

**INSTRUCTIONS FOR UPDATING THE  
SAFETY-KLEEN BOYNTON BEACH, FLORIDA  
OPERATING PERMIT APPLICATION FLD984167791**

<u>Attachments to Replace/Include</u>	<u>Reason for Replacement</u>
(Text pages only unless otherwise indicated)	
Cover Page and Table of Contents	
Page I.B.3-1B	Added references to antifreeze tank.
Attachment I.D.2	Removed references to drum colors.
	Removed references to drum sizes.
	Added Fluid Recovery Service (FRS) wastes.
	Added antifreeze tank description.
Attachment I.D.3	Added Fluid Recovery Service (FRS) wastes.
	Added tank as process code for ethylene glycol.
Page II.A.1(a)-2D	Added references to antifreeze tank.
Page II.A.1(c)-1A	Added references to antifreeze tank.
Attachments II.A.4(b) (text pages only)	Added antifreeze in tanks.
	Added Fluid Recovery Service (FRS) wastes.
	Removed references to drum sizes.
Attachment II.A.4(b), pages iii and II.A.4(b)-3C	Changed alternate emergency coordinator.
Page II.A.4(b)-3A	Changed reference from oil tank to antifreeze tank.

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<u>Attachments to Replace/Include</u>	<u>Reason for Replacement</u>
Attachment II.A.4(b), Appendix B	Reissue letters to local authorities.
Page II.A.4(d)-5A	Changed reference from oil tank to antifreeze tank.
Attachment II.A.5, Table II.A.5-1	Added Fluid Recovery Service (FRS) wastes.
	Added antifreeze tank.
Pages II.A.6-2A, II.A.6-2B, II.A.6-2C, and II.A.6-2D	Added Fluid Recovery Service (FRS) wastes.
	Added antifreeze tank references.
Attachment II.B.1	Reference to Fluid Recovery Service (FRS) wastes on page II.B.1-2.
Attachment II.B.3	Removed references to drum color.
	Removed references to drum sizes.
	Added references to Fluid Recovery Service (FRS) wastes.
Attachment II.B.4, Table II.B.4-1	Added references to Fluid Recovery Service (FRS) wastes.
	Provided table of container sizes.
	Removed references to color of drums.
Attachment II.B.6	Changed drum sizes on page II.B.6-2.
	Added references to Fluid Recovery Service (FRS) wastes.
Attachment II.C-1 (Remove no pages)	Add new tank assessment to attachment.
Attachment II.C-2 and page II.C-2-1A	Added spent antifreeze tank assessment. Added reference to the 20,000-gallon spent antifreeze tank.
Attachment II.C-7 and page II.C-7-1A (text pages only)	Added reference to the 20,000-gallon spent antifreeze tank.



**Attachments to Replace/Include**

**Reason for Replacement**

Attachment II.C-9

Added reference to the 20,000-gallon spent antifreeze tank.

Attachment II.C-12(a)

Added reference to the 20,000-gallon spent antifreeze tank on page II.C.12(a)-2.

Attachment II.K.1

Added reference to the 20,000-gallon spent antifreeze tank on pages II.K.1-1 and II.K.1-2.

Added Fluid Recovery Service (FRS) wastes.

Changed drum sizes.

**RCRA OPERATING PERMIT APPLICATION  
SAFETY-KLEEN CORP.  
LOT 46B QUANTUM INDUSTRIAL PARK  
BOYNTON BEACH, FLORIDA**

FLD 984167791

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## TABLE OF CONTENTS

		<u>Page</u>
Permit Chronology		
Part I	General Facility Information	
	Attachment I.A.21 Permit Information	
	Attachment I.B.3 Facility Layout and Photographs	I.B.3-1
	Attachment I.B.4 Topography Map of the Site	I.B.4-1
	Attachment I.D.2 Description of Facility Operation	I.D.2-1
	Attachment I.D.3 Waste Type	I.D.3-1
Part II A	General	
	Attachment II.A.1(a) Topography Map	II.A.1(a)-1
	Attachment II.A.1(b) Wind Rose	II.A.1(b)-1
	Attachment II.A.1(c) Traffic Information	II.A.1(c)-1
	Attachment II.A.2 Financial Responsibility Information	II.A.2-1
	Attachment II.A.3 Flood Information	II.A.3-1
	Attachment II.A.4 Facility Security Information	II.A.4-1
	Attachment II.A.4(a) Security Procedures and Equipment	II.A.4(a)-1
	Attachment II.A.4(b) Contingency Plan and Emergency Procedures for Daily Business Operations	II.A.4(b)-1
	Attachment II.A.4(d) Preparedness and Prevention Procedures	II.A.4(d)-1
	Attachment II.A.4(e) Training Program	II.A.4(e)-1
	Attachment II.A.5 Waste Analysis Report	II.A.5-1
	Attachment II.A.6 Waste Analysis Plan	II.A.6-1
	Attachment II.A.7 Manifest System, Recordkeeping, and Reporting	II.A.7-1
Part II B	Containers	
	Attachment II.B.1 Containment System	II.B.1-1
	Attachment II.B.2 Waste Compatibility	II.B.2-1
	Attachment II.B.3 Waste Segregation	II.B.3-1
	Attachment II.B.4 Container Management	II.B.4-1
	Attachment II.B.5 Container Inspections	II.B.5-1
	Attachment II.B.6 Container Closure Plan	II.B.6-1

## TABLE OF CONTENTS (Continued)

		<u>Page</u>
Part II C	Tank Systems	
Attachment II.C.1	Engineering Assessment of Tank System	II.C.1-1
Attachment II.C.2	Tank System Specifications	II.C.2-1
Attachment II.C.7	Tank System Secondary Containment	II.C.7-1
Attachment II.C.9	Controls and Spill Prevention	II.C.9-1
Attachment II.C.11	Tank System Inspections	II.C.11-1
Attachment II.C.12(a)	Tank System Closure Plan	II.C.12(a)-1
Attachment II.C.12(b)	Tank System Contingent Post-Closure Plan	II.C.12(b)-1
Attachment II.C.13	Response to Leaks and Disposition of Unfit for Use Tank Systems	II.C.13-1
Part II K	Closure	
Attachment II.K.1	Closure Plan	II.K.1-1
Attachment II.K.2	Contingent Post-Closure Plan	II.K.2-1
Part II P	Information Regarding Potential Releases from Solid Waste Management Units	II.P.-1

## LIST OF FIGURES

		<u>Page</u>
FIGURE I.B.3-1	Site Layout	I.B.3-1A
FIGURE I.B.3-2	Truck Traffic Patterns	I.B.3-1B
FIGURE I.B.3-3	Traffic Volumes	I.B.3-1C
FIGURE I.B.4-1	Topographic Map	I.B.4-1A
FIGURE I.B.4-2	Floodplain	I.B.4-1B
FIGURE I.B.4-3	Surrounding Land Uses	I.B.4-1C
FIGURE I.B.4-4	Legal Boundary of the Facility	I.B.4-2A
FIGURE I.B.4-5	Well Inventory Map	I.B.4-2B
FIGURE I.B.4-6	Facility Run-Off Control System	I.B.4-2D
FIGURE II.A.1(a)-1	Floodplain	II.A.1(a)-1A
FIGURE II.A.1(a)-2	Access Control Features	II.A.1(a)-1B
FIGURE II.A.1(a)-3	Well Inventory Map	II.A.1(a)-1C
FIGURE II.A.1(a)-4	Buildings and Structures	II.A.1(a)-2A
FIGURE II.A.1(a)-5	Fire Fighting Equipment	II.A.1(a)-2B
FIGURE II.A.1(a)-6	Surface Water Flow	II.A.1(a)-2C
FIGURE II.A.1(a)-7	Truck Traffic Patterns	II.A.1(a)-2D
FIGURE II.A.1(b)-1	Wind Rose	II.A.1(b)-1A
FIGURE II.A.1(c)-1	Truck Traffic Patterns	II.A.1(c)-1A
FIGURE II.A.1(c)-2	Traffic Volumes	II.A.1(c)-1B

## LIST OF FIGURES (Continued)

		<u>Page</u>
FIGURE II.A.3-1	Floodplain	II.A.3-1A
FIGURE II.A.4(a)-1	Security Signage	II.A.4(a)-1A
FIGURE II.A.4(b)-1	Site Layout	II.A.4(b)-3A
FIGURE II.A.4(b)-2	Safety Equipment	II.A.4(b)-3B
FIGURE II.A.4(d)-1	Location of Emergency Equipment	II.A.4(d)-5A
FIGURE II.B.1-1	Drum Storage Area	II.B.1-1A
FIGURE II.B.3-1	16-Gallon Steel Barrel	II.B.3-2A
FIGURE II.B.3-2	16-Gallon Drum Lid	II.B.3-2B
FIGURE II.B.3-3	16-Gallon Drum Clamp Ring	II.B.3-2C
FIGURE II.B.3-4	16-Gallon Drum Adapter Clip	II.B.3-2D
FIGURE II.B.3-5	Dry Cleaning Drum	II.B.3-2E
FIGURE II.B.3-6	Dry Cleaning Drum Ring	II.B.3-2F
FIGURE II.B.3-7	Dry Cleaning Drum Cover	II.B.3-2G
FIGURE II.B.3-8	Waste Paint Containers	II.B.3-2H
FIGURE II.B.5-1	Daily Inspection of Gates and Locks	II.B.5-1A
FIGURE II.B.5-2	Weekly Inspection of Safety and Emergency Equipment	II.B.5-1B
FIGURE II.B.5-3	Daily Inspection of Drum Storage Area	II.B.5-1C
FIGURE II.B.6-1	Typical Closure Schedule	II.B.6-1A
FIGURE II.C.2-1	Tank Farm	II.C.2-1A

## LIST OF FIGURES (Continued)

	<u>Page</u>
FIGURE II.C.2-2(a) - Barrel Washer Specifications FIGURE II.C.2-2(j)	II.C.2-2A
FIGURE II.C.2-3 Solvent Dispenser	II.C.2-2K
FIGURE II.C.2-4(a) - Used Solvent Storage Tank Installation Details FIGURE II.C.2-4(b)	II.C.2-3A
FIGURE II.C.2-5(a) - High Level Alarm System FIGURE II.C.2-5(c)	II.C.2-3C
FIGURE II.C.7-1 Tank Farm	II.C.7-1A
FIGURE II.C.7-2 Tank Containment Calculations	II.C.7-1B
FIGURE II.C.7-3 Return/Fill Shelter	II.C.7-1C
FIGURE II.C.11-1 Daily Inspection of Gates and Locks	II.C.11-1A
FIGURE II.C.11-2 Weekly Inspection of Safety and Emergency Equipment	II.C.11-1B
FIGURE II.C.11-3 Daily Inspection of Storage Tanks	II.C.11-1C
FIGURE II.C.12(a)-1 Typical Closure Schedule	II.C.12(a)-1A

## LIST OF TABLES

		<u>Page</u>
TABLE I.B.4-1	Well Inventory	I.B.4-2C
TABLE I.D.3-1	List of Wastes	I.D.3-1A
TABLE II.A.1(a)-1	Well Inventory	II.A.1(a)-1D
TABLE II.A.4(b)-1	Emergency Notification	II.A.4(b)-4A
TABLE II.A.4(b)-2	Telephone Notification Log	II.A.4(b)-4B
TABLE II.A.4(b)-3	Emergency Response Equipment	II.A.4(b)-14A
TABLE II.A.4(d)-1	Emergency Response Equipment	II.A.4(d)-5B
TABLE II.A.4(e)-1	Time of Training	II.A.4(e)-1A
TABLE II.A.4(e)-2	Training Plan Outline	II.A.4(e)-1B
TABLE II.A.4(e)-3	Record of Personnel Training	II.A.4(e)-1F
TABLE II.A.4(e)-4	Job Description - Branch Manager	II.A.4(e)-2A
TABLE II.A.4(e)-5	Job Description - Branch Secretary	II.A.4(e)-2B
TABLE II.A.4(e)-6	Job Description - Sales Representative	II.A.4(e)-2C
TABLE II.A.4(e)-7	Job Description - Warehouse Personnel	II.A.4(e)-2D
TABLE II.A.4(e)-8	New Branch Manager Training	II.A.4(e)-4A
TABLE II.A.5-1	Acceptance Criteria for Fluid Recovery Service (FRS) Wastes	II.A.5-7A
TABLE II.A.6-1	Parameters and Rationale for Hazardous Waste Identification	II.A.6-2A
TABLE II.A.6-2	Parameters and Test Methods	II.A.6-2B



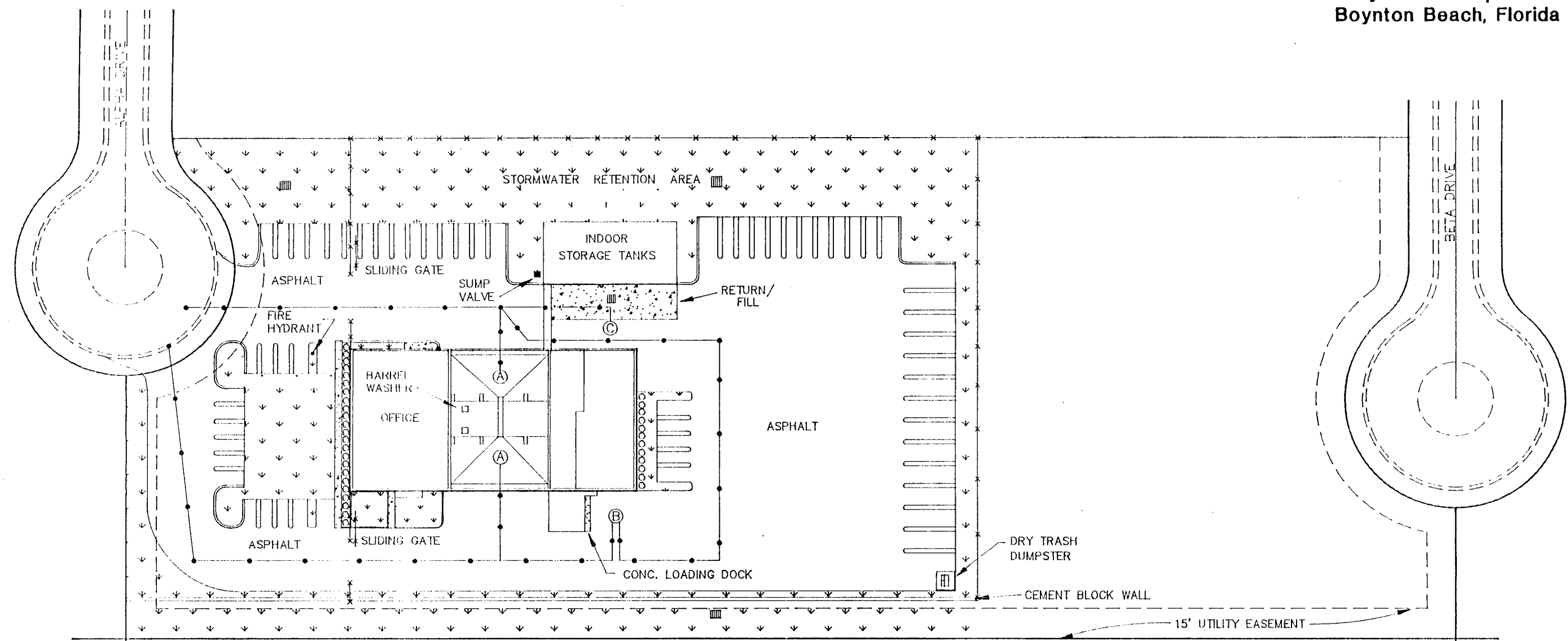
## LIST OF TABLES (Continued)

		<u>Page</u>
TABLE II.A.6-3	Methods Used to Sample Hazardous Wastes	II.A.6-2C
TABLE II.A.6-4	Frequency of Analysis	II.A.6-2D
TABLE II.B.4-1	Waste Containers	II.B.4-1A

**PART I**  
**GENERAL FACILITY INFORMATION**

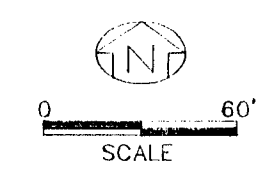


Figure I.B.3-2  
 Truck Traffic Patterns and Loading/  
 Unloading Areas of Hazardous Waste  
 Safety-Kleen Corp. Facility  
 Boynton Beach, Florida



LEGEND

- |                                      |   |
|--------------------------------------|---|
| GRASS                                | (A) MINERAL SPIRIT DRUM DUMP/BARREL WASH/REFILL                                       |
| CONCRETE                             | (B) LOADING AND UNLOADING OF DRUMS CONTAINING SOLVENT FROM TRUCKS AND LOCAL AREA VANS |
| SHRUBS                               | (C) LOADING AND UNLOADING OF MINERAL SPIRITS AND ANTIFREEZE FROM TANKER TRUCKS        |
| STORM DRAIN                          | —●—●— ENTRANCE/EXIT ROUTE   |
| 6 FOOT CHAINLINK/<br>BARB WIRE FENCE |   |



**ATTACHMENT I.D.2**  
**DESCRIPTION OF FACILITY OPERATION**

**ATTACHMENT I.D.2**  
**DESCRIPTION OF FACILITY OPERATION**

**DESCRIPTION OF THE BUSINESS**

Safety-Kleen Corp. of Elgin, Illinois is an international, service-oriented company whose customers are primarily engaged in automotive repair and industrial maintenance. Since 1968, Safety-Kleen has been offering a leasing service for hydrocarbon and chlorinated solvents and small parts washing equipment. A unique feature of this business concept is that the solvent is produced through recycling the used solvent that is leased to the customers. Approximately two-thirds of the clean solvent leased has been previously used by the customers.

The Safety-Kleen parts washing equipment, together with the solvents, are leased to customers; the leasing charge includes regularly scheduled solvent changes and machine maintenance. The business is conducted from local service centers (sales branches) located in 45 states domestically that warehouse the products and equipment required to service the customers in their sales areas. On a regular basis, service representatives furnish clean solvent to the customers, pick up the used solvent, and ensure that the leased equipment is in good working order. In 1979, Safety-Kleen expanded their scope of operations to make their solvent leasing service available to owners of parts cleaning equipment, regardless of manufacturer, using Safety-Kleen's types of solvents.

Basically, Safety-Kleen handles three types of parts washer solvents: a mineral spirits solvent and old and new formulations of immersion cleaner. The old immersion cleaner solvent is labeled under the trade name of "Immersion Cleaner and Carburetor and Cold Parts Cleaner #609." It is a two-phase system consisting of an upper aqueous (water) layer and lower non-aqueous (solvent) layer. The water phase consists of water and Dresinate TX (sodium soap of tall oil). The solvent phase is composed of methylene chloride, orthodichlorobenzene, cresylic acid, and an amines additive. A new immersion

cleaner is being marketed under the name #699 and will eventually replace the old immersion cleaner. It is a non-chlorinated solvent mixture. The solvent is composed of heavy aromatic naphtha, N-methyl-2-pyrrolidone dipropylene glycol methyl ether, monoethanolamine and oleic acid. It contains a maximum of 1 percent total chlorinated solvents.

The solvents are distributed and collected by their service representatives. Containers are transported in specially-equipped, enclosed route trucks. Clean solvents are distributed from and used solvents returned to the service center where they are stored in separate tanks for the clean and used mineral spirits bulk storage. Warehouse space is dedicated for the storage of both clean and used immersion cleaner containers. Safety-Kleen leases parts washing equipment, including partially filled containers, which double as the solvent reservoir of the parts washer. During servicing, the quantity of used solvent removed from each machine ranges from 5 to 20 gallons. The mineral spirits are collected in containers. The 609 and 699 Immersion Cleaners are also housed in containers.

The mineral spirits are transported in covered containers between the service center and customers. Upon returning to the service center, the used mineral spirits are transferred from the containers into a wet dumpster (solvent return receptacle) in which coarse solids in the mineral spirits are retained. Used mineral spirits in the wet dumpster flow into a 15,000-gallon aboveground tank for storage. Used mineral spirits solvent is picked up periodically by a bulk tank truck from the recycle facility which at the same time delivers a load of clean mineral spirits. The sludge in the wet dumpster is periodically cleaned out, containerized, and temporarily stored in the container storage area for later shipment to the recycle facility for reclamation.

Periodically, a company truck is dispatched from one of Safety-Kleen's nationwide solvent recycle facilities to the service center to deliver a load of clean solvent and pick

up a load of used solvent. Mineral spirits are transported in bulk tank trucks between the service centers and the recycle facilities. The Immersion Cleaner remain in the covered containers during transfer between the service centers and the recycle facilities. Approximately 97 percent of the solvent handled in the parts washer business is mineral spirits, while the remainder is immersion cleaner.

In 1984, Safety-Kleen began offering a service for the collection of filter cartridges and still bottoms contaminated with dry cleaning solvents (usually perchloroethylene). These wastes are containerized on the customer's premises and are periodically collected by a sales representative. The containerized waste is accumulated in a contained area of the warehouse for shipment to a Safety-Kleen recycle center. Approximately 35 percent of this waste is returned to dry cleaners as usable product.

In 1986, a paint waste reclamation program was initiated to service automobile body repair businesses. Paint gun cleaning machines are leased to customers with a reservoir of lacquer thinner (for cleaning the paint guns). On a periodic basis the reservoir is replaced and the spent solvent taken back to the facility for shipment to a reclamation facility. Wastes containing various thinners and paints are collected in containers on the customer's premises. The sales representative collects these containers and stores them in the container storage area. These wastes are periodically shipped to a reclaimer and the regenerated solvent is distributed to Safety-kleen customers for use as product.

Safety-Kleen offers generators of large quantities of Fluid Recovery Service (FRS) wastes a reclamation service through its FRS wastes collection service. Wastes containing mineral spirits, halogenated solvents, and lacquer thinners are shipped from the generator to the accumulation center in containers. The containers are then shipped to the Safety-Kleen recycle center in Lexington, South Carolina or to an independent reclaimer.

In 1990, Safety-Kleen began offering a service for the collection of spent antifreeze (ethylene glycol) from automobile service stations. These wastes are deposited into a 150-gallon translucent carboy by the customer, on the customer's premises, and the carboy is pumped into containers or a 3,500-gallon tanker truck by a sales representative. It is then placed in the container storage warehouse or a bulk tank in the tank building for shipment to a Safety-Kleen recycle center. Approximately 35 percent of this waste is returned to customers as usable product.

Safety-Kleen's solvent cycle is essentially a closed loop, moving from the service center to the customer, from the customer to the service center, from the service center to the recycle facility and then from the recycle center back to the service center. The small quantities of residue remaining in the storage tanks at the service centers and after distillation of the used solvent at Safety-Kleen's solvent recycling facilities are disposed of in accordance with applicable laws and regulations.

This closed loop supplies Safety-Kleen with most of its solvent requirements; the resultant stabilized cost benefits are passed on to its customers. Ownership of the solvent remains with Safety-Kleen; the service center managers are accountable for the quantities of clean and used solvents handled by their branch operations. The service center is basically a temporary storage and transfer facility. By FDER definition, however, these centers are considered to be the waste generator.



**ATTACHMENT I.D.3**

**WASTE TYPE**



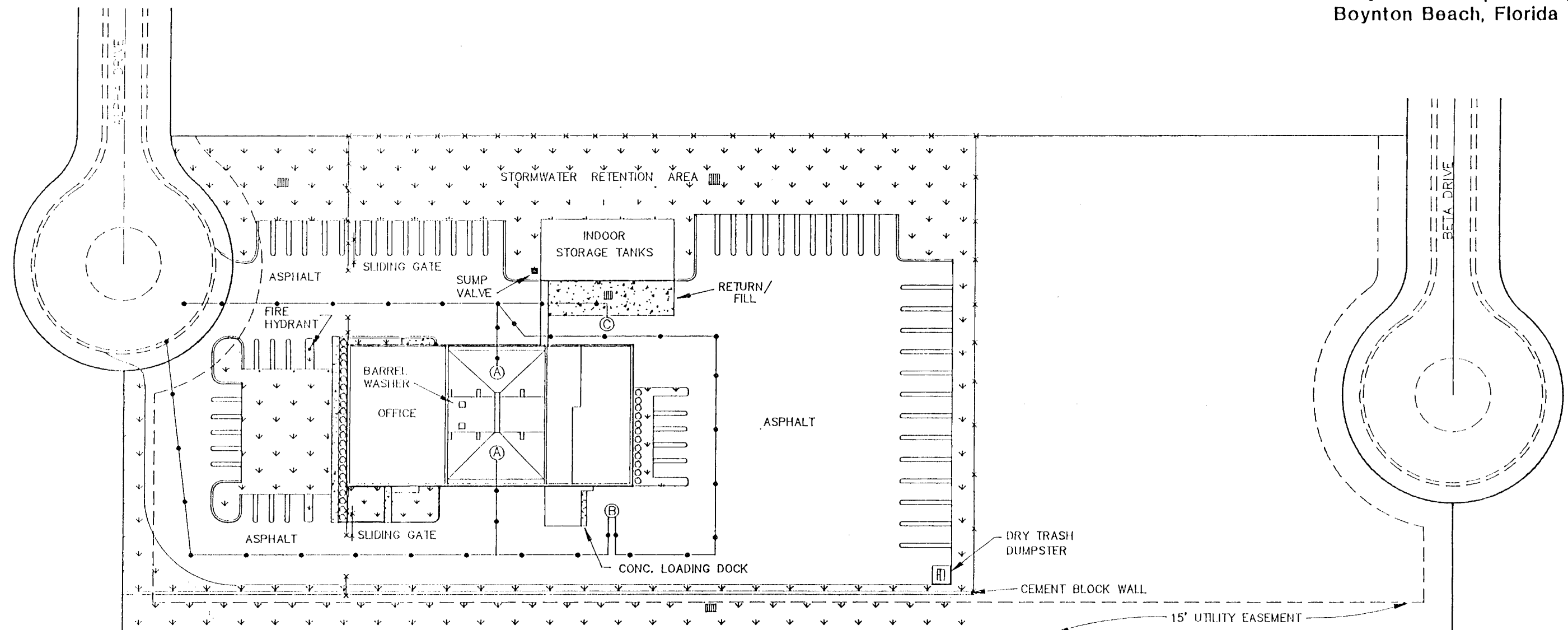
**ATTACHMENT I.D.3-1  
SAFETY-KLEEN CORP. FACILITY  
BOYNTON BEACH, FLORIDA**

<b>Waste Type</b>	<b>Process Code(s)</b>	<b>Estimated Annual Amounts (Tons)</b>	<b>Waste Codes</b>
Spent Mineral Spirits	S01 S02	993	D001 and Codes Listed in Note Below
Dumpster Sediment	S01	Included Above	D001 and Codes Listed in Note Below
Tank Bottoms	S01	Included Above	D001 and Codes Listed in Note Below
Spent Ethylene Glycol	S01 S02	5,000	Codes Listed in Note Below
Spent Immersion Cleaner (Old Formula)	S01	31	F002, F004, and Codes Listed in Note Below
(New Formula)	S01	Included Above	Codes Listed in Note Below
Dry Cleaning Waste	S01	350	D001 or F002 and Codes Listed in Note Below
Paint Waste	S01	50	D001, F003, F005 and Codes Listed in Note Below
Fluid Recovery Service (FRS) Waste	S01	250	D001, F001, F002, F003, F005, and Codes Listed in Note Below
Off Specification Perchloroethylene	S01	10	U210

NOTE: D004, D005, D006, D007, D008, D009, D010, D011, D018, D019, D021, D022, D023, D024, D025, D026, D027, D028, D029, D030, D032, D033, D034, D035, D036, D037, D038, D039, D040, D041, D042, D043

**PART II A**  
**GENERAL**

**Figure II.A.1(a)-7**  
**Truck Traffic Patterns and Loading/**  
**Unloading Areas of Hazardous Waste**  
**Safety-Kleen Corp. Facility**  
**Boynton Beach, Florida**



**LEGEND**

- |                                      |   |
|--------------------------------------|---|
| GRASS                                | (A) MINERAL SPIRIT DRUM DUMP/BARREL WASH/REFILL                                       |
| CONCRETE                             | (B) LOADING AND UNLOADING OF DRUMS CONTAINING SOLVENT FROM TRUCKS AND LOCAL AREA VANS |
| SHRUBS                               | (C) LOADING AND UNLOADING OF MINERAL SPIRITS AND ANTIFREEZE FROM TANKER TRUCKS        |
| STORM DRAIN                          | —•—•— ENTRANCE/EXIT ROUTE   |
| 6 FOOT CHAINLINK/<br>BARB WIRE FENCE |   |

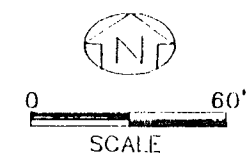
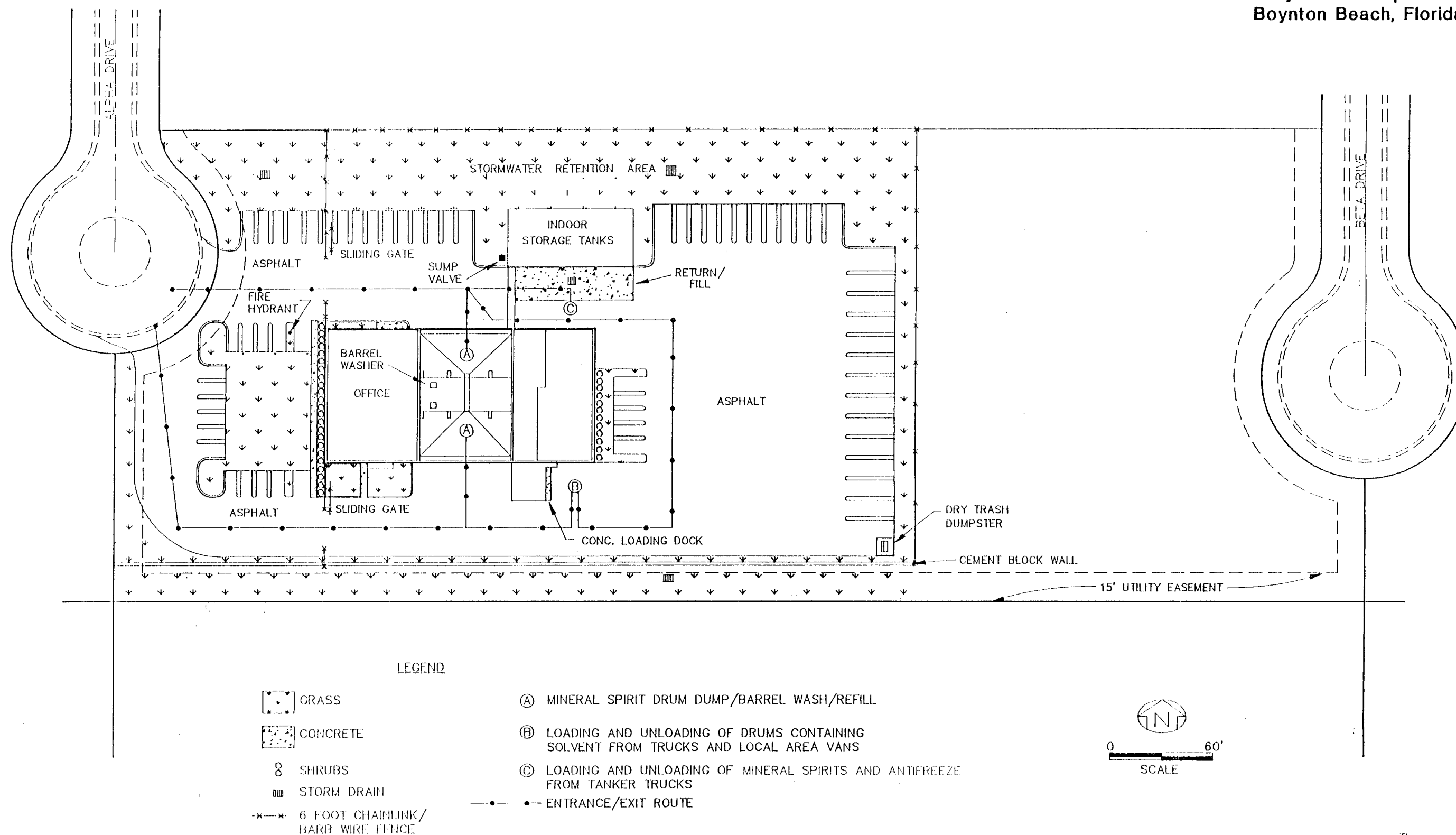


Figure II.A.1(c)-1  
 Truck Traffic Patterns and Loading/  
 Unloading Areas of Hazardous Waste  
 Safety-Kleen Corp. Facility  
 Boynton Beach, Florida



**ATTACHMENT II.A.4(b)**  
**CONTINGENCY PLAN AND EMERGENCY PROCEDURES**  
**FOR DAILY BUSINESS OPERATIONS**

## TABLE OF CONTENTS

	<u>Page</u>
EMERGENCY PHONE NUMBERS	iii
GENERAL INFORMATION	II.A.4(b)-1
EMERGENCY NOTIFICATION	II.A.4(b)-3
EMERGENCY RESPONSE AGENCIES AND TEAM MEMBERS	II.A.4(b)-3
ACTIONS OF THE EMERGENCY COORDINATOR	II.A.4(b)-4
POTENTIAL SPILL SOURCES	II.A.4(b)-8
DECONTAMINATION	II.A.4(b)-12
EMERGENCY RESPONSE EQUIPMENT AND COMMUNICATION	II.A.4(b)-13
FIRE CONTROL PROCEDURES	II.A.4(b)-14
AVAILABILITY AND REVISION OF THE CONTINGENCY PLAN	II.A.4(b)-15
ARRANGEMENTS WITH LOCAL AUTHORITIES	II.A.4(b)-16
EVACUATION PLAN	II.A.4(b)-17
APPENDICES	
APPENDIX A	Material Safety Data Sheets for Known Hazardous Constituents
APPENDIX B	Letters to Local Authorities

## LIST OF FIGURES

	<u>Page</u>
FIGURE II.A.4(b)-1 Site Layout	II.A.4(b)-3A
FIGURE II.A.4(b)-2 Safety Equipment	II.A.4(b)-3B
FIGURE II.A.4(b)-3 Fire Fighting Sprinkler System	II.A.4(b)-15A

## LIST OF TABLES

TABLE II.A.4(b)-1 Emergency Notification	II.A.4(b)-3C
TABLE II.A.4(b)-2 Telephone Notification Log	II.A.4(b)-3D
TABLE II.A.4(b)-3 Emergency Response Equipment	II.A.4(b)-14A



## EMERGENCY PHONE NUMBERS

### Emergency Coordinators

<b>Primary:</b> Thomas H. Sands 9873 Lawrence Road, G205 Boynton Beach, FL 33436 Home: (407) 736-8968 Office: (407) 736-1339	<b>Alternate:</b> Jereme Breen 65 Deer Path Lake Worth, FL 33424 Home: No phone available Office: (407) 736-1339
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### Emergency Notification Phone Numbers

Safety-Kleen Environmental Department  
 Telephone (708) 888-4660 (24-hour number)

National Response Center  
 Telephone (800) 424-8802

Southeast Florida District of the FDER, 1900 South Congress Avenue, Suite A, West Palm Beach, Florida (407) 433-2650 or (904) 488-1320 - 24 hours.

South Florida Water Management District, West Palm Beach, Florida (407) 686-8800

### Emergency Team to be Notified

Boynton Beach Fire Department  
 150 E. Boynton Beach Blvd.  
 Boynton Beach, FL 33435  
 (407) 738-7430

O.H. Materials Company  
 P.O. Box 551  
 Findlay, OH 45840  
 (800) 537-9540  
 (Primary Cleanup Contractor)

Boynton Beach Police Department  
 135 N.E. 1st Avenue  
 Boynton Beach, FL 33435  
 (407) 732-8132

AMO Pollution Services, Inc.  
 P.O. Box 311B  
 Canonsburg, PA 15317  
 (800) 325-1398  
 (Secondary Cleanup Contractor)

Bethesda Memorial Hospital  
 2815 S. Seacrest Blvd.  
 Boynton Beach, FL 33435  
 (407) 737-7733 or 278-7733

Ryckman's Emergency Action and  
 Consulting Team  
 P.O. Box 27310  
 St. Louis, MO 63141  
 (800) 325-1398  
 (Secondary Cleanup Contractor)



**ATTACHMENT II.A.4(b)****CONTINGENCY PLAN AND EMERGENCY PROCEDURES  
FOR DAILY BUSINESS OPERATIONS****GENERAL INFORMATION****Purpose**

The contingency plan and emergency procedures are designed to ensure that Safety-Kleen is prepared to address emergency situations rapidly and in a manner to prevent or minimize hazards to human health or the environment from fire, explosion, or any unplanned sudden or nonsudden release of hazardous material constituents to the air, soil, surface water, or ground water at the facility.

The provisions of the contingency plan are to be carried out immediately if there is a fire, explosion, or release of hazardous materials occurs that could threaten human health or the environment. All contingency plan responses must conform with the procedures contained in this plan.

**General Description of Activities**

The business activities conducted at the Boynton Beach Service Center relate to the leasing and servicing of Safety-Kleen Parts Cleaning Equipment, including the provisions of a solvent leasing service for the customers. Clean solvents are distributed from and the used solvents are returned to the service center, where separate storage tanks are utilized for the storage of clean and used mineral spirits (solvent) and spent antifreeze, and warehouse space is designated for the storage of containers of both clean and used immersion cleaner, mineral spirits, tank bottoms, dumpster mud, antifreeze, paint, dry cleaning wastes (chlorinated solvent), and FRS wastes. Safety-Kleen uses a container color scheme as a part of its waste management system. An overpack container is used for the management of containers whose integrity has been compromised.

The mineral spirits are transported in covered containers between the service center and customers. Upon returning to the service center, the used mineral spirits are transferred from the containers into a wet dumpster (solvent return receptacle) in which coarse solids in the mineral spirits are retained. Used mineral spirits in the wet dumpster flow into a 15,000-gallon aboveground tank for storage. Used mineral spirits solvent is picked up periodically by a bulk tank truck from the recycle facility which at the same time delivers a load of clean mineral spirits. The sludge in the wet dumpster is periodically cleaned out, containerized, and temporarily stored in the container storage area for later shipment to the recycle facility for reclamation.

The immersion cleaner remains in a covered container at all times during transportation and storage. The solvent is not transferred to another container while being used by the customers or while in storage at the service center. Dry cleaning wastes are picked up at commercial dry cleaning establishments in containers and are stored temporarily at the service center. The containers are picked up periodically for recycling at the recycle facility.

Dry cleaning wastes consist of spent filter cartridges, powder residue from diatomaceous or other powder filter systems and still bottoms. These wastes are packaged on the customer's premises in containers.

The antifreeze waste is approximately one-third water and two-thirds antifreeze (ethylene glycol) and contaminants. The waste is collected in 150-gallon carboys at the customer's facility. The spent antifreeze is then transferred to containers or a 3,500-gallon tanker truck. The tanker truck empties the waste into a 20,000-gallon storage tank. The containerized waste is placed in the container storage area prior to shipment to a reclamation facility.

The paint wastes consist of various lacquer thinners and paints collected in containers.

The waste products exhibit essentially the same biological, physical, and chemical properties as the fresh product. Used products are basically fresh products with impurities of dirt and metals. The MSDSs provided in Appendix A represent the biological, physical, and chemical properties of both the fresh and used products.

Figures II.A.4(b)-1 and II.A.4(b)-2 shows the basic site and floor plans, particularly, the locations of waste management facilities, emergency equipment, facility storage, and evacuation routes.

### **EMERGENCY NOTIFICATION**

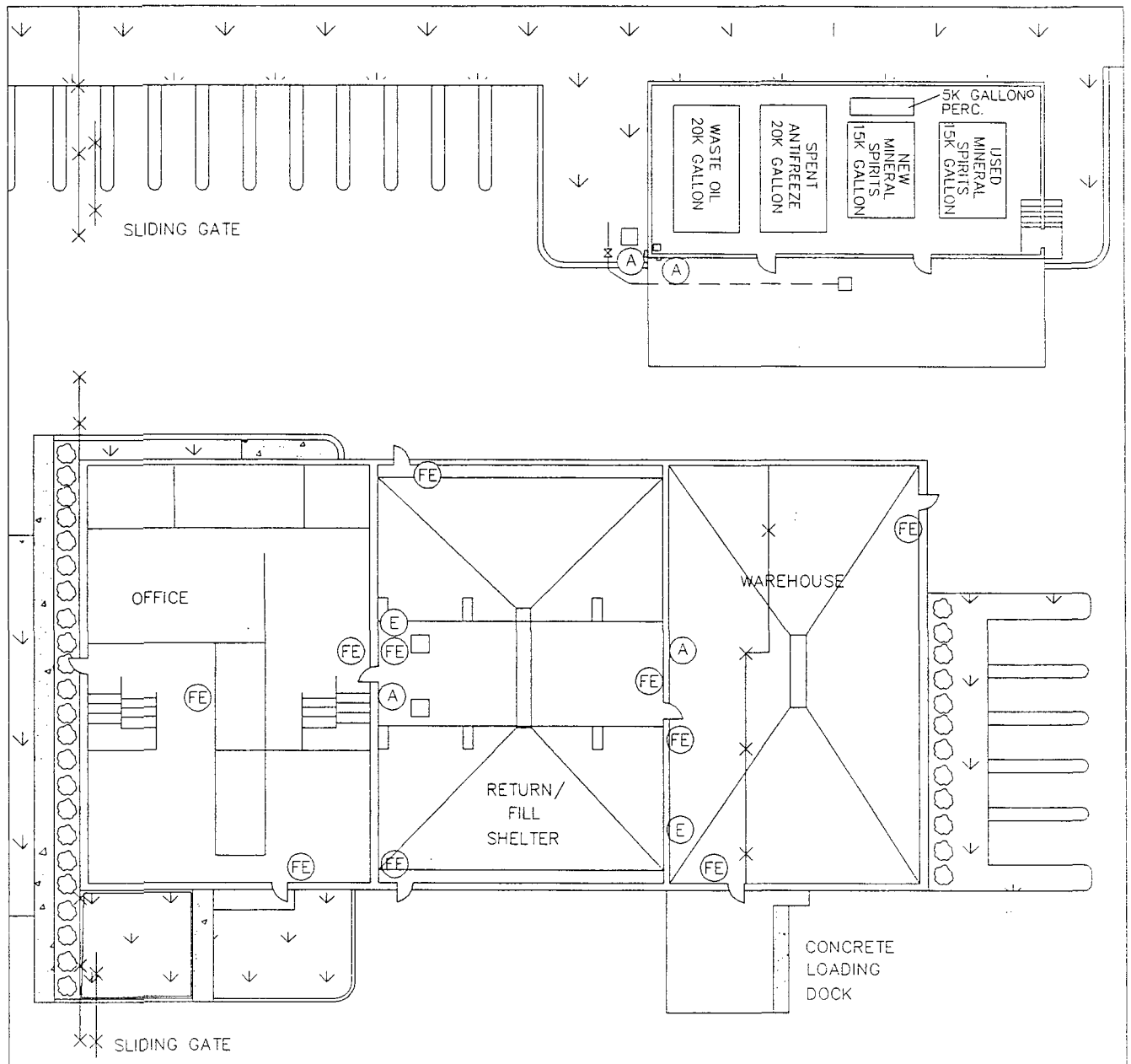
#### **Emergency Coordinator**

The Branch Manager or his designee is the emergency coordinator. Table II.A.4(b)-1 includes the names, home addresses, and both office and home phones of the primary emergency coordinator and his alternatives. At least one employee is either present on the facility premises or on call with responsibility for coordinating all emergency response measures at all times. This primary emergency coordinator and alternate emergency coordinator are thoroughly familiar with all aspects of the facility's contingency plan, all operations and activities at the facility, the location and characteristics of materials handled, the location of all records within the facility, and the facility layout. In addition, these coordinators have the authority to commit the resources needed to carry out the contingency plan.

### **EMERGENCY RESPONSE AGENCIES AND TEAM MEMBERS**

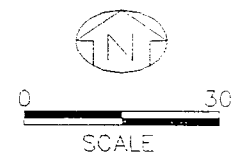
The agencies and response team members to be notified whenever an imminent or actual emergency occurs are presented in Table II.A.4(b)-1. A Telephone Notification Log is shown in Table II.A.4(b)-2.

Figure II.A.4(b)-2  
Safety Equipment  
Safety-Kleen Corp. Facility  
Boynton Beach, Florida



LEGEND

- (FE) FIRE EXTINGUISHER
- (E) EYE WASH/SHOWER
- (A) ALARM



**TABLE II.A.4(b)-1  
EMERGENCY NOTIFICATION**

**Emergency Coordinators**

<b>Primary:</b> Thomas H. Sands 9873 Lawrence Road, G205 Boynton Beach, FL 33436 Home: (407) 736-8968 Office: (407) 736-1339	<b>Alternate:</b> Jereme Breen 65 Deer Path Lake Worth, FL 33424 Home: No phone available Office: (407) 736-1339
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**Emergency Notification Phone Numbers**

Safety-Kleen Environmental Department  
 Telephone (708) 888-4660 (24-hour number)

National Response Center  
 Telephone (800) 424-8802

Southeast Florida District of the FDER, 1900 South Congress Avenue, Suite A, West Palm Beach, Florida (407) 433-2650 or (904) 488-1320 - 24 hours.

South Florida Water Management District, West Palm Beach, Florida (407) 686-8800

**Emergency Team to be Notified**

Boynton Beach Fire Department  
 150 E. Boynton Beach Blvd.  
 Boynton Beach, FL 33435  
 (407) 738-7430

O.H. Materials Company  
 P.O. Box 551  
 Findlay, OH 45840  
 (800) 537-9540  
 (Primary Cleanup Contractor)

Boynton Beach Police Department  
 135 N.E. 1st Avenue  
 Boynton Beach, FL 33435  
 (407) 732-8132

AMO Pollution Services, Inc.  
 P.O. Box 311B  
 Canonsburg, PA 15317  
 (800) 325-1398  
 (Secondary Cleanup Contractor)

Bethesda Memorial Hospital  
 2815 S. Seacrest Blvd.  
 Boynton Beach, FL 33435  
 (407) 737-7733 or 278-7733

Ryckman's Emergency Action and  
 Consulting Team  
 P.O. Box 27310  
 St. Louis, MO 63141  
 (800) 325-1398  
 (Secondary Cleanup Contractor)

### **ACTIONS OF THE EMERGENCY COORDINATOR**

Whenever there is an imminent or actual emergency situation, the emergency coordinator (or his or her designee when the emergency coordinator is on call) must immediately:

- a. Activate internal or communication systems to notify all facility personnel. The relatively small size of this Service Center makes direct verbal communication the most expedient form of emergency notification. The emergency coordinator may also elect to proceed to the front of the building and honk a car horn to notify building occupants of an emergency. A head count will be performed by the emergency coordinator.
- b. Notify appropriate state or local agencies with designated response roles if their help is needed.
- c. Summon the primary emergency coordinator, if he is absent.

Whenever a release, fire, or explosion occurs, the emergency coordinator must immediately identify the character, exact source, amount, and area extent of any released materials. Because of the limited types of chemicals in storage, the identification processes can easily be performed visually.

#### **Procedure for Assessing Possible Hazard to the Environment and Human Health:**

- a. After identification of the character, source, amount, and extent of a release, fire, or explosion, the emergency coordinator must decide whether the situation can be contained or cleaned up by plant personnel and equipment.
- b. If a fire or explosion is determined uncontrollable by plant personnel or threatening neighboring establishments or population, assistance from a local emergency

response agency shall be summoned immediately and an evacuation order be requested.

- c. In case of a release outside of the containment area that is deemed immediately uncontainable or unrecoverable, a local emergency response agency and/or specialty cleanup contractor shall be called in.
- d. After termination of a fire or explosion, containment and preliminary cleanup of a spill, evaluate whether residues in the form of gas or liquid have become airborne, seeped into ground water, and/or flowed into surface water bodies.
- e. Expert assistance should be requested to determine whether the escaped materials are potentially harmful and whether the receiving medium ultimately will be a populated area, public water supply source, a private well, or an environmentally sensitive area.
- f. Additional steps shall then be taken to mitigate the potential impact on the environment and human health, in accordance with expert recommendations.

If the emergency coordinator determines that the facility has had a release, fire, or explosion that could threaten human health, or the environment outside the facility, the coordinator must report those findings, as follows:

- a. If the assessment indicates that evacuation of local areas may be advisable, the coordinator must immediately notify appropriate authorities. The coordinator must be available to help appropriate officials decide whether local areas should be evacuated.



- b. The coordinator must immediately notify the Southeast Florida District of the FDER, (407) 433-2650, and the National Response Center (800) 424-8802, by telephone.

The report must include:

- (1) Name and telephone number of notifier;
- (2) Name and address of facility;
- (3) Time and type of incident (e.g., release, fire);
- (4) Name and quantity of material(s) involved, to the extent known;
- (5) The extent of injuries, if any; and
- (6) The possible hazards to human health, or the environment outside the facility.

Immediate assistance in assessing and responding to an emergency is obtained by the emergency coordinator by calling the 24-hour emergency number of the Safety-Kleen Corporation Environmental, Health and Safety Department ((708) 888-4660).

During an emergency, the emergency coordinator must take all reasonable measures necessary to ensure that fires, explosions, and releases do not occur, recur, or spread to other hazardous waste at the facility. These measures must include, where applicable, stopping processes and operations, collecting and containing released waste, and removing or isolating containers.

If the facility stops operations in response to a fire, explosion, or release, the emergency coordinator must monitor for leaks, pressure buildup, gas generation, or ruptures in valves, pipes, or other equipment, wherever this is appropriate.

Immediately after an emergency, the emergency coordinator must provide for treating, storing, or disposing of recovered waste, contaminated soil or surface water, or any other material that results from a release, fire, or explosion at the facility.

The emergency coordinator must ensure that, in the affected area(s) of the facility:

- a. No waste that may be incompatible with the released material is treated or stored until cleanup procedures are completed; and
- b. All emergency equipment listed in the contingency plan is cleaned and fit for its intended use before operations are resumed.

The owner or operator must notify the appropriate state or local authorities that the facility is in compliance with the requirements of the preceding paragraph, before operations are resumed in the affected area(s) of the facility.

The owner or operator must note in the operating record the time, date, and details of any incident that requires implementing the contingency plan. Within 15 days after the incident, the owner must submit a written report on the incident to the Southeast Florida District of the FDER, 1900 South Congress Avenue, Suite A, West Palm Beach, Florida 33406 (407) 433-2650. The report must include:

- a. Name, address, and telephone number of the owner or operator;
- b. Name, address, and telephone number of the facility;
- c. Date, time, and type of incident (e.g., fire, explosion);
- d. Name and quantity of material(s) involved;

- e. The extent of injuries, if any;
- f. An assessment of actual or potential hazards to human health or the environment, where this is applicable; and
- g. Estimated quantity and disposition of recovered material that resulted from the incident.

### **POTENTIAL SPILL SOURCES**

The following is a list of activities that have the potential for a small scale (less than 30 gallons of waste) pollution incident.

- a. Moving of containers.

Every time a container is moved, a chance exists that it could tip over or be dropped. To minimize the possibility of spillage of solvent under those conditions, all containers must remain covered before being moved.

- b. Delivery truck container transfers.

- (1) Individual delivery containers contain from five to 55 gallons of waste, a quantity which can be contained by oil sorbent clay or pads, if accidentally spilled.
- (2) Each vehicle is equipped with a hoist and hand cart for ease of moving clean solvent off the truck and into the customer's shop and returning the dirty solvent to the truck.
- (3) Clamp type lids are on containers during movement to prevent a spill.

- (4) Each truck should contain a shovel and a quantity of sorbent material to contain a minor spill.
- (5) The cargo should be secured in the route vehicle before transit.

### **Spills Inside Buildings**

In the event of a spill indoors, the doors and windows should be opened to improve the ventilation in the confined area. Following the instructions of the Material Safety Data Sheet (MSDS), the worker would enter the area wearing rubber gloves, boots, and respirator and mop up the liquid and return it to dirty storage. The cleanup is completed only when the workers have cleaned themselves and the emergency equipment with soap and water. Spills originating in the container return/fill area should be contained within its collection trench. This area has three-inch sloped concrete sides leading to the trench. Spills originating in the warehouse area should be retained within its collection trench. The concrete floor in this area is sloped two inches toward the trench. The concrete floor in both these areas is coated with sealant compatible with and resistant to the chemicals stored at this facility.

### **Spills on Concrete Pads**

Concrete pads in loading and unloading areas are, in most cases, equipped with emergency containment. Under most spill conditions, product can be totally contained on the concrete surface and in the catchment system. Upon containment, arrangements must be immediately undertaken to recover the material. Any soil that may be involved must be removed and treated as a hazardous waste.

### **Tank Spills or Leakage**

Aboveground tanks are completely enclosed within a building which has a monolithically poured slab and 36-inch high sides to contain any spilled or leaked solvent. The surface of the monolithic pour (bottom and sides) are coated with a concrete sealant compatible

with and resistant to the chemicals stored in this area. The remainder of the building is concrete blocks from three feet to the roof. The containment system has been sized in accordance with the regulations, and the product will be totally contained under most spill conditions. Should a spill occur, arrangements must be immediately undertaken to recover the material. In the event of leakage, tank repair or replacement will be initiated. Any soil that may be involved must be removed and treated as hazardous waste.

### **Spill Control Procedures**

If a harmful discharge occurs:

- a. Stop the discharge, if possible, by immediately transferring the liquid to a good container.
- b. Retain, contain, or slow the flow of the material, if possible, by diking with sorbent pad or dirt. Appropriate personal protective equipment should be worn. Pump and mop up the liquid from the floor into a good container and return the container to storage and then later to the recycle center for reclamation/disposal. The area and equipment that comes in contact with the spill must be decontaminated with soap and water. All residues resulting from containment and decontamination should be collected for proper disposal at a Safety-Kleen recycle center.
- c. If the material escapes the containment efforts, immediately call the cleanup contractor with response time less than two hours (Table II.A.4(b)-1). Record the date, time, and name of person taking the message. Call the primary emergency coordinator, if he is absent.
- d. Immediately recover spilled solvent to reduce property and environmental damage using the safety equipment stored onsite for such situations (Figure II.A.4(b)-2) or

call in emergency response contractors (Table II.A.4(b)-1). Start recovery operations immediately.

After recovery of spilled solvent, wash all contaminated impervious surfaces and equipment with soap and water. The residue of spill- or fire-contaminated soils and waste waters must be removed and disposed of at a Safety-Kleen recycle center. In addition, the recovered solvent will be sent to a Safety-Kleen recycle center for reclamation.

- e. Report any incident as soon as possible to Safety-Kleen Corporate Environmental Department on the 24-hour telephone line: (708) 888-4660. If the Environmental Department does not respond within 30 minutes, call the National Response Center (telephone: (800) 424-8802) and Southeast Florida District of the FDER, 1900 South Congress Avenue, Suite A, West Palm Beach, Florida (407) 433-2650.
- f. The person reporting a spill should be prepared to give his name, position, company name, address, and telephone number. The person reporting also should give the nature of the material spilled (e.g., immersion cleaner, etc.) and, if possible, some estimate of the amount, and whether it is near a stream or could enter a stream by flowing through ditches or storm sewers.

If assistance is needed, the emergency coordinator should describe the containment status and specify any additional equipment needed. When reporting a spill, record the date and time of the call and the name of the person answering the call at the above number.

Spill prevention plans are reviewed with facility personnel every year, and records of the training are kept at the facility.

Every spill must be recorded on the attached form with the revision of the contingency plan to prevent similar spills in the future. A copy of this report is sent to the Corporate Environment Health and Safety Department.

Reports of emergency incidents will be transmitted to the Secretary of the FDER or his designee within 15 days of occurrence. This report shall include:

- a. Name, address, and telephone number of the owner of operator;
- b. Name, address, and telephone number of the facility;
- c. Date, time, and type of incident (e.g., fire, explosion);
- d. Name and quantity of materials involved;
- e. The extent of injuries, if any;
- f. An assessment of actual or potential hazards to human health or the environment, where this is applicable; and
- g. Estimated quantity and disposition of recovered material that resulted from the incident.

#### **DECONTAMINATION**

Once the spilled material has been cleaned-up, the spill area and equipment used during the spill clean-up must be decontaminated and/or disposed.

Concrete surfaces/containment areas:

- Concrete surfaces/containment areas will be cleaned with a detergent solution and then rinsed with hot water. The rinsate will be collected via wet vacuums and placed in containers. Visual inspection will be used to determine the success of the decontamination procedure.
- The intent of the surface decontamination is to prevent current or future releases of materials to the environment. It is believed that a vigorous cleaning with detergent is sufficient to prevent releases to the environment during normal operations. Potential for hazards from residual materials to future occupants of the facility are dealt with in the Closure Plans for the facility and the decontamination procedures incorporated therein.

### **Equipment**

The equipment used to clean the area includes mops, pails, scrub brushes, and a wet/dry vacuum. Equipment which is considered reusable (i.e., pails, wet/vac, hoses) will be washed with detergent and the wash water and rinsate collected. All non-reusable equipment and/or equipment which is not capable of being decontaminated will be containerized and disposed of as hazardous waste.

### **Wash Water and Rinsate**

If the rinsate or other wastes generated in the clean-up process are determined to be hazardous, they will be properly disposed of as a hazardous waste, otherwise the material will be disposed of as an industrial waste. It should be noted that wash water and rinsate will not be allowed to drain to the waterway or stormwater.

## **EMERGENCY RESPONSE EQUIPMENT AND COMMUNICATION**

Due to the small size of the facility, routine communication is accomplished by voice communication; however, an intercom is also available. Telephones are used in case of



a spill or fire emergency to summon assistance. Emergency numbers are posted by each phone in the office. Included with these phone numbers is the 24-hour spill number which connects to Corporate Environmental Department at the corporate office in Elgin, Illinois. See Figure II.A.4(b)-2 for locations of telephones, fire extinguisher, the first-aid kit, and the emergency eyewash/shower. Other emergency response equipment (Table II.A.4(b)-3) is kept in a small storage area inside the warehouse near the return/fill dock. This equipment includes mops and buckets, soap, shovels, and spill sorbent pads. Rubber gloves, boots, pumps, and a wet/dry vacuum cleaner are stored in an emergency supply area near the container storage area. The City of Boynton Beach supplies water for domestic use, decontamination, and fire fighting. Adequate aisle space is provided in the container storage area for movement in an emergency situation.

The equipment available at the service center for emergency situations is adequate for most cases. Large or serious emergency situations will be remediated by local emergency response teams or special emergency response or cleanup contractors. The facility is constructed and operated in accordance with National Fire Protection Association (NFPA) standards and applicable local ordinances. Applicable health and safety standards also are observed at the service center. A recent air quality survey conducted by an independent industrial hygienist at the Los Angeles service center has shown that air quality at a typical service center is within Threshold Limit Values (TLV) as specified by OSHA and local air pollution control criteria, and no respirator or special protection unit is deemed mandatory.

#### **FIRE CONTROL PROCEDURES**

Call the Fire Department.

- a. Immersion cleaner #609 (old formula) (which is a mixture of chlorinated solvents and water) and dry cleaning wastes are initially not flammable, but produce toxic gases and hydrochloric acid at elevated temperatures (about 1200° F).

Center aisles are available in container storage areas to permit fire department personnel to pass with fire fighting equipment.

Act quickly with the fire extinguisher to put out the fire before it spreads.

Call the Police Department and local hospital (Table II.A.4(b)-1) when injury occurs and/or order of on-lookers and traffic is to be maintained.

Areas in the service building (offices, container fill/return, container storage) and storage tank building have automatic fire fighting sprinkler systems (Figure II.A.(b)-3). In addition, building walls have a four hour rating.

#### **AVAILABILITY AND REVISION OF THE CONTINGENCY PLAN**

This plan and all revisions to the plan are kept at the facility and regularly updated throughout the operating life of the facility.

Copies of this document are provided to local authorities and organizations listed under the Preparedness and Prevention Plan, which may be called upon to provide emergency services.

This plan and all revisions to the plan are made readily available to employees working at the facility.

This plan is reviewed and updated, if necessary, whenever:

- a. The facility license is modified to allow new process wastes to be stored or treated, or applicable regulations are revised;
- b. The list or location of emergency equipment changes;

- c. The facility changes in its design, construction, operation maintenance, or other circumstances in a way that:
  - (1) Materially increase the potential for fires, explosions, or releases of hazardous waste or hazardous waste constituents, or
  - (2) Changes in response necessary in an emergency.
- d. The names, addresses, or phone numbers of emergency coordinators change;
- e. The employee assigned to each emergency task changes, or
- f. The plan fails when implemented in an emergency.

#### **ARRANGEMENTS WITH LOCAL AUTHORITIES**

Arrangements have been made to familiarize the Police Department, Fire Department, and local emergency response teams with the layout of the facility, properties of hazardous materials handled (Material Safety Data Sheets) at the facility and associated hazards, places where facility personnel would normally be working, entrances to and roads inside the facility, and possible evacuation routes.

Potential primary and secondary spill control contractors as well as sorbent suppliers are identified in the Contingency Plan and Emergency Procedures.

Arrangements have been made to familiarize the local hospital with the properties of hazardous waste handled at the facility and the types of injuries or illnesses which would result from fires, explosions, or releases at the facility.

Appendix B includes copies of letters which have been transmitted to local authorities for emergency response in the event of an incident where public health or environment is threatened.

### **EVACUATION PLAN**

In an uncontrolled emergency, all persons are to be evacuated from the area by means of a verbal cry and assemble across from the entrance drive to the facility (Figure II.A.4(b)-1). Assure that all personnel are accounted for and out of the area. The emergency coordinator may elect to use a car horn as a means of emergency notification. A head count will be performed by the emergency coordinator.

The Fire Department must be notified at the time of evacuation either from a safe onsite building or neighboring facilities.

Clearly marked exits exist in warehouse and office area.

**APPENDIX B**  
**LETTERS TO LOCAL AUTHORITIES**



December 7, 1991

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Boynton Beach Police Department  
135 NE 1st Avenue  
Boynton Beach, FL 33435

RE: Safety-Kleen Corp. (3-097-01), Lot 46B, Quantum Industrial Park, Boynton Beach, Florida

Dear Sir:

Under terms of U.S.E.P.A. Regulation 40 CFR 264.37, Safety-Kleen Corp. must make arrangements to familiarize police and fire departments with the layout of the facility, places where facility personnel would be working, entrances to roads inside the facility, and possible evacuation routes.

A copy of the Contingency Plan and Emergency Procedures is enclosed for your file. A facility layout is attached to show where facility personnel would normally be working, entrances to road inside facilities and possible evacuation routes.

As required by law, Safety-Kleen will need your acknowledgment of receipt of this letter and indications that you have been familiarized with the action necessary in the event of an emergency and that you are willing to provide assistance.

If you have any questions or desire to visit the facility, please contact the branch manager, Mr. Thomas H. Sands (407) 736-1339.

Sincerely,

*Victor L. San Agustin*  
Victor L. San Agustin, P.E.  
Regional Environmental Engineer  
Tampa Region

pjh/mmm

Enclosure(s)

13112.28B/TSK10/EXHIBITS.IE



December 7, 1991

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Boynton Beach Fire Department  
150 East Boynton Beach Boulevard  
Boynton Beach, FL 33435

RE: Safety-Kleen Corp. (3-097-01), Lot 46B, Quantum Industrial Park, Boynton Beach, Florida

Dear Sir:

Under terms of U.S.E.P.A. Regulation 40 CFR 264.37, Safety-Kleen Corp. must make arrangements to familiarize police and fire departments with the layout of the facility, places where facility personnel would be working, entrances to roads inside the facility, and possible evacuation routes.

A copy of the Contingency Plan and Emergency Procedures is enclosed for your file. A facility layout is attached to show where facility personnel would normally be working, entrances to road inside facilities and possible evacuation routes.

As required by law, Safety-Kleen will need your acknowledgment of receipt of this letter and indications that you have been familiarized with the action necessary in the event of an emergency and that you are willing to provide assistance.

If you have any questions or desire to visit the facility, please contact the branch manager, Mr. Thomas H. Sands (407) 736-1339.

Sincerely,

Victor L. San Agustin, P.E.  
Regional Environmental Engineer  
Tampa Region

pjh/mmm

Enclosure(s)

13112.28B/TSK10/EXHIBITS.IE



December 7, 1991

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Bethesda Hospital  
2815 South Seacrest Boulevard  
Boynton Beach, FL 33435

RE: Safety-Kleen Corp. (3-097-01), Lot 46 B, Quantum Industrial Park, Boynton Beach, Florida

Dear Sir:

Under terms of U.S.E.P.A. Regulation 40 CFR 264.37, Safety-Kleen Corp. is required to familiarize local hospitals with the properties of the materials handled at their facilities and the types of injuries or illnesses which could result from fires, explosions, or releases at this facility.

A copy of the Contingency Plan and Emergency Procedures is enclosed for your file. A facility layout is attached to show where facility personnel would normally be working, entrances to road inside facilities and possible evacuation routes.

As required by law, Safety-Kleen will need your acknowledgment of receipt of this letter and indications that you have been familiarized with the action necessary in the event of an emergency and that you are willing to provide assistance.

If you have any questions or desire to visit the facility, please contact the branch manager, Mr. Thomas H. Sands (407) 736-1339.

Sincerely,

Victor L. San Agustin, P.E.  
Regional Environmental Engineer  
Tampa Region

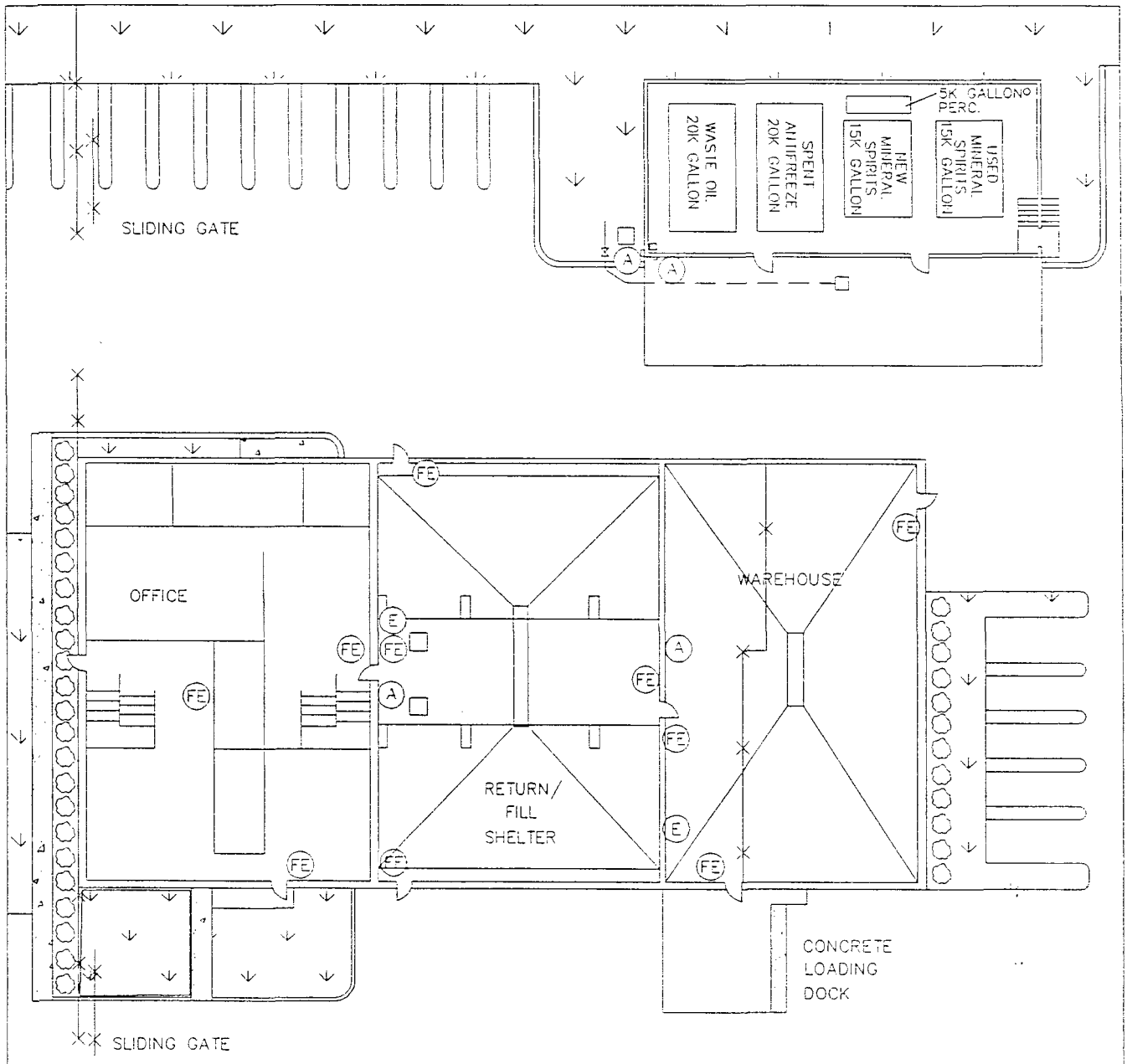
pjh/mmm

Enclosure(s)

13112.28B/TSK10/EXHIBITS.IE

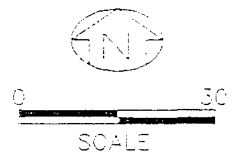


Figure II.A.4(d)-1  
Safety Equipment  
Safety-Kleen Corp. Facility  
Boynton Beach, Florida



LEGEND

- (FE) FIRE EXTINGUISHER
- (E) EYE WASH/SHOWER
- (A) ALARM



**ATTACHMENT II.A.5**  
**WASTE ANALYSIS REPORT**



## ATTACHMENT II.A.5

### WASTE ANALYSIS REPORT

In accordance with U.S. EPA Hazardous Waste Regulations, seven types of hazardous waste have been identified at the service center:

1. The used mineral spirits solvent, returned from customers in separate containers transferred and stored in the aboveground tank awaiting shipment to the recycle facility is considered to be an Ignitable Waste (D001) and a characteristic waste by TCLP (D004, D005, D006, D007, D008, D009, D010, D011, D018, D019, D021, D022, D023, D024, D025, D026, D027, D028, D029, D030, D032, D033, D034, D035, D036, D037, D038, D039, D040, D041, D042, and D043);

Mineral spirits, dumpster mud, and tank bottom sludge accumulated in the solvent return receptacles (wet dumpsters) and in the sludge tank, is considered to be an Ignitable Waste (D001) a characteristic waste by TCLP (D004, D005, D006, D007, D008, D009, D010, D011, D018, D019, D021, D022, D023, D024, D025, D026, D027, D028, D029, D030, D032, D033, D034, D035, D036, D037, D038, D039, D040, D041, D042, and D043);

2. The used chlorinated solvent #609 (old formula), returned from customers in separate containers and remaining in the same container for shipment to the recycle facility is considered to be a Listed Waste from Non-Specific sources (F002 and F004); and a characteristic waste by TCLP (D004, D005, D006, D007, D008, D009, D010, D011, D018, D019, D021, D022, D023, D024, D025, D026, D027, D028, D029, D030, D032, D033, D034, D035, D036, D037, D038, D039, D040, D041, D042, and D043);

The used immersion cleaner #699 (new formula), returned from customers in separate containers and remaining in the same container for shipment to the recycle facility, is considered a characteristic waste by TCLP (D004, D005, D006, D007, D008, D009, D010, D011, D018, D019, D021, D022, D023, D024, D025, D026, D027, D028, D029, D030, D032, D033, D034, D035, D036, D037, D038, D039, D040, D041, D042, and D043);

3. Dry cleaning wastes consist of spent filter cartridges, powder residue from diatomaceous or other powder filter systems and still bottoms. While approximately 80 percent of Safety-Kleen's customers use perchloroethylene (F002) and a characteristic waste by TCLP leaching procedure (D004, D005, D006, D007, D008, D009, D010, D011, D018, D019, D021, D022, D023, D024, D025, D026, D027, D028, D029, D030, D032, D033, D034, D035, D036, D037, D038, D039, D040, D041, D042, and D043), approximately 17 percent use mineral spirits (D001) and a characteristic waste by TCLP (D004, D005, D006, D007, D008, D009, D010, D011, D018, D019, D021, D022, D023, D024, D025, D026, D027, D028, D029, D030, D032, D033, D034, D035, D036, D037, D038, D039, D040, D041, D042, and D043), and the remaining three percent use trichloro-trifluoroethane (F002) and a characteristic waste by TCLP leaching procedure (D004, D005, D006, D007, D008, D009, D010, D011, D018, D019, D021, D022, D023, D024, D025, D026, D027, D028, D029, D030, D032, D033, D034, D035, D036, D037, D038, D039, D040, D041, D042, and D043);
4. Antifreeze waste is approximately one-third water with the remaining third being antifreeze (ethylene glycol) and contaminants. As a protective measure, the container storage area for spent antifreeze is being permitted to store wastes with the following TCLP waste codes: D004, D005, D006, D007, D008, D009, D010, D011, D018, D019, D021, D022, D023, D024, D025, D026, D027, D028, D029,



D030, D032, D033, D034, D035, D036, D037, D038, D039, D040, D041, D042, and D043; and

5. The paint waste, collected in containers at the customer's place of business and stored in the container storage area, is considered to be an ignitable waste (D001); a listed waste (F003 and F005); and a characteristic waste by TCLP (D004, D005, D006, D007, D008, D009, D010, D011, D018, D019, D021, D022, D023, D024, D025, D026, D027, D028, D029, D030, D032, D033, D034, D035, D036, D037, D038, D039, D040, D041, D042, and D043).
6. Eight solvents are collected from FRS waste users: mineral spirits (D001, D004, D005, D006, D007, D008, D009, D010, D011, D018, D019, D021, D022, D023, D024, D025, D026, D027, D028, D029, D030, D032, D033, D034, D035, D036, D037, D038, D039, D040, D041, D042, and D043); 1,1,1-trichloroethane (F001, F002, D004, D005, D006, D007, D008, D009, D010, D011, D018, D019, D021, D022, D023, D024, D025, D026, D027, D028, D029, D030, D032, D033, D034, D035, D036, D037, D038, D039, D040, D041, D042, and D043); perchloroethylene and trichloroethylene (F001, F002, D004, D005, D006, D007, D008, D009, D010, D011, D018, D019, D021, D022, D023, D024, D025, D026, D027, D028, D029, D030, D032, D033, D034, D035, D036, D037, D038, D039, D040, D041, D042, and D043); methylene chloride (F001, F002, D004, D005, D006, D007, D008, D009, D010, D011, D018, D019, D021, D022, D023, D024, D025, D026, D027, D028, D029, D030, D032, D033, D034, D035, D036, D037, D038, D039, D040, D041, D042, and D043); 1,1,2-trichloro-1,2,2-trifluoroethane (F001, F002, D004, D005, D006, D007, D008, D009, D010, D011, D018, D019, D021, D022, D023, D024, D025, D026, D027, D028, D029, D030, D032, D033, D034, D035, D036, D037, D038, D039, D040, D041, D042, and D043), lacquer thinners (F003, F005, D004, D005, D006, D007, D008, D009, D010, D011, D018, D019, D021, D022, D023, D024, D025, D026, D027, D028, D029, D030, D032,



D033, D034, D035, D036, D037, D038, D039, D040, D041, D042, and D043); and waste oil which exhibits a characteristic (D001, D004, D005, D006, D007, D008, D009, D010, D011, D018, D019, D021, D022, D023, D024, D025, D026, D027, D028, D029, D030, D032, D033, D034, D035, D036, D037, D038, D039, D040, D041, D042, and D043). These wastes, except characteristic waste oil, are shipped in containers and are stored on pallets. It is anticipated that 39,000 gallons of spent mineral spirits, 158,000 gallons of spent halogenated solvents and 60,000 gallons of spent lacquer thinners will be shipped from the service center to a reclaimer on an annual basis.

7. Off specification perchloroethylene (U210) resulting from the management of bulk perchloroethylene. This may have some minor impurities. This is shipped from the service center to a reclaimer.

A typical composition and chemical physical analysis for waste streams listed above are shown in the attached chemical analyses reports, based on existing data on these wastes generated from similar processes within Safety-Kleen's current and/or potential customers.

#### **USED MINERAL SPIRITS**

The clean mineral spirits solvent is labeled under the trade name of "Safety-Kleen 105 Solvent", so-named because of the flash point of the solvent being 105°F (minimum). Chemically, the solvent primarily consists of petroleum hydrocarbon fraction (the mineral spirits) with boiling points between 310°F and 400°F. Impurities, such as light aromatic hydrocarbons (LAHC) and chlorinated hydrocarbons, usually constitute less than one percent of the total volume. The mineral spirits constitutes over 99.5 percent of the total volume of the solvent.

The used mineral spirits solvent consists primarily of mineral spirits solvent plus water, solid, oil, and grease picked up in the various degreasing operations. In most instances, no water is associated with the used solvent; however, at times, the water content may range from one percent to as much as 50 percent. The oily bottoms may range from 2 percent to 10 percent, by volume, in the used solvent.

Chemically, the composition of the solvent fraction in the used mineral spirits solvent is essentially the same as the clean solvent, as shown in analyses.

An estimated 275,000 gallons of used mineral spirits are expected to be shipped to a recycle center from this facility.

#### **USED MINERAL SPIRITS BOTTOM SLUDGE**

This is material settled from used mineral spirits in the aboveground tanks. It contains basically soils, oil and grease, and some water picked up in the degreasing operations, together with a small amount of mineral spirits. Analyses have shown that the sludge is an ignitable waste and might also be considered toxic using TCLP standards.

The sludge is removed from the aboveground tank periodically and shipped to a Safety-Kleen facility for reclamation.

#### **USED MINERAL SPIRITS DUMPSTER MUD**

This waste material is accumulated in the wet dumpsters when emptying the used mineral spirits from the containers into the aboveground storage tanks. The nature of this waste is similar to the used mineral spirits bottom sludge, except with some small metal parts and less mineral spirits. It is regarded as an ignitable waste and often is also considered a characteristic waste using TCLP standards.

The sludge in the dumpsters is cleaned out frequently. The waste is containerized and shipped to Safety-Kleen's facility for recycling. Approximately 150 containers (1,500 gallons) of dumpster mud will be removed from this center annually.

### USED IMMERSION CLEANER

The old formula clean chlorinated solvent is labeled under the trade name of "Immersion Cleaner and Carburetor and Cold Parts Cleaner #609." It is a two-phase system consisting of an upper aqueous (water) layer and lower non-aqueous (solvent) layer. The water phase consists of water and Dresinate TX (a sodium soap of tall oil). The solvent phase is composed of methylene chloride, orthodichlorobenzene, cresylic acid, and an amines additive.

A new "Immersion Cleaner and Carburetor and Cold Parts Cleaner #699" is also being leased. It is a heavy aromatic naphtha, N-methyl-2-pyrrolidon dipropylene glycol methyl ether, monoethanolamine and oleic acid, and contains a maximum of 1 percent total chlorinated solvents.

The used immersion cleaner is basically unchanged from its clean state, except oil, grease, and other solids may be picked up during the various degreasing operations. The spent solvent is non-flammable. It is regarded as toxic because of the contents of various solvents. Less than five gallons of waste is returned in each container. It is anticipated that 7,500 gallons of used immersion cleaner will be stored at this facility annually.

### DRY CLEANING WASTES

Solvent used in dry cleaning of clothing is commonly tetrachloroethylene (or perchloroethylene). Hence, waste generated from dry cleaning operations contains various concentrations of the solvent. Basically, wastes generated by dry cleaning facilities are in the following forms.



1. Cartridge Filter: In addition to the construction materials consisting of steel, paper, clay, and carbon, the used cartridge retains solvent, oil and grease, and undissolved elements such as lint and soil. Solvent retained in the filter cartridge generally amounts to less than 50 percent of the total cartridge weight.
2. Muck: At some dry cleaning facilities, a mixture of powdered materials is used as the filter medium for the dry cleaning solvent, in lieu of the cartridge filter. This filter medium normally consists of diatomaceous earth and carbon. In addition to lint, soil, oil, and grease retained by this medium, between 40 and 50 percent by weight of the "muck" is absorbed solvent.
3. Still Residue: After filtration, the dry cleaning solvent is distilled by the dry cleaning machine to remove the dissolved materials from the used solvent. The dissolved materials (still residues) are in liquid form and consist of primarily detergent, oil and grease, vinyl acetate (a sizing compound), and 20 to 30 percent of solvent. This facility will ship about 80,000 gallons of dry cleaner wastes for reclamation annually.
4. Off specification perchloroethylene is generated by Safety-Kleen during the management of bulk perchloroethylene.

### **FRS WASTES**

Eight solvents are collected from FRS waste users: mineral spirits; 1,1,1-trichloroethylene; per- and trichloroethylene; methylene chloride; 1,1,2-trichloro-1,2,2-trifluoroethane; lacquer thinners; and waste oil exhibiting a characteristic. Prior to accepting an FRS waste customer's waste for recycling, a sample is drawn and analyzed at Safety-Kleen's laboratory in Elgin, Illinois. The criteria used to determine whether a waste is acceptable for recycling are in Table II.A.5-1. The containers are not opened until they reach the recycle center. Samples of the waste collected at the recycle center

## TABLE II.A.5-1

ACCEPTANCE CRITERIA FOR  
FLUID RECOVERY SERVICE WASTES

1. Solvents suitable for recycling will include mineral spirits, methylene chloride, 1,1,1-trichloroethane, trichloroethylene, and perchloroethylene, or mixtures of these solvents. Freon TF (1,1,2-trichloroethane-1,2,2-trifluoroethene) and TMC (a mixture of Freon and methylene chloride) will be acceptable for recycling but must be authorized.
2. A minimum of 50% yield of usable solvent is necessary. Yield is to be calculated as a percentage of the total sample received. Chemical breakdown of distillate should also be reported since this affects whether the distillate can be suitably incorporated into the Safety-Kleen product line.
3. The distillate cannot contain more than 5% by volume of aromatic solvents (toluene + xylene).
4. The distillate cannot contain more than 1% oxygenated solvents. (This excludes the inhibitor packages which should be reported as inhibitors).
5. Freon contamination is limited to 1% by volume for chlorinated feedstocks. Materials containing methylene chloride and Freon should be noted as producing TMC.
6. The raw material cannot contain more than 50% water (free + emulsified). Solids content should not exceed 5% (by centrifuge) by volume.
7. Materials with more than 5% solid bottoms are not acceptable feedstocks for normal feed.
8. Materials which pose potential safety hazards are not acceptable, i.e. low flash point (less than 100°F), high toxicity, and those that pose explosive hazards during processing.
9. Materials which contain herbicides, pesticides, PCBs, and PBBs are not suitable feedstocks due to the potential for contamination of the processing equipment and facility.
10. Materials which contain more than 1% unknown are to be referred to Jim Breece or Clark Rose for a decision on further analysis or rejection, depending upon quantity.

**TABLE II.A.5-1 (Continued)**

**ACCEPTANCE CRITERIA FOR  
FLUID RECOVERY SERVICE WASTES**

11. All sample analyses which are approved by the lab will be forwarded to Jim Breece or Clark Rose for their acceptance prior to authorizing the generator to ship material to a recycle center.
12. All sample analyses that are rejected by the lab will be forwarded to Industrial Solvents and Operations to resolve whether or not the material can be accepted under a special processing and pricing arrangement.



wastes are either returned to the customer or properly disposed of. These wastes are shipped in containers and are stored on pallets. It is anticipated that 38,600 gallons of spent mineral spirits, 157,600 gallons of spent halogenated solvents and 60,400 gallons of spent lacquer thinners will be shipped from the accumulation center to a reclaimer on an annual basis.

### **ANTIFREEZE COLLECTION SERVICE**

The spent antifreeze (ethylene glycol) is collected from automobile service stations. These wastes are deposited into 150-gallon translucent carboy by the customer, on the customer's premises, the carboy is pumped into containers or a 3,500-gallon tanker by the sales representative. It should be noted that the vast majority of the antifreeze sample analyses indicated this waste is not hazardous. However, due to the low concentrations at which contaminants render a waste hazardous under TCLP, the container storage area for spent antifreeze will, as a protective measure, be permitted to hold TCLP wastes.

### **PAINT WASTE COLLECTION**

The paint wastes are collected from facilities where one process is managed and the possibility of cross-contamination from other chemicals or wastes is minimal. The contents of the containers are verified by the sales representative when he services the customer and, comparable to the handling of immersion cleaner, the containers are not reopened until they reach the recycle center.

Paint wastes consist of various lacquer thinners (D001, F003, and F005) and paints. Both are characteristic wastes by TCLP (D004, D005, D006, D007, D008, D009, D010, D011, D018, D019, D021, D022, D023, D024, D025, D026, D027, D028, D029, D030, D032, D033, D034, D035, D036, D037, D038, D039, D040, D041, D042, and D043). The waste is collected in containers at the customer's place of business and the containers are then palletized and stored in a designated storage area. It is anticipated that this facility will ship 14,300 gallons of paint waste to a reclaimer annually.

**ATTACHMENT II.A.6**  
**WASTE ANALYSIS PLAN**

**TABLE II.A.6-1  
PARAMETERS AND RATIONALE  
FOR HAZARDOUS WASTE IDENTIFICATION**

<b>Hazardous Waste</b>	<b>Parameter<sup>a</sup></b>	<b>Rationale</b>
1. Used Immersion Cleaner (609IC)	Methylene Chloride Orthodichlorobenzene Cresylic Acid	Formula contains these ingredients: F002 & Cresylic Acid F004
2. Used Immersion Cleaner (699IC)	TCLP	May contain these compounds
3. Used Mineral Spirits	Flash Point TCLP	Ignitable characteristics D001; may contain these compounds
4. Mineral Spirits Tank Bottom Sludge and Free Water	TCLP Flash Point	The sludge and free water may contain these compounds and the sludge has a flash point of 105° F (D001)
5. Mineral Spirits Dumpster Mud	TCLP Flash Point	The sludge and free water may contain these compounds and the sludge has a flash point of 105° F (D001)
6. Dry Cleaning Wastes	Perchloroethylene Trichlorotrifluoroethane Mineral Spirits	Contain ingredient of F002 or contains a hazardous constituent. Ignitable characteristics D001
7. Spent Antifreeze	TCLP	May contain these compounds
8. Paint Waste	Toluene, xylene, methyl ethyl ketone, methyl isobutyl ketone,, acetone, isopropanol, methanol, ethanol, normal butyl acetate, isobutyl acetate, cadmium, chromium, lead TCLP	Contains these components: F003 and F005. Ignitable characteristics D001
9. Fluid Recovery Service Wastes	Volatile Organic Compounds TCLP	Contains D001, F001, F002, F003, and F005 listed components; may contain these compounds.
10. Off Specification Perchloroethylene	None	Pure compound with minor impurities

<sup>a</sup> TCLP Waste Codes: D004-D011, D018, D019, D021-D030, D032-D043.

TABLE II.A.6-2

## PARAMETERS AND TEST METHODS

Parameter	Test Method	Reference
pH	pH Meter	ASTM Standard D1293-65
Flash Point	Tag closed cup tester	ASTM Standard D56-79
TCLP	Toxicity Characteristic Leaching Procedure	40 CFR 261, Appendix II
Hydrocarbons and Volatile Organics	Gas Chromatography (GC)	Modified Methods Based on "Test Methods for Evaluation of Solid Waste, Physical/Chemical Methods," SW-846, USEPA and ASTM Standards
Boiling Range	Distillation of Petroleum	ASTM Method D86-78
API Gravity	Hydrometer Method	ASTM Standard D287-67

TABLE II.A.6-3

## METHODS USED TO SAMPLE HAZARDOUS WASTES

Hazardous Waste	Reference for Sampling	Sampler	Description of Sampling Method
1. Used Immersion Cleaner	Sampling a drum "Samplers and Sampling Procedures for Hazardous Waste Streams," EPA/600/2-80/018	Test Methods for the Evaluation of Solid Waste Physical/ Chemical Methods, SW-846, USEPA	Representative composite sample using drum sampler
2. Used Mineral Spirits	Sampling a tank "Samplers and Sampling Procedures for Hazardous Waste Streams," EPA/600/2-80/018	Same as 1	For tanks--Bomb sampler (similar to weighted bottle sampler)
3. Mineral Spirits, Tank Bottom Sludge, and Free Water	Same as 2	Same as 1	Same as 2
4. Mineral Spirits Dumpster Mud	Same as 1	Same as 1	Same as 1
5. Dry Cleaning Wastes	Same as 1	Same as 1	Same as 1
6. Spent Antifreeze	Same as 1 or 2	Same as 1	Same as 1 or 2
7. Paint Waste	Same as 1	Same as 1	Same as 1
8. Fluid Recovery Service Wastes	Same as 1	Same as 1	Same as 1
9. Off Specification Perchloroethylene	Same as 1	Same as 1	Same as 1



TABLE II.A.6-4

## FREQUENCY OF ANALYSIS

Hazardous Waste	Frequency <sup>a</sup>
1. Used Immersion Cleaner 609	Gas chromatograph annually TCLP every five years
2. Used Immersion Cleaner 699	Gas chromatograph annually TCLP every five years
3. Used Mineral Spirits	Gas chromatograph annually Flash point annually
4. Mineral Spirits, Tank Bottom Sludge, and Free Water	Gas chromatograph annually TCLP every five years
5. Mineral Spirits Dumpster Mud	Gas chromatograph annually TCLP every five years
6. Dry Cleaning Wastes	Gas chromatograph annually TCLP every five years
7. Spent Antifreeze	Gas chromatograph annually TCLP every five years
8. Paint Waste	Gas chromatograph annually TCLP every five years
9. Fluid Recovery Service Wastes	Gas chromatograph annually TCLP every five years
10. Off Specification Perchloroethylene	None

<sup>a</sup> In accordance with 40 CFR 264.13(a), Safety-Kleen will also perform physical and chemical analysis of a waste stream when it is notified or has reason to believe that the process or operation generating the waste has changed, or when the result of inspection indicates that the waste to be collected does not match the waste designated.



**PART II B**  
**CONTAINERS**



**ATTACHMENT II.B.1**  
**CONTAINMENT SYSTEM**

Revision 2 - 12/06/91



## ATTACHMENT II.B.1

### CONTAINMENT SYSTEM

#### CONTAINMENT

The indoor container storage area shown in Figure II.B.1-1, occupies a portion of the building area which has a sloped concrete floor and a collection trench to form a spill containment system. The capacity of the containment system is designed to be greater than ten percent of the total liquid storage capacity.

The containment area is free of cracks and has been coated with a concrete sealant, Sikagard® 62 and was recoated with Semstone® 245. As stated by the manufacturer, Semstone® 245 is compatible with and resistant to products handled by Safety-Kleen. The manufacturer's statement and information regarding these products are provided in Sub-Attachment II.B.1-1 and Sub-Attachment II.B.1-3.

The containment volume is composed of the sloped concrete floor and the collection trench. As illustrated in Sub-Attachment II.B.1-2, the total containment volume is 2,972 gallons. Therefore, the maximum storage capacity is 29,720 gallons. The types and number of each container may vary; however, the total volume of product and waste stored will never exceed the maximum volume of 29,720 gallons. The estimated maximum storage volume of waste is 6,912 gallons.

Spills are removed by a hand-held, portable electric pump (the COMS pump), wet/dry vacuum cleaner, or sorbent material. Product collected in the collection trench is pumped into a safe container for transport to the recycle facility for reclamation. Only in the event that the spill were to exceed the containment capacity would spilled wastes be able to extend beyond the containment area. Only six openings (doorways) exist in the container containment area. Four of these lead to other containment areas; the container fill/return and the enclosed concrete dock (Figure II.B.1-1). The other two doorways are located on the east side of the container containment area behind a locked

chain link fence. All openings are normally closed and locked. Due to the volume of containment available and the configuration of the container containment area, it is highly unlikely that any spill would extend beyond this area. The complete containment assessment is provided in Sub-Attachment II.B.1-2.

Since the characteristics of the stored wastes are known, analyses are not performed on the materials collected from the containment area. All collected materials are sent to a recycle facility for recycling/reclamation. Recovered materials that cannot be effectively reclaimed at the recycle facility will be, in turn, sent to a permitted facility for disposal.

### CONTAINER MOVEMENT

In the container storage area, containers are handled with a hand-truck that is free of sharp points and stacked by hand. Every time a container is moved, a chance exists that it will be tipped over, dropped, or punctured. To minimize the possibility of spillage, containers are tightly covered and kept in an upright position. A small portable electric pump is available to quickly transfer the liquid from any leaking container into another safe container. Each route truck is equipped with an electric hoist. This hoist is used in the loading/unloading operation to minimize chances for spillage and/or employee injury. Trucks used for shipping containers between the recycle center and service center have lift gates for container loading/unloading. With the exception of mineral spirits, all containerized wastes are loaded/unloaded in the vicinity of the garage door on the southern side of the building. The mineral spirits are loaded/unloaded at the fill/return shelter, which are described in the Tank Section, Part IIC.

All containers are transported, moved, and stored carefully in an upright position. The route trucks are equipped with an electric hoist to assist loading/unloading. In the warehouse area, the immersion cleaner, mineral spirits dumpster mud containers, dry cleaning waste, paint waste, and FRS waste containers are moved with two-wheel hand trucks and stacked by hand. All containers will be elevated on pallets to eliminate the possibility of them standing in spilled solvent.

Containers will be double-stacked. The containers will be arranged so that a two-foot aisle space exists between all rows of pallets such that all containers can be readily visible for inspection and handling. Since all materials handled by Safety-Kleen are compatible with one another, no specific areas have been designated for specific wastes. Wastes will be grouped by type and are distinguishable by the color of the container; however, since the actual volume present of any product at a given time varies greatly, it is not practical to assign specific locations to given wastes.



208 697 0672

**TECHNICAL BULLETIN**

APRIL 1990

**DESCRIPTION AND USES:**

SEMSTONE 245 is a high performance specialty coating for concrete. Its unique formulation makes it suitable for constant immersion service in chlorinated solvents, such as:

- Methylene chloride
- Ethylene dichloride
- Trichloroethylene

In addition, SEMSTONE 245 offers excellent resistance to a very broad range of other hazardous and corrosive chemicals including benzene, phenol, ketones, alcohols and chromic acid, as well as such commonly encountered items as 98% sulfuric acid and 50% caustic. This makes it the preferred choice for protecting hazardous waste handling facilities and other areas that will regularly see exposure to a wide variety of difficult chemicals.

**Other features include:**

- Very rapid cure, providing quick turnaround of projects.
- Can be applied at temperatures as low as 35°F.
- Can be applied over damp concrete.

**PACKAGING/COVERAGE:**

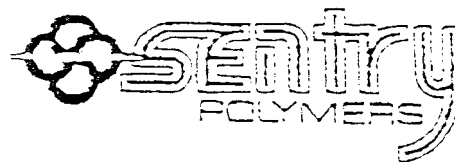
SEMSTONE 245 is available in 1 gallon, 3 gallon and 25-gallon units. Each unit consists of premeasured Part A and Part B components. A bagged Part C thixotropic agent is added for work on vertical surfaces.

Application thickness may vary from 25 mils to 125 mils, depending on expected service conditions (i.e., chemical exposure, temperature, traffic load and other mechanical abuse, immersion service vs. splash-spill, etc.). Consult Sentry Polymers for specific thickness recommendations.

In addition, coverage rates will be effected by the condition of surface being coated (degraded vs. smooth, steel vs. concrete, etc.).

To figure THEORETICAL coverage per gallon, divide desired mil thickness into 1.604. (For example, theoretical coverage for a 60 mil thickness is: 1.604 divided by 60 = 26.73 square feet per gallon.)

For practical coverage, make necessary allowances for condition of the substrate, working conditions, waste, spillage, etc.

**SEMSTONE® 245****High Performance Coating**

P. O. BOX 2075A  
8600 E. HWY 282  
FREDERICK, MD 21734

409-233-0012  
800-231-7544

## CHEMICAL RESISTANCE GUIDE

This guide is intended as an aid in determining the potential usefulness of SEMSTONE 245 as a protective barrier against chemical exposure. Each application should be evaluated according to its particular circumstances and conditions.

KEY: 1 = Suitable for constant immersion

2 = Suitable for shorter term containment and continual spillage

3 = Suitable for intermittent spills when followed promptly with water flushing

NR = Not recommended

C = Consult Sentry Polymers

\* = This chemical will attack the silica aggregate in the system. When the system is applied, be especially careful that all aggregate is totally encapsulated with SEMSTONE 245.

\*\* = For constant immersion service, coating must be postcured 12 hours at 150°F.

\*\*\* = Coating may show some staining or color change when exposed to this chemical.

RATING		RATING		RATING	
Acetic Acid, 10%	1	Cyclohexane	2	Naphthalene	1
Acetic Acid, 30%	2	Cyclohexanol	2	Nitric Acid, 5%	2***
Acetic Acid, Glacial	2	Cyclohexanone	2	Nitric Acid, 30%	3***
Acetone	1	Diesel Fuel	1	Nitric Acid, 50%	NR
Acrylic Acid, up to 25%	2	Diethyl Benzene	1	Nitrobenzene	1
Acrylonitrile	2	Dimethyl Aniline	1	n-Octyl Alcohol	1
Adipic Acid	2	Epichlorohydrin	1	Oil	1
Alum (Aluminum Potassium Sulfate)	1	Ethyl Acetate	1	Oleic Acid	2
Aluminum Chloride	1	Ethyl Acrylate	1	Oleum	2***
Aluminum Fluoride	1*	Ethyl Alcohol	1	Oxalic Acid	2
Aluminum Hydroxide	1	Ethyl Benzene	1	Perchloroethylene	1
Aluminum Nitrate	1	Ethyl Chloride	1**	Perchloric Acid	2
Aluminum Sulfate	1	Ethylene Dichloride (EDC)	1**	Phenol	2
Ammonia	2	Ethylene Glycol	1	Phosphoric Acid, 50%	1
Ammonium Bisulfite	1	Fatty Acids	1	Phosphoric Acid, 65%	1
Ammonium Chloride	1	Ferric Chloride	1***	Phosphorous Acid	2
Ammonium Hydroxide	1	Ferric Nitrate	1	Potassium Carbonate	1
Ammonium Nitrate	1	Ferric Sulfate	1	Potassium Chloride	1
Ammonium Sulfate	1	Ferrous Chloride	1	Potassium Dichromate	2
n-Amyl Alcohol	1	Fluosilicic Acid	1*	Potassium Hydroxide	1
Aniline	1	Formaldehyde	1	Potassium Nitrate	1
Barium Chloride	1	Formic Acid	2	Propionic Acid	2
Barium Hydroxide	1	Fuel Oil	1	Silver Nitrate	1***
Barium Sulfate	1	Gasoline	2	Skydrol	1
Barium Sulfide	1	Glycerine	1	Sodium Acetate	1
Benzene	1	Heptane	1	Sodium Bicarbonate	1
Benzene Sulfonic Acid	1	Hexane	1	Sodium Bisulfate	1
Benzole Acid	1	Hydrobromic Acid	2	Sodium Bisulfite	1
Black Liquor, Pulp Mill	2	Hydrochloric Acid, 15%	1	Sodium Carbonate	1
Bleach	0	Hydrochloric Acid, 37%	2***	Sodium Chloride	1
Boric Acid	1	Hydrofluoric Acid	1*	Sodium Chlorate	2
Brine	1	Hydrogen Peroxide	2	Sodium Hydroxide, 10%	1
Bromide, Liquid	NR	Hydrogen Sulfide	1	Sodium Hydroxide, 50%	1
Bromide Gas (Dry & Wet)	3	Isopropyl Alcohol	1	Sodium Hypochlorite	0
Butyl Acetate	1	Jet Fuel	1	Sodium Sulfate	1
Butyl Acrylate	1	Kerosene	1	Sodium Sulfide	1
n-Butyl Alcohol	1	Lactic Acid	2	Stannic Chloride	1
Butyl Cellulosolve Solvent	1	Lauryl Chloride	1	Stannous Chloride	1
n-Butyric Acid	2	Lead Acetate	1	Stearic Acid	1
Cadmium Chloride	1	Unleaded Oil	1	Syrene	1
Calcium Chloride	1	Lithium Bromide	1	Sugar/Sucrose	1
Calcium Hydroxide	1	Lithium Chloride	1	Sulfur Dioxide	1
Calcium Hypochlorite	0	Lithium Hypochlorite	0	Sulfuric Acid, 10%	1
Calcium Nitrate	1	Lithium Hydroxide	1	Sulfuric Acid, 50%	1
Calcium Sulfate	1	Magnesium Bisulfite	1	Sulfuric Acid, 65%	1***
Calcium Sulfite	1	Magnesium Carbonate	1	Tail Oil	1
Carbon Dioxide Gas	1	Magnesium Chloride	1	Tannic Acid	1
Carbon Dioxide Liquid	1	Magnesium Hydroxide	1	Tartaric Acid	1
Carbon Tetrachloride	1**	Magnesium Sulfate	1	Tetrahydrofuran	2
Chlorine Dioxide	2	Maleic Acid	2	Toluene	1
Chlorine Gas (Dry & Wet)	3	Mercuric Chloride	1	Toluene Sulfonic Acid	1
Chlorine Water	2	Mercurous Chloride	1	Trichloroacetic Acid	1
Chlorobenzene	1	Methanol	1	Trichloroethane	1
Chloroform	1**	Methyl Chloride	2	Trichloromethylene	1**
Chromic Acid, 25%	1***	Methylene Chloride	1**	Trisodium Phosphate	1
Chromic Acid, 50%	2***	Methyl Ethyl Ketone	1	Urea	1
Copper Nitrate	1	Methyl Methacrylate	1	Water, Deionized	1
Copper Sulfate	1	Mineral Spirits	1	Water, Demineralized	1
Corn Oil	1	Monochloroacetic Acid	2	Water, Distilled	1
Crude Oil, Sour	1	Monothanolamine	1	Xylene	1
Crude Oil, Sweet	1	Muriatic Acid	1	Zinc Chloride	1



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## APPLICATION GUIDELINES

### IMPORTANT NOTES

1. Work on vertical surfaces requires the addition of Part C thixotrope.
2. For manual applications, use only 1 gallon and 3 gallon units. The mixed material has a very short pot life, so plan your work accordingly.

### TEMPERATURE CONSIDERATIONS

1. Throughout the application process, the temperature of the surface to be coated should be 35°F - 95°F.
2. Below 75°F, the components will thicken noticeably, making manual applications extremely difficult.
3. When coating steel, halt application if the temperature falls within 5°F of the dew point. (This is not necessary when coating concrete.)
4. Bubbles may appear in the SEMSTONE 245 coating if it is applied over concrete in direct sunlight, or when temperatures are rising. This is due to the expansion of air and/or moisture trapped in the concrete. It is especially true of air entrained concrete.

For best results, shade the work area and apply SEMSTONE 245 when temperatures are falling.

5. Store all materials (components A, B, C and aggregate) at 80°F - 90°F for at least 24 hours before use, to facilitate handling.

### SURFACE PREPARATION - GENERAL

1. Surfaces must be free of dirt, dust, oil, grease, chemicals and other contaminants immediately prior to applying each coat of SEMSTONE 245.

For the initial coat, concrete surfaces can be damp.

However, for recoats, all surfaces must be dry.

### SURFACE PREPARATION OF CONCRETE

1. New concrete generally should be cured a minimum of 28 days.

NOTE: Check with Sentry Polymers for recommendations regarding concrete cured less than 28 days.

2. Concrete must be structurally sound and must not contain any accelerators or curing compounds.
3. Remove all oil and grease.
4. Remove all surface laitance and expose sound concrete. We recommend abrasive blasting to do this.

However, other methods, such as acid etching and neutralizing, may be used.

5. In general, any existing coating should be completely removed.

In certain instances, this may not be necessary, but consult with Sentry Polymers first.

Always remove coatings which have failed due to lack of adhesion or thermal shock.

6. Locate all expansion joints, control joints, floor drains, equipment base plates and mid-floor termination points. Handle them as per Sentry's Construction Details.
7. Honeycombs or any form voids in vertical surfaces must be filled.

Above 50°F, use SEMSTONE 140 with Part C thixotrope and aggregate added.

Below 50°F, use SEMSTONE 140-OT with Part C aggregate added.

8. If the concrete is damp:

- a. Flush thoroughly with clear water. Steam or hot water is recommended, if available.

- b. Remove all standing water.

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## SURFACE PREPARATION OF STEEL (NON-IMMERSION SERVICE ONLY)

1. Abrasive blast steel surfaces to a near white metal finish with 1 - 2 mil anchor profile.  
(Ref. SSPC-SP-10)
2. All outside corners must be ground smooth and rounded.
3. Round all inside corners to a minimum 1/2" radius with SEMSTONE 500 Epoxy Putty.

## MASKING

Mask surfaces that are not to be coated. This material is difficult to remove, once applied.

## APPLICATION EQUIPMENT

1. For spraying, use only a specially equipped plural component rig. Specifications are as follows:

Graco King Hydracat (or equivalent); 28:1 pump; 2.3 GPM, 4:1 mix ratio; inlet air pressure on pump set at 75-120 psi.

Two 15 gallon heated hopper tanks. Set heater at 95°F.

In-line heater on resin outlet, set at 110° F.

High pressure solvent pump.

Insulated hoses, 3/8 in. ID, maximum length of 100 ft.

Graco Silver Gun, or equivalent, equipped with a reversible, self-cleaning tip, orifice size .035 - .041 inches.

No filters or internal screens.

2. For manual applications:

- a. Floors - preferred method is to spread with serrated squeegee, then backroll.

As a second choice, trowel or brush could be used.

- b. Walls - use roller or brush.

## MIXING AND APPLICATION

1. The components must be individually agitated immediately prior to use:

Part A - Blend each Part A component to a uniform consistency in its individual container, using a Jiffy type mixer.

Part B - Stir each Part B component to a uniform color in its individual container.

2. For work on vertical surfaces, add Part C.

Part C comes in premeasured bags.

For a one gallon unit and three gallon units, add one premeasured bag to each Part A.

For 25 gallon units, add one premeasured bag to each bucket of Part A and each bucket of Part B.  
(NOTE - There are 4 buckets of Part A and one bucket of Part B in a 25-gallon unit.)

Using a Jiffy type mixer, blend the Part C in until it is evenly dispersed, (about 1 - 2 minutes).

NOTE: Adding Part C darkens the color of SEMSTONE 245 somewhat.

3. Skip this step if you are spraying.

If mixing for application by hand:

Pour Part A into a clean mixing container of adequate capacity.

Add Part B.

Mix thoroughly for two minutes using a Jiffy type mixer.

The pot life of the mixed material will be about 15 minutes at 80°F. So, use immediately. For work on floors, etc., we suggest that you immediately dump the mixed material onto the surface and spread it.

NOTE: The premeasured quantities of each component have been carefully set. Any variation in these premeasured ratios will adversely effect performance. So, mix only complete units. If any of the components are spoiled, discard the batch.

Clean all tools and equipment with Xylene, MEK or toluene.

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## SAFETY PRECAUTIONS

### FOR INDUSTRIAL USE ONLY.

Both the mixed product and its separate A and B components can be extremely irritating to skin, eyes and the respiratory system.

Avoid contact with eyes and skin; do not ingest or inhale.

When spraying in a confined area, wear a fresh air hood and make provision for forced ventilation.

At all other times, wear a NIOSH approved respirator suitable for organic vapors when working with this product or its components.

When working with SEMSTONE 245, always wear chemical goggles, rubber gloves, and appropriate work clothing.

Prolonged or repeated exposure to the unreacted Part A and Part B components of SEMSTONE 245 may cause skin irritation or allergic reactions.

Refer to material safety data sheets regarding individual components.

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### NOTES:

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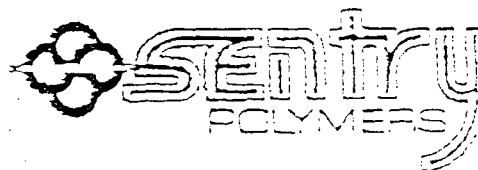
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NOTICE TO CUSTOMERS

We believe the information in this technical bulletin to be accurate. It is offered in good faith for your benefit. However, no guarantee of its accuracy is given or implied. Since the conditions of use are beyond our control, we suggest you make full and thorough use of these recommendations and suggestions. We guarantee our products to conform to our manufacturing standards. We assume no responsibility for damage, performance or failure resulting from use. Liability, if any, is limited to replacement of our products.

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P.O. BOX 20754  
1500 E. HWY 282  
FREEDOM, TX 77541

409-750-0310  
800-251-7544

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## TYPICAL PROPERTIES:

Solids, by Volume \_\_\_\_\_ 100%  
Color \_\_\_\_\_ Buff (Selected other colors optional)  
Weight per Mixed Gallon \_\_\_\_\_ 10 lbs.

## Cure Times (Approximate):

Temperature	Foot Traffic	Chemical Service**
35°F _____	24 hrs. _____	7 days _____
55°F _____	8 hrs. _____	48 hrs. _____
80°F _____	4 hrs. _____	24 hrs. _____

\*\*For Immersion service in chlorinated solvents, the coating must be postcured at 150°F for 12 hours.

## RELATED AND ANCILLARY PRODUCTS:

SEMSTONE 140 Epoxy Floor Topping  
SEMSTONE 140-CT Epoxy Floor Coating - Cold Temperature Formulation  
SEMSTONE 140-S Epoxy Coating and Lining  
SEMSTONE 300 Epoxy Polymer Concrete  
SEMSTONE 500 Epoxy Putty  
SEM-CRETE Rapid Hardening Underlayment Mortar

Refer to separate technical bulletin on each products for its uses, application instructions, etc.

## STORAGE AND SHELF LIFE:

Keep SEMSTONE 245 components tightly sealed in their original containers until ready for use. Store unopened at 50°F-90°F, out of direct sunlight. At least 24 hours immediately prior to use, store all components (A, B, C, and aggregate) at 30°F-90°F, to facilitate handling.

Properly stored, SEMSTONE 245 has a minimum shelf life of one year. Refer to batch number on label for date of manufacture.

**ATTACHMENT II.B.3**  
**WASTE SEGREGATION**



## ATTACHMENT II.B.3

### WASTE SEGREGATION

#### PROCEDURE FOR SEGREGATING WASTE TYPES

The used solvents are compatible with each other and with other materials handled at this facility with respect to reactivity and therefore do not require special segregation procedures. However, the wastes are the primary source of feed stock for regenerating the clean solvents. For ease of inventory control and product integrity, separation and grouping of both used and unused solvents is a standard practice at the facility. Safety-Kleen uses a container color scheme as a part of its waste management system. Eighty-five-gallon overpack containers are used to manage containers whose integrity have been compromised.

All materials are managed in accordance with the local fire protection code and fire department recommendations.

The immersion cleaner is always contained in partially filled covered containers before, during, and after its use. Until received at the recycle facility, the immersion cleaner is never transferred to another container. The containers containing the used immersion cleaner are returned to the facility and stored in the designated container storage areas before shipment to the recycle center.

The dry cleaning wastes are contained in containers. The liquids are in polyethylene or steel containers. Filters are in steel containers. These containers are managed similarly to the used immersion cleaner containers, and contents within the containers will not be removed or processed at the facility.

The mineral spirits are collected in containers. These containers are then emptied into the dumpsters in the return/fill shelter. Spent antifreeze is packaged in containers.





Paint wastes are stored in containers. The contents within these containers will not be transferred or processed at the service center. The paint waste is not removed from the containers until receipt by a reclaimer.

Eight solvents are collected from FRS waste users: mineral spirits; 1,1,1-trichloroethylene; per- and trichloroethylene; methylene chloride; 1,1,2-trichloro- 1,2,2-trifluoroethane; lacquer thinners, and waste oil exhibiting a characteristic. These wastes, except waste oil, are shipped in containers and are stored on pallets. It is anticipated that 38,600 gallons of spent mineral spirits, 157,600 gallons of spent halogenated solvents, and 60,400 gallons of spent lacquer thinners will be shipped from the accumulation center to a reclaimer on an annual basis.

The containers are designed and constructed to be compatible with the stored material and to minimize the possibility of breakage and leaking, in accordance with DOT shipping container specifications. Figures II.B.3-1 through II.B.3-4 show typical detailed construction specifications of the 16-gallon containers. The containers used to store cleaning wastes are shown in Figures II.B.3-5 through II.B.3-7. Paint containers are shown in Figure II.B.3-8.

Wastes are stored in polyethylene and steel containers. Since none of the waste handled by Safety-Kleen reacts with metal or polyethylene, compatibility is assured. Immersion cleaner and dry cleaning waste containers are never opened at the branch, and none of the wastes are incompatible.

### **POTENTIAL FIRE SOURCES**

The following is a list of fire prevention and minimization measures:

1. All wastes and products are kept away from ignitable sources--Personnel must confine smoking and open flames to remote areas (e.g., the office or locker room),



separate from any solvent. The mineral spirits handling area and the aboveground storage tanks are separate from the warehouse building area to minimize the potential for a fire to spread or injury to personnel to occur.

2. Ignitable wastes are handled so that they do not:

- a. become subject to extreme heat or pressure, fire or explosion, or a violent reaction--The mineral spirits waste is stored in a tank or in containers, none of which are near sources of extreme heat, fire, potential explosion sources, or subject to violent reactions. The tanks are vented and the containers kept at room temperature to minimize the potential for pressure build-up.
- b. produce uncontrolled toxic mists, fumes, dusts or gases in quantities sufficient to threaten human health--The vapor pressure of mineral spirits is low (2 mm) and it is reactive with strong oxidizers only. Toxic mists, fumes, dusts, or gases will not form in quantities sufficient to threaten human health since strong oxidizers are not handled at this facility and the solvent vaporization will be minimal under normal working conditions.
- c. produce uncontrolled fires or gases in quantities sufficient to pose a risk of fire or explosion--See "a" above and "d" below.
- d. damage the structural integrity of the Safety-Kleen facility--The solvents stored at this facility will not cause deterioration of the tank, containers, or other structural components of the facility.

3. Adequate aisle space is maintained to allow the unobstructed movement of personnel, fire protection equipment, and decontamination equipment to any area of the facility operation in an emergency.

4. "NO SMOKING" signs are posted in areas where solvents are handled or stored.
5. Fire extinguishers must be checked once per week and tested by the fire extinguisher company once per year.

#### **EXTERNAL FACTORS**

The design of the installation is such that a harmful spill is highly unlikely to occur from most external factors. The storage tanks are inaccessible to non-Safety-Kleen personnel and the pump switches are located inside. Also, the container storage area is in a building which is inaccessible to unauthorized personnel.

1. Vandalism--Only extreme vandalism would result in a solvent spill or fire. Responses to spills and fires are described in the contingency plan.
2. Strikes--A strike would not result in a solvent spill or fire.
3. Power failure--A power failure would not result in a spill or fire. Should a power failure occur, all activities requiring electricity will cease.
4. Flooding--The site elevation is above the projected 100-year floodplain.
5. Storms or Cold Weather--The solvent return and fill station is roofed to eliminate the possibility of rain or snow entering the dumpsters. No opportunity is foreseen to affect the facility with snow, cold weather, or stormwater.

**ATTACHMENT II.B.4**  
**CONTAINER MANAGEMENT**



## ATTACHMENT II.B.4

### CONTAINER MANAGEMENT

The immersion cleaner is always contained in partially filled, covered containers before, during, and after it use. Until received at the recycle facility, the immersion cleaner is never transferred to another container. The containers containing the used immersion cleaner are returned to the facility and stored in the designated container storage areas before shipment to the recycle facility.

The dry cleaning wastes are contained in containers. The perchloroethylene from dry cleaning operations is collected in polyethylene containers. The dry cleaning filters are in steel containers. These containers are managed similarly to the used immersion cleaner containers, and contents within the containers will not be removed or processed at the facility.

The spent antifreeze is packaged in containers, and the containers are not opened at the facility. The mineral spirits are collected in containers which are poured into the dumpsters. Paint wastes are stored in containers. The contents within these containers will not be transferred or processed at the service center. The paint waste is not removed from the containers until receipt by an offsite reclaimer.

The containers are designed and constructed to be compatible with the stored material and to minimize the possibility of breakage and leaking, in accordance with DOT shipping container specifications. Figures II.B.3-1 through II.B.3-4 showed typical detailed construction specifications of the 16-gallon immersion cleaner containers. The containers used to store dry cleaning wastes were shown in Figures II.B.3-5 through II.B.3-7. Paint waste containers were shown in Figure II.B.3-8. Table II.B.4-1 provides a list of the containers used at the facility.

TABLE II.B.4-1

**SAFETY-KLEEN CORP.  
WASTE STREAMS AND CONTAINER SIZES  
BOYNTON BEACH, FLORIDA**

Waste Stream	Container Sizes (gallons)	Construction Material of Container
Mineral Spirits	5	Polyethylene
	16	Steel
	30	Steel
Dry Cleaner (including off specification perchloroethylene)	5	Steel
	13.5	Polyethylene
	15	Steel
	16	Polyethylene
	16	Steel
	Split 30 (also known as 20-gallon)	Steel
Immersion Cleaner	16	Steel
Paint Waste	5	Steel
	16	Steel
Ethylene Glycol	30	Steel
	55	Steel
Fluid Recovery Service (FRS) Waste	30	Steel
	55	Steel
Dumpster Mud/Tank Bottoms	16	Steel
	30	Steel
Overpack	85	Steel
	85	Polyethylene

Seven FRS wastes are collected from FRS waste users: mineral spirits; 1,1,1-trichloroethylene; per- and trichloroethylene; methylene chloride; 1,1,2-trichloro- 1,2,2-trifluoroethane; lacquer thinners, and waste oil exhibiting a characteristic. These wastes, except waste oil, are shipped in containers and are stored on pallets.

Wastes are stored in polyethylene and steel containers. Since none of the wastes handled by Safety-Kleen react with metal or polyethylene, compatibility is assured. Immersion cleaner and dry cleaning waste containers are never opened at the branch, and none of the wastes are incompatible.

Containers will be double-stacked. The containers will be arranged so that a two-foot aisle space exists between all rows of pallets such that all containers can be readily visible for inspection and handling. Since all materials handled by Safety-Kleen are compatible with one another, no specific areas have been designated for specific wastes. Wastes will be grouped by type and are distinguishable by the color of the container; however, since the actual volume present of any product at a given time varies greatly, it is not practical to assign specific locations to given wastes.

**ATTACHMENT II.B.6**  
**CONTAINER CLOSURE PLAN**

Revision 2 - 12/06/91





## ATTACHMENT II.B.6

### CONTAINER CLOSURE PLAN

The Safety-Kleen Corp. has constructed each service center with the intent that each will be a long-term facility for the distribution of Safety-Kleen products. Onsite disposal does not occur at any plant and hence there is no disposal capacity to be exhausted that will necessitate closure of a facility. Based on current business and facility conditions, this facility is expected to remain in operation beyond the year 2000.

In the event that some presently unforeseen circumstance(s) would result in the discontinuance of operations and permanent closure or sale of the facility, the following closure plan is designed to identify the steps necessary to completely close the facility at any point during its intended life, and should be used for tanks, container storage area, and equipment.

It is intended that all closures will be complete and final with removal of waste and decontamination of the facility and associated equipment, in order to eliminate need for maintenance after closure and chance of escape of hazardous waste constituents into the environment.

Procedures described in this closure plan are also applicable to cleaning up of spills and repairing/decontamination of facility or equipment.

An anticipated closure schedule can be seen in Figure II.B.6-1. An anticipated maximum waste inventory for the container storage portion of the facility is presented in the following section.

## **FACILITY DATA**

### **Container Storage Area:**

The container storage area has a 48' x 78' area with a sloped floor and collection sump. The maximum total volume of product and waste stored is 29,720 gallons with 6,912 gallons anticipated to be containers of waste mineral spirits dumpster mud, dry cleaner wastes, antifreeze, paint waste, immersion cleaner, and/or FRS wastes.

## **MAXIMUM INVENTORY OF WASTE**

Containerized Waste: Anticipated maximum of 6,912 gallons of waste.

This amount includes any combination of 5-, 15-, 16-, split 30- (also known as 20-gallon), 30-, 55-, and 85-gallon containers.

## **CLOSURE PROCEDURE**

### **Container Storage Areas**

The container storage area houses containers of used immersion cleaner, mineral spirits dumpster mud, dry cleaning wastes, antifreeze, paint waste, and FRS wastes.

- At closure all containers will be removed and transported to the recycle center with proper packaging, labeling, and manifesting where the contents in the containers will be reclaimed and the containers will be cleaned for reuse.
- The concrete floor and spill containment areas will be cleaned with detergent solution and the rinsate will be analyzed for mineral spirits, volatile organic compounds, lead, and cadmium using SW-846 methods to determine the effectiveness of decontamination. The area will continue to be washed and rinsed until levels are below maximum contaminant levels (MCLs), or if MCLs are not available, practical quantitation limits (PQLs) as specified in Appendix IX of 40 CFR 264.

- If the wash water or other wastes generated in the closure process are determined to be hazardous, they will be properly disposed of as a hazardous waste; otherwise the material will be disposed of as an industrial waste. It should be noted that wash water and rinsate will not be allowed to drain to the waterway. It is anticipated that approximately 350 gallons of rinsate will require RCRA disposal.
- The equipment used to clean this area includes mops, pails, scrub brushes, a wet/dry vacuum, and containers. The mops, pails, and scrub brushes will be containerized and disposed of as hazardous waste. The wet/dry vacuum hose will be washed with a detergent solution to decontaminate it. The containers will be used to store the wastewater.

#### **FACILITY CLOSURE SCHEDULE AND CERTIFICATION**

- Safety-Kleen may amend the closure plan at any time during the active life of the facility. (The active life of the facility is that period during which wastes are periodically received.) Safety-Kleen shall amend the plan any time changes in operating plans or facility design affect the closure plan or whenever there is a change in the expected year of closure of the facility. The plan must be amended within 60 days of the changes.
- Safety-Kleen shall notify the state authority at least 180 days prior to the date closure is expected to begin, except in cases where the facility's permit is terminated or if the facility is otherwise ordered by judicial decree or compliance order to cease receiving wastes or to close. The date when Safety-Kleen "expects to begin closure" should be within 90 days after the date on which Safety-Kleen expects to receive the final volume of wastes.
- Within 90 days of receiving the final volume of hazardous wastes, or 90 days after approval of the closure plan, if that is later, Safety-Kleen shall remove from the site

all hazardous wastes in accordance with the approved closure plan. The Regional Administrator may approve a longer period if Safety-Kleen demonstrates that:

The activities required to comply with this paragraph will, of necessity, take longer than 90 days to complete; or

The following requirements are met:

- ▶ The facility has the capacity to receive additional wastes;
  - ▶ There is a reasonable likelihood that a person other than Safety-Kleen will recommence operation of the site;
  - ▶ Closure of the facility would be incompatible with continued operation of the site; and Safety-Kleen has taken and will continue to take all steps to prevent threats to human health and the environment.
- Safety-Kleen shall complete closure activities in accordance with the approved closure plan and within 180 days after receiving the final volume of wastes or 180 days after approval of the closure plan, whichever is later.
  - When closure is completed, all facility equipment and structures will be properly disposed of, or decontaminated by removing all hazardous waste and residues.
  - When closure is completed, Safety-Kleen shall submit to the Regional Administrator a certification by an independent registered professional engineer that the facility has been closed in accordance with the specifications in the approved closure plan.



**PART II C**  
**TANK SYSTEMS**



**ATTACHMENT II.C.1**  
**ENGINEERING ASSESSMENT OF TANK SYSTEM**



DESIGN AND INSTALLATION ASSESSMENTS  
USED ANTIFREEZE STORAGE TANK SYSTEM  
BOYNTON BEACH, FLORIDA

For

SAFETY-KLEEN CORP.  
Elgin, Illinois





# TERA, Inc.

6440 Hillcroft, Suite 200  
P.O. Box 740038, Houston, Texas 77274, Tel. 713/772-0876, Fax: 713/981-7713

91-208-1

## TANK SYSTEM CERTIFICATION

I have supervised the design and installation assessments dated November 21, 1991, of the used antifreeze storage tank systems at the Safety-Kleen Corp. facility in Boynton Beach, Florida. The EPA ID Number for this facility is: FLD984167791.

With regard to this duty, I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all related attachments and that, based on my observations and my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Wendell R. Vines

Registered Professional Engineer

Florida No. 37464

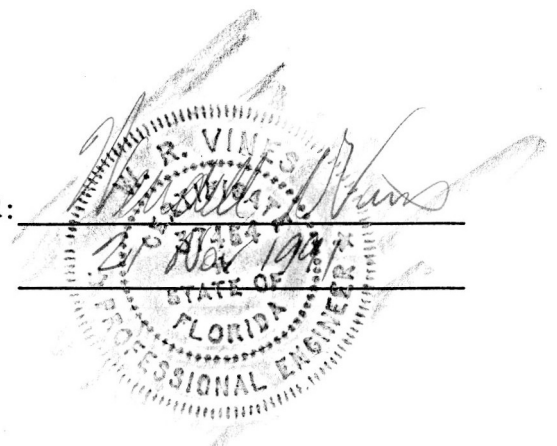
TERA, Inc.

P. O. Box 740038

Houston, Texas 77274

Signed: \_\_\_\_\_

Date: \_\_\_\_\_







## TERA, Inc.

6440 Hillcroft, Suite 200  
P.O. Box 740038, Houston, Texas 77274, Tel. 713/772-0876, Fax: 713/981-7713

November 21, 1991  
91-208-1

SAFETY-KLEEN CORP.  
777 Big Timber Road  
Elgin, Illinois 60123

Attention: Ms. Melissa Hlebasko

Subject: Design and Installation Assessments  
Used Antifreeze Storage Tank System  
Boynton Beach, Florida

Dear Melissa:

Submitted here is our design and installation assessments report for the used antifreeze storage tank system at your Boynton Beach facility. The main report body summarizes assessment results in a format corresponding to the rules being addressed. Appendices are used for presenting detailed information.

We have enjoyed working with you on this interesting project, and look forward to another opportunity to be of service to Safety-Kleen. Please contact us at 713/772-0876 if you have any questions.

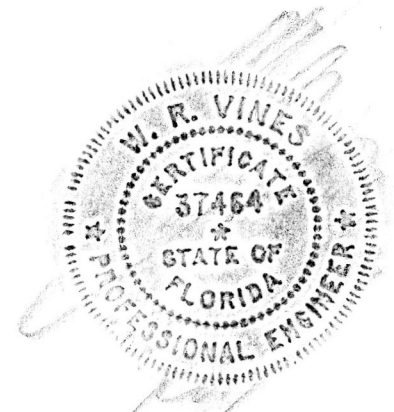
Very truly yours,

TERA, Inc.

Wendell R. Vines, P.E.  
President

WRV/lf

Enclosures: Eleven (11) Copies



91-208-1

DESIGN AND INSTALLATION ASSESSMENTS  
USED ANTIFREEZE STORAGE TANK SYSTEM  
BOYNTON BEACH, FLORIDA

\* \* \*

For

SAFETY-KLEEN CORP.  
Elgin, Illinois

\* \* \*

By

TERA, Inc.  
Houston, Texas

November 1991

TABLE OF CONTENTS

<u>Title</u>	<u>Page No.</u>
SYSTEM DESCRIPTION . . . . .	1
CONSIDERATIONS OF DESIGN ASSESSMENT . . . . .	2
1. Design Standards . . . . .	2
2. Hazardous Characteristics of the Waste . . . . .	3
3. Corrosion Protection . . . . .	4
4. Effects of Vehicular Traffic . . . . .	5
5. Foundation Design . . . . .	6
6. Tank Installation Assessment . . . . .	6
SECONDARY CONTAINMENT ASSESSMENT . . . . .	7
1. Required Data . . . . .	7
2. Materials Compatibility . . . . .	7
3. Strength . . . . .	8
4. Foundation . . . . .	8
5. Leak Detection . . . . .	8
6. Liquid Removal . . . . .	9
7. Device Requirements for Vault . . . . .	9
8. Ancillary Equipment . . . . .	10
CONCLUSIONS OF ASSESSMENTS . . . . .	10
ILLUSTRATIONS	
APPENDIX A - Design Documentation	
APPENDIX B - Design Review Documentation	
APPENDIX C - Description of Waste	
APPENDIX D - Inspection Records	

This report documents the design and installation assessments for the used antifreeze storage tank system at the Safety-Kleen facility in Boynton Beach, Florida. The assessments described here are written to address the requirements of 40 CFR 264.192 and 40 CFR 264.193, and Florida DER Regulation 17-30.180.

#### SYSTEM DESCRIPTION

Used antifreeze liquids will be received from offsite generators in tank trucks. The hose from the truck is connected to a tanker hookup located in the secondary containment of the tank farm building. The truck pump transfers the used antifreeze via aboveground piping into an aboveground steel storage tank of 20,000-gallon capacity. Accumulated used antifreeze will be evacuated periodically from this tank via a tank truck pump through the aboveground piping to the tank truck for transport to an offsite recycling center. Sludge and solids that accumulate in the tank will be removed periodically through a manway for offsite disposal. All of the ancillary equipment for this system is located in the tank containment area.

For the purpose of this assessment, the used antifreeze storage system has been defined to include the storage tank, the aboveground piping, the ancillary equipment, and the secondary containment system for these components. The system was originally constructed as a used oil system and has been converted to a used antifreeze system before putting the system into service.

The 20,000-gallon storage tank for the used antifreeze is a horizontal tank with integral saddle supports. The tank is located inside a steel-reinforced concrete containment area which is coated for impermeability. The used antifreeze storage tank is vented to the

SYSTEM DESCRIPTION (Continued)

atmosphere. Exhaust fans (32" x 32") are mounted at each end of the building for air circulation. Tank liquid level is to be monitored daily by reading a level indicator. The tank is also equipped with a high level alarm to provide a warning to service center personnel when the tank is approximately 95% full. Emergency venting is to be provided by a 24-inch loose-bolt manway on top of the tank.

Documents further describing the used antifreeze storage system are attached at Appendix A.

A local area map for Boynton Beach, Florida, and a site plan for the facility are shown on Plates 1 and 2. A Flood Map is shown on Plate 3. A schematic drawing of the used antifreeze storage tank system is shown on Plate 4.

CONSIDERATIONS OF DESIGN ASSESSMENT1. Design Standards (40 CFR 264.192(a) and 40 CFR 264.193))

Design standards and materials of construction were determined from construction drawings for the system. Information made available for this purpose is listed in Appendix A.

This tank system design has been reviewed for compliance with the following applicable codes:

- Underwriters' Laboratory, UL 142, Standard for Steel Aboveground Tanks for Flammable and Combustible Liquids, 6th Ed. (tank)
- American Concrete Institute, ACI 318-89, Building Code Requirements for Reinforced Concrete (containment)

CONSIDERATIONS OF DESIGN ASSESSMENT (Continued)1. Design Standards (40 CFR 264.192(a) and 40 CFR 264.193)) (Continued)

- American Society of Civil Engineers, ASCE 7-88, Minimum Design Loads for Buildings and Other Structures, (Formerly ANSI A58.1) (tank environmental response analyses).

Calculations, discussions and checklists which evaluate compliance with these codes for primary considerations are given in Appendix B. The design review shows that:

- The design substantially conforms to the standards referenced above;
- The design standards are appropriate for this application.

Descriptions of the concrete coating and caulking materials and application procedures used by Safety-Kleen for the tank secondary containment are referenced in Appendix A. This information indicates that the materials should be satisfactory for the intended service, provided recommended procedures were followed by the applicator.

The conclusion upon review of the documents is that the design of the used antifreeze storage tank system is appropriate for the intended service. The structural system, support, and seams appear to be adequately designed.

2. Hazardous Characteristics of the Waste (40 CFR 264.192(a)(2) and 40 CFR 264.193)

The waste material to be collected and stored by this system will be antifreeze liquids which consist primarily of ethylene

CONSIDERATIONS OF DESIGN ASSESSMENT (Continued)

2. Hazardous Characteristics of the Waste (40 CFR 264.192(a)(2) and 40 CFR 264.193) (Continued)

glycol and water picked up in various automotive service centers and commercial users. The material is a single-phase liquid at ambient temperatures. Documentation describing the waste material is included in Appendix C.

The primary hazardous characteristic of the waste is toxicity by characteristic leaching procedure standards (D004-D011, D018, D019, D021-D030, D032-D043), EPA Hazard Code E.

3. Corrosion Protection (40 CFR 264.192(a)(3))

The steel tank, protected with a paint coating on its exterior, is inside a building. All associated piping is also painted and inside the building.

System components are not provided with internal corrosion protection.

A literature search by TERA for test data which confirms compatibility of the waste antifreeze and water mixture with the carbon steel elements of this tank storage system has not been fruitful. However, due to the usual presence of rust inhibitors in manufactured antifreeze and the world-wide use of antifreeze mixed with water as a coolant for internal combustion engines, there is ample reason to believe that the used antifreeze stored in this tank system is not corrosive to steel alloys.

CONSIDERATIONS OF DESIGN ASSESSMENT (Continued)3. Corrosion Protection (40 CFR 264.192(a)(3)) (Continued)

Safety-Kleen states that they have been intensively investigating all aspects of the marketing, handling, and storage of used antifreeze for the past three years. The company reportedly has conducted extensive chemical analyses of the various compositions of used antifreeze expected to be stored in this system and has evaluated the compatibility of used antifreeze with the usual materials of construction normally employed for a hazardous waste storage system at their service centers. Safety-Kleen has determined that used antifreeze is compatible with those materials without the need for special liners or other protection against internal corrosion. A letter from Safety-Kleen is included in Appendix C.

External metal components of this tank system are not in long-term contact with soil or water. Therefore, the tank system will not require cathodic protection.

It is therefore concluded that the used antifreeze waste materials are sufficiently compatible with the system materials of construction to not require additional corrosion protection.

4. Effects of Vehicular Traffic (40 CFR 264.192(a)(4))

No underground components are used in this system, and no adverse effects from vehicular traffic under normal conditions have been identified.



CONSIDERATIONS OF DESIGN ASSESSMENT (Continued)5. Foundation Design (40 CFR 264.192(a)(5))

The foundation support for the used antifreeze storage tank is provided by a reinforced concrete slab. As shown in the calculations included in Appendix B, the foundation design for the new tank components appears to be sufficient to maintain a full liquid load. The branch site is in a zone of low seismic activity (Zone 0 from ASCE 7-88) and the tank will not require special anchorage for earthquakes. See Appendix B for seismic calculations. Wind forces on the tank are not expected since the system is inside a building.

6. Tank Installation Assessment (40 CFR 264.192)A. Installation Inspection

After installation and prior to being placed in service, the new tank system was inspected by TERA for defects and compliance with the design documentation. No discrepancies were identified between design documentation and observed features of the tank system. No indications were found of any weld breaks, punctures, scrapes of protective coatings, cracks, corrosion, structural damage or inadequate construction or installation. The tank and piping wall thicknesses were also verified by ultrasonic thickness measurements. Documentation of the inspections performed is included in Appendix D of this report.

B. Tightness Testing

The new tank system components were tested for tightness prior to being placed in service. Tightness testing consisted of pneumatic leak testing of the tank and system piping.

CONSIDERATIONS OF DESIGN ASSESSMENT (Continued)6. Tank Installation Assessment (40 CFR 264.192) (Continued)B. Tightness Testing (Continued)

Documentation of the testing performed is included in Appendix D. There was reportedly no evidence of leakage from any of the system components during final tightness testing.

SECONDARY CONTAINMENT ASSESSMENT

The following paragraphs give a detailed comparison of containment system features to current requirements. This evaluation considers only the used antifreeze tank system containment area. For brevity, "secondary containment" as used here means features that meet the requirements of 40 CFR 264.193.

1. Required Date (40 CFR 264.193(a)(3))

Since this system is new, secondary containment is required prior to placing the tank system in service. As discussed in subsequent paragraphs, secondary containment has been provided.

2. Materials Compatibility (40 CFR 264.193(c)(1))

The waste material collected and stored by the system is to be a used antifreeze liquid which consists primarily of ethylene glycol and water received from various automotive service operations and commercial users. The primary hazardous characteristic of the waste is toxicity. As noted earlier, this material is compatible with and not corrosive to the system materials of construction (primarily concrete, polyurethane caulking, epoxy coating and carbon steel).

SECONDARY CONTAINMENT ASSESSMENT (Continued)3. Strength (40 CFR 264.193(c)(1))

The most critical strength requirement for the floor slab of the tank containment structure is to be its service as foundation support for the used antifreeze tank when full (used antifreeze has a higher specific gravity than either clean or used solvent). Loading from the tank is higher than any expected hydrostatic pressure. As shown in the calculations in Appendix B, the strength of the floor slab appears to be adequate.

The most critical strength requirement for the concrete containment walls is from hydrostatic pressure with the containment full of ethylene glycol. As shown in Appendix B, the strength of the containment walls appears to be adequate.

The pressure containment capacity of the piping and other ancillary equipment items was reviewed and found to be adequate for the intended service.

4. Foundation (40 CFR 264.193(c)(2))

The foundation for the secondary containment vault, tanks and their contents is the soil subgrade and aggregate subbase described in Appendix A. A check of the subgrade bearing pressure shows maximum loads on the subgrade to be less than specified bearing capacity (see Appendix B).

5. Leak Detection (40 CFR 264.193(c)(3))

All components of this system are aboveground and are directly accessible for visual inspection.

SECONDARY CONTAINMENT ASSESSMENT (Continued)6. Liquid Removal (40 CFR 264.193(c)(4))

The tank containment system is sloped to drain to sumps at each end of the containment structure. Liquid removal is accomplished by hand pumps or vacuum trucks.

7. Device Requirements for Vault (40 CFR 264.193(e)(2))

As shown by the calculations in Appendix B, containment for the tanks will have a design volume sufficient to hold 100 percent of the used antifreeze tank capacity. Since the system is inside a building, additional containment for rainfall is not required. Therefore, containment capacity for the storage tank system is considered sufficient.

Chemically-resistant external waterstops were formed where necessary at joints in the concrete walls by the application of Sika Flex-1a joint sealant, described by concrete construction details and manufacturer's literature in Appendix A.

The tank concrete containment structure for the tanks has been coated with Sikagard 62 epoxy coating. As shown in the manufacturer's literature in Appendix A, this material is expected to be impermeable to and compatible with the waste antifreeze being stored. A few spots where the Sikagard 62 has flaked will require touch-up.

SECONDARY CONTAINMENT ASSESSMENT (Continued)

8. Ancillary Equipment (40 CFR 264.193(f)(1))

The piping for the used antifreeze system is aboveground. All ancillary equipment including piping are located within the containment structure. The pressure containment capacity, support, and protection of ancillary equipment appears to be designed satisfactorily.

CONCLUSIONS OF ASSESSMENTS

Based on the information included in this report, the used antifreeze storage system at the Safety-Kleen facility in Boynton Beach, Florida, appears to have been adequately designed to have sufficient structural strength and to be sufficiently compatible with the wastes being stored to not leak, collapse, rupture, or fail in their intended service. No evidence of damage, defects or improper installation was found, and tightness test records show no indications of leakage. A secondary containment system is provided that appears to meet the requirements of 40 CFR 264.193, except that secondary containment coating touch-up should be accomplished before the system is put into service.

91-208-1

ILLUSTRATIONS

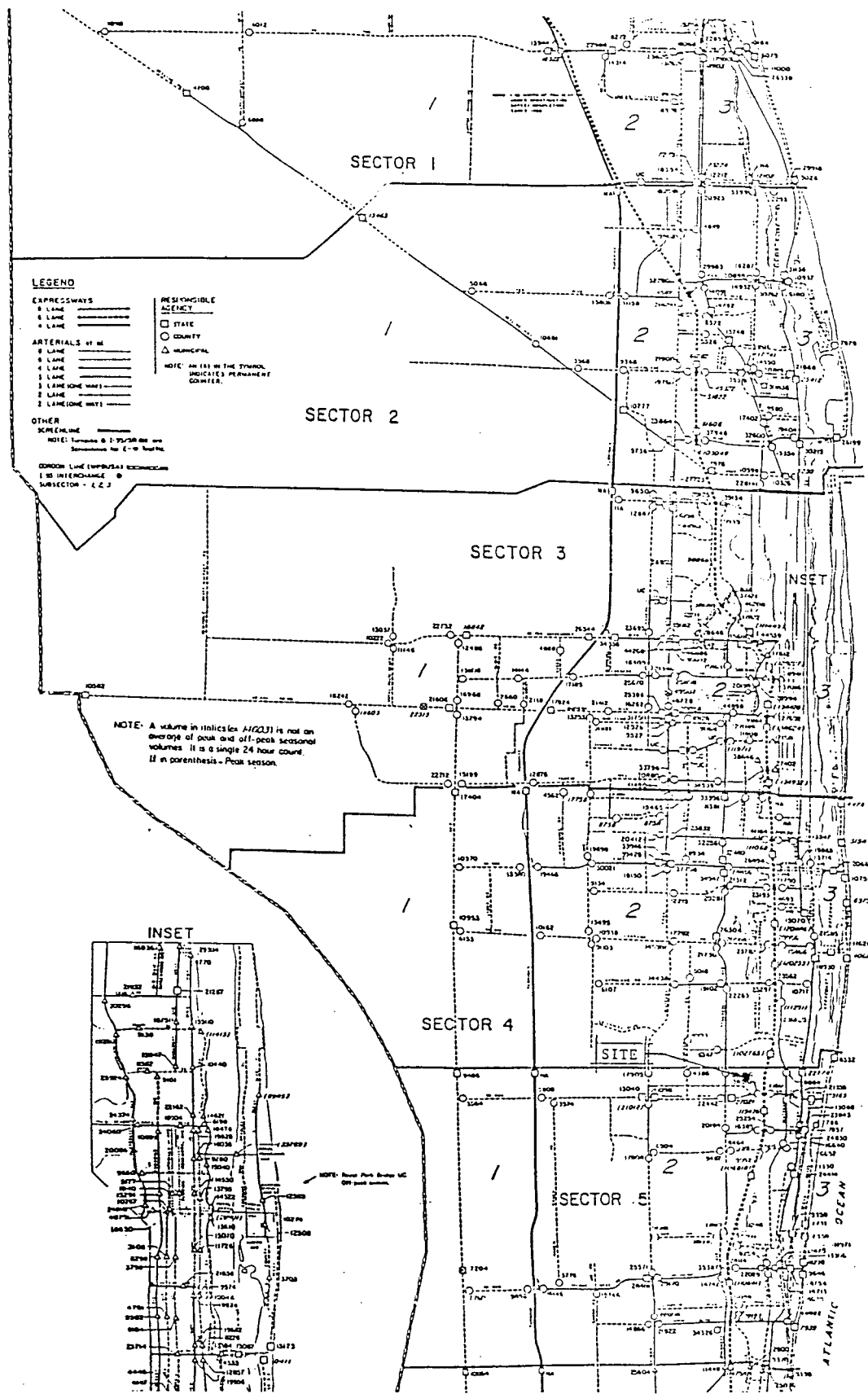
ILLUSTRATIONSTABLE OF CONTENTS

<u>Title</u>	<u>Plate No.</u>
Local Area Map . . . . .	1
Site Plan . . . . .	2
Flood Insurance Rate Map . . . . .	3
System Schematic, Used Antifreeze Tank . . . . .	4

SUBJECT: LOCAL AREA Map  
Boynton Beach, Fl.  
BY: TFT DATE: 11/1/91

**TERA, inc.**

JOB NO.: 91-208-1  
FILE: FACILITY INFORMATION  
SHEET: 1 OF: 3

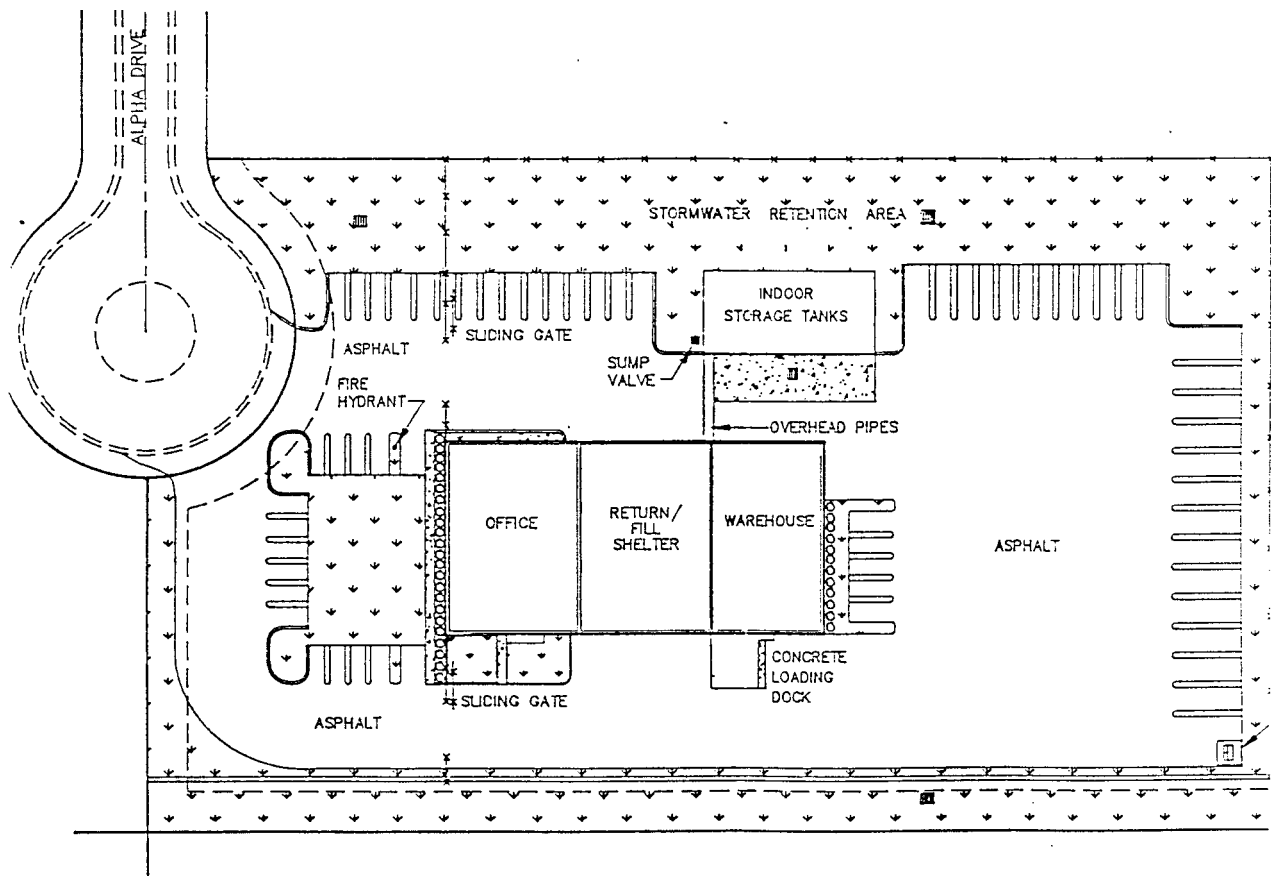




SUBJECT: Site Plan  
Boynton Beach, Fl.  
BY: TFT DATE: 11/1/91

 **TERA, inc.**

JOB NO.: 91-208-1  
FILE: Facility Information  
SHEET: 2 OF: 3

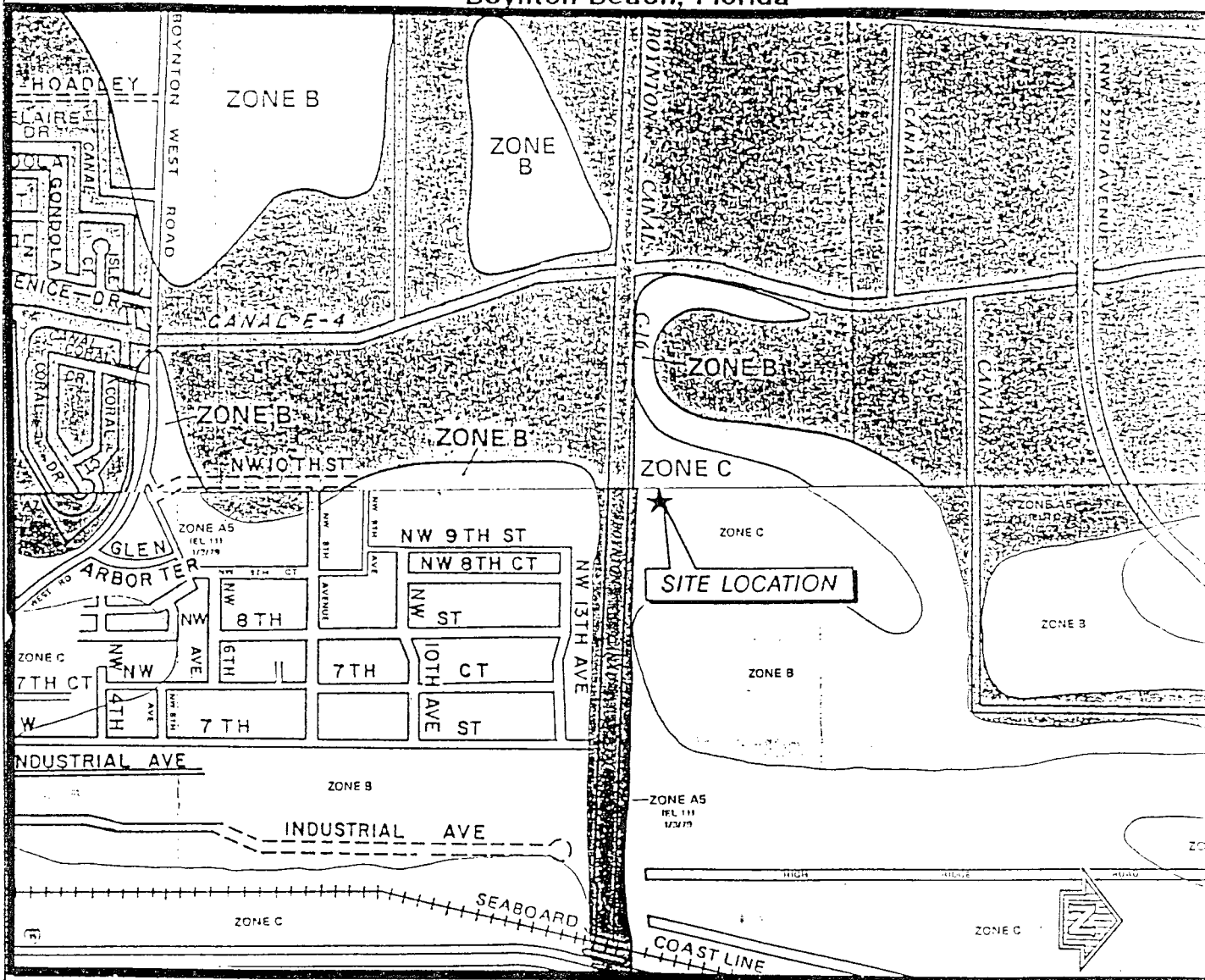


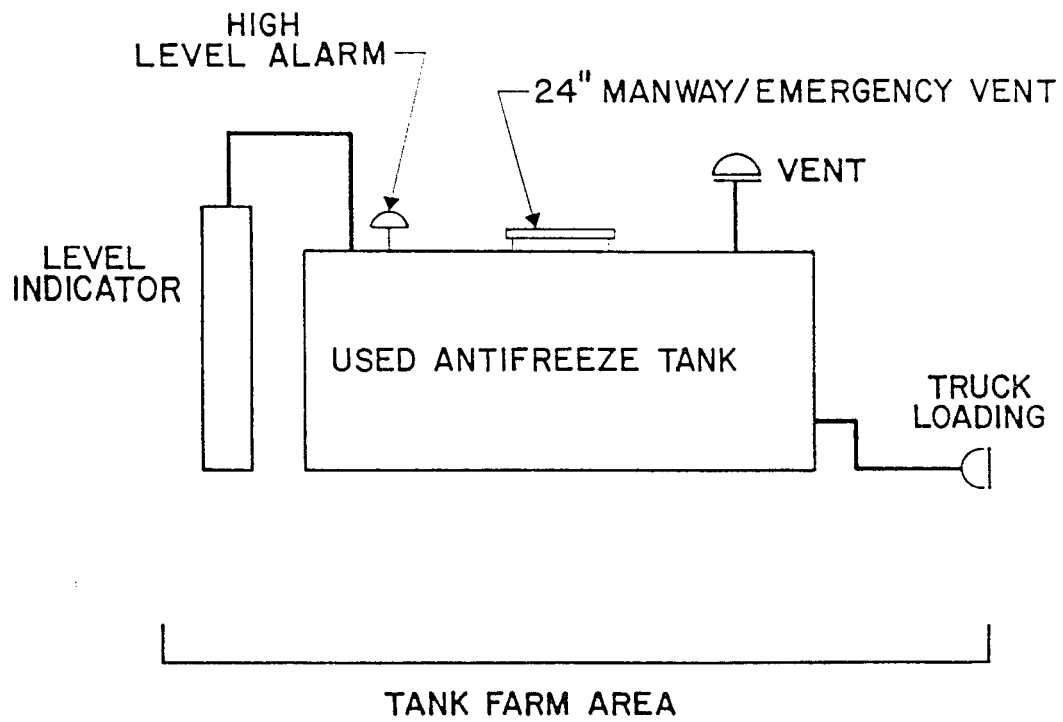
SUBJECT: Flood Map  
Boynton Beach, Fl.  
 BY: TFT DATE: 11/1/91

**TERA, inc.**

JOB NO.: 91-208-1  
 FILE: Facility Information  
 SHEET: 3 OF: 3

# Flood Map Safety-Kleen Corp. Facility Boynton Beach, Florida





SYSTEM SCHEMATIC

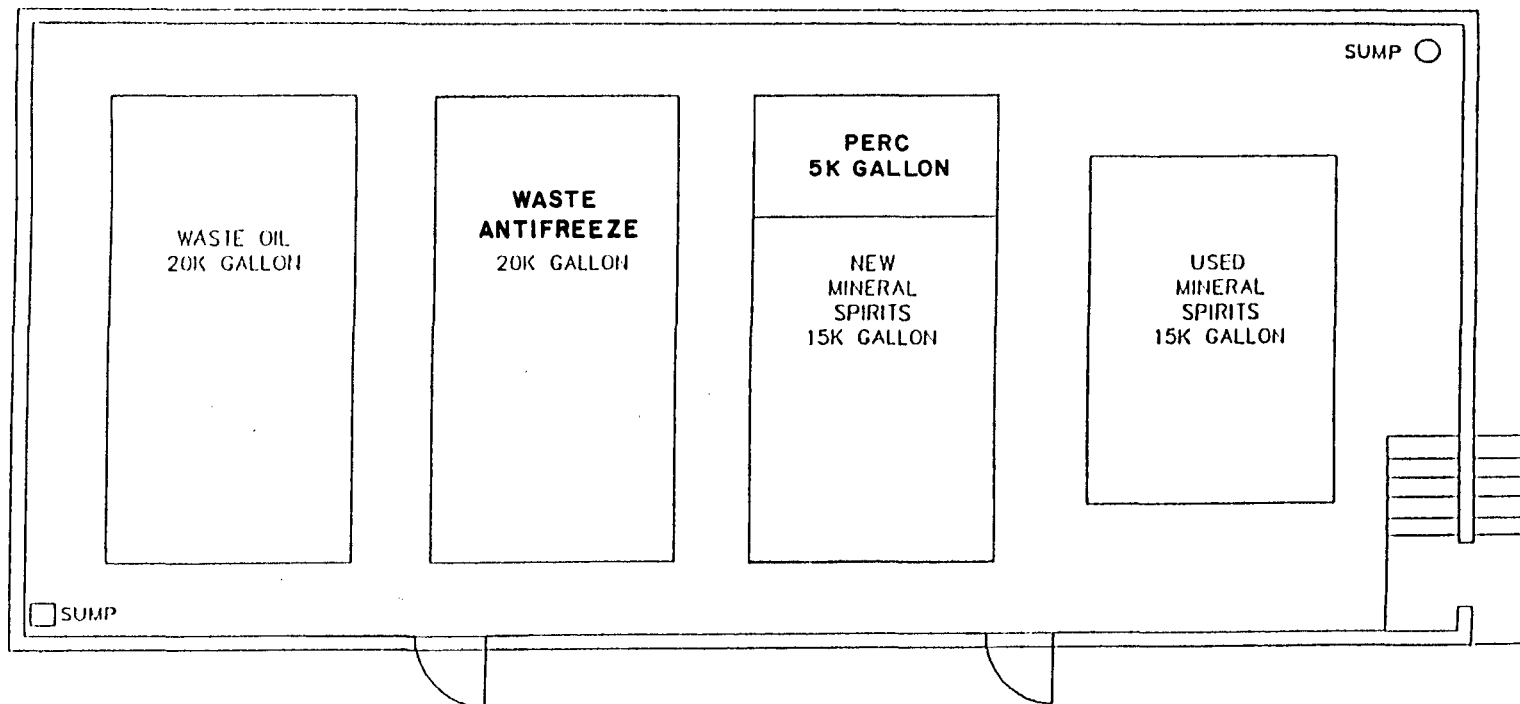
APPENDIX A  
Design Documentation

APPENDIX A  
Design Documentation

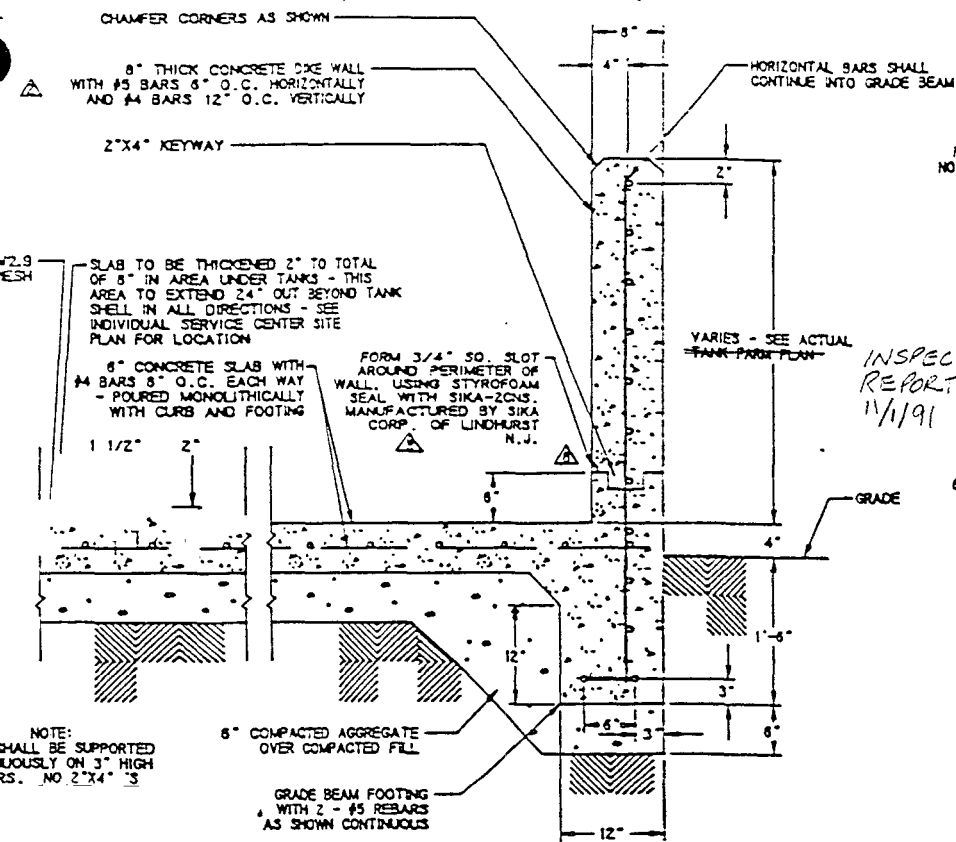
The information in this Appendix was provided by Safety-Kleen to TERA for purposes of this design assessment as being representative of in-place details. The inspection was limited to externally visible features and showed general conformance to these drawings. Where non-accessible details were needed in the assessment, such as reinforcement of concrete, they were assumed to be as shown here.

TABLE OF CONTENTS

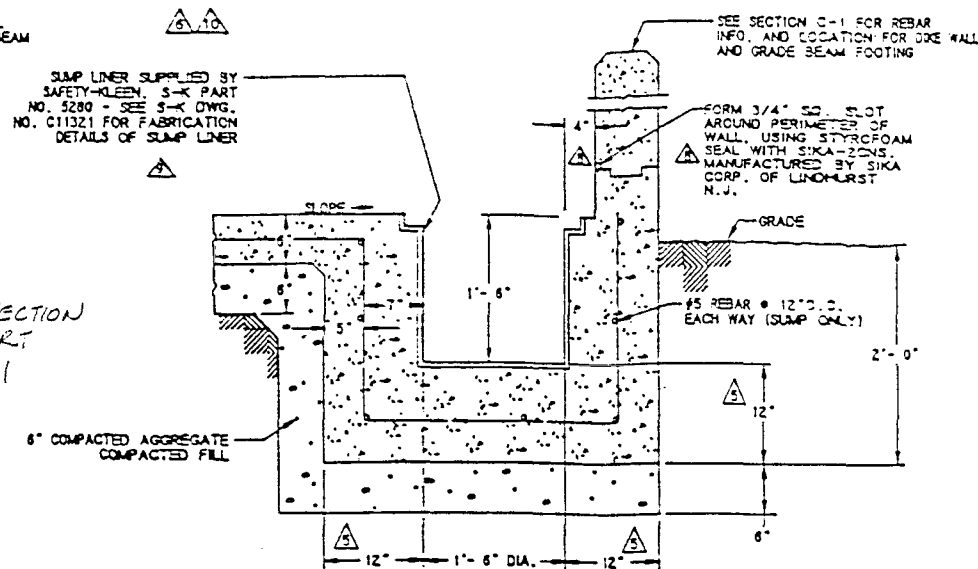
<u>Title</u>	<u>Page No.</u>
Tank Farm Plan . . . . .	A-1
Typical Concrete Construction Details D11322 . . . . .	A-2
20,000 Gallon Horizontal Steel Aboveground Storage Tank	
Drwg. No. D12966 . . . . .	A-3
Emergency & Gate Valve Installation Details . . . . .	A-4
High Level Alarm System - D13102 . . . . .	A-5
Moormann Bros. Tank Gauge Installation A10243 . . . . .	A-6
Caulking/Coating Data . . . . .	A-7



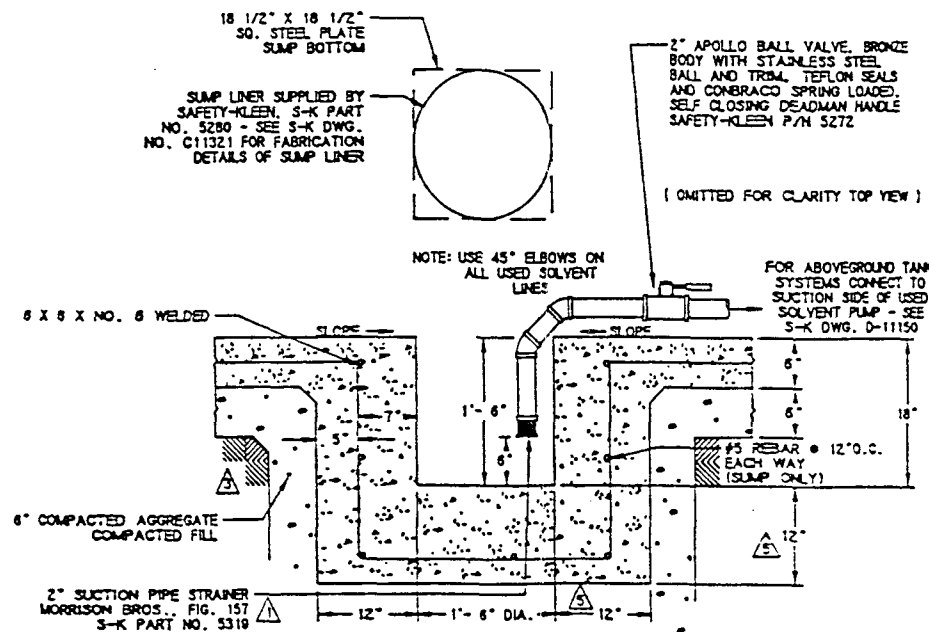
TANK FARM  
SAFETY-KLEEN BRANCH  
BOYNTON BEACH, FLORIDA



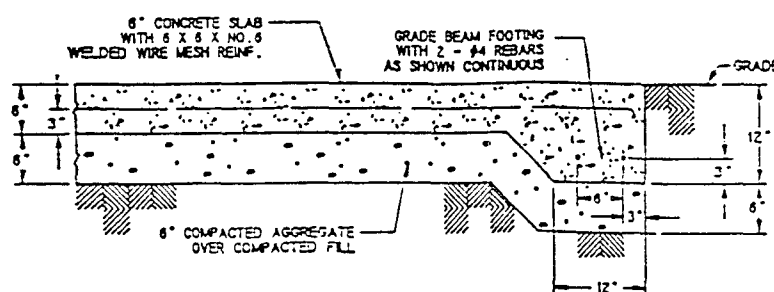
C1 SECTION C-1: TANK SLAB & DIKE WALL  
SCALE: 1"=1'-0" CONSTRUCTION DETAIL



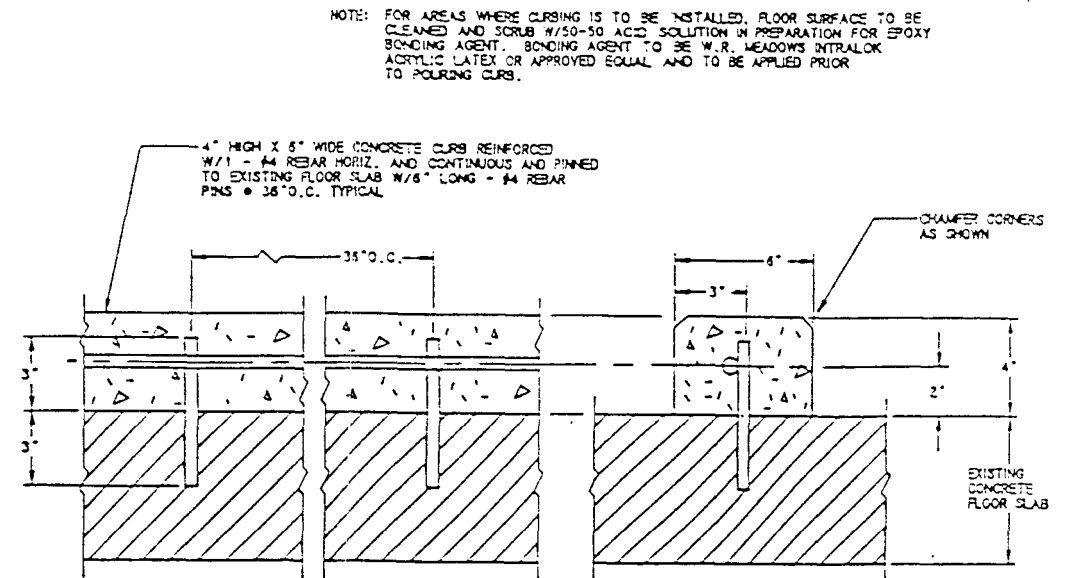
C3 SECTION C-3: TANK FARM SUMP  
SCALE: 1"=1'-0" CONSTRUCTION DETAIL



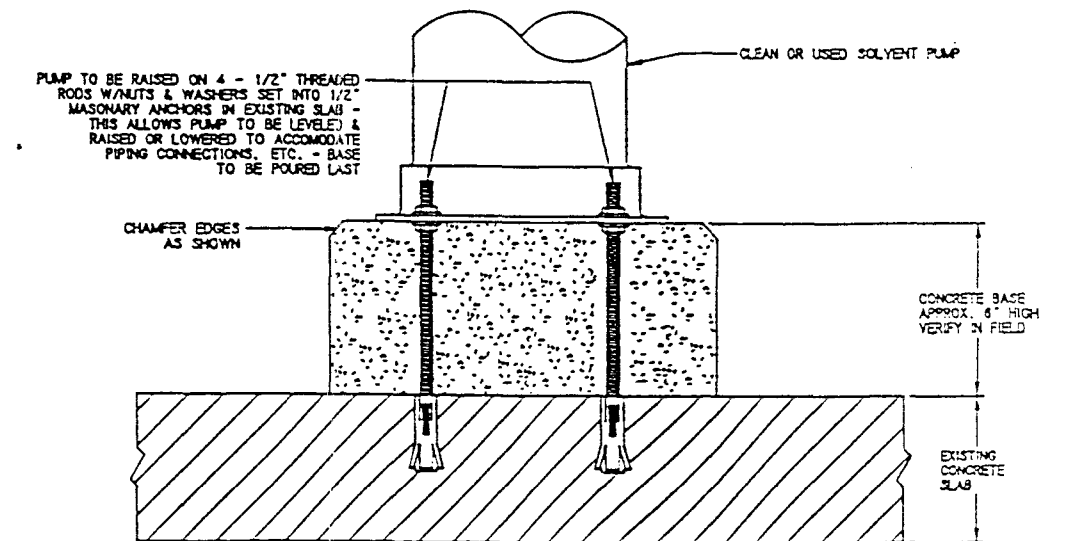
C4 SECTION C-4: RETURN & FILL AREA SUMP  
SCALE: 1"=1'-0" CONSTRUCTION DETAIL



C2 SECTION C-2: SLAB CONSTRUCTION DETAIL  
SCALE: 1"=1'-0"



D1 DETAIL D-1: CURB CONSTRUCTION  
SCALE: 3"=1'-0"



D2 DETAIL D-2: PUMP BASE CONSTRUCTION  
SCALE: 3"=1'-0"

# GENERAL NOTES

- THIS DRAWING CONTAINS INFORMATION PROPRIETARY TO SAFETY-KLEEN CORP. ANY REPRODUCTION DISCLOSURE OR USE OF THIS DRAWING IS EXPRESSLY PROHIBITED EXCEPT BY SAFETY-KLEEN OR AS SAFETY-KLEEN MAY AGREE IN WRITING.
- THIS DRAWING SUPERCEDES SAFETY-KLEEN DRAWINGS C10240, C10962, D10507, AND D10955.
- SEE INDIVIDUAL SERVICE CENTER PLANS FOR LOCATIONS OF THESE DETAILS.
- CONCRETE TO OBTAIN 3,000 PSI STRENGTH IN 28 DAYS.
- ALL ITEMS WITH SAFETY-KLEEN PART NO. REFERENCES WILL BE SUPPLIED TO CONTRACTOR.
- ALL CONCRETE WORK SHALL CONFORM TO THE REQUIREMENTS OF ACI-301-84 "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS". ALL CONCRETE SHALL HAVE F<sub>c</sub>=3,000 PSI. ALL CONCRETE EXPOSED TO WEATHER SHALL HAVE 5-7% AIR ENTRAINMENT. COARSE AGGREGATE SHALL CONFORM TO NO. 57 IN ACCORDANCE WITH ASTM C-33.
- ALL CONCRETE AREAS TO BE COVERED WITH BURLAP AND KEPT CONTINUOUSLY MOIST FOR A MINIMUM PERIOD OF THREE DAYS IMMEDIATELY AFTER PLACEMENT & FINISHING.
- SLOPE ALL CONCRETE SLABS TO SUMP AS SHOWN ON PLAN. RAISED SLAB UNDER TANKS TO BE LEVEL.
- ALL FOOTINGS SHALL BEAR ON UNDISTURBED SOIL OR COMPACTED FILL. MINIMUM SOIL BEARING PRESSURE TO BE 2,500 PSF.
- TOP OF ALL EXPOSED CONCRETE WALL POURS TO BE SCREENED AND FINISHED PERFECTLY LEVEL FOR PROPER ARCHITECTURAL APPEARANCE.
- SUMPS TO BE TESTED BY CONTRACTOR WITH WATER AT FULL HEIGHT FOR A PERIOD OF 24 HOURS, WITH NO LEAKAGE ALLOWED.
- ALL FLOORS AND SUMPS SHALL BE COATED WITH TWO COATS OF SIKAGARD 82, MANUFACTURED BY SIKACORP, LYNHURST, N.J. OR CONCRESEAL 1305, MANUFACTURED BY ADHESIVE ENGINEERING CO., SAN CARLOS, CA. COATING SHALL HAVE A SLIP-RESISTANT FINISH PER MANUFACTURER'S SPECIFICATIONS. MANUFACTURER'S RECOMMENDATIONS FOR SURFACE PREPARATION AND APPLICATION SHALL BE STRICTLY FOLLOWED. ALLOW CONCRETE SUBSTRATE TO CURE AT LEAST 30 DAYS PRIOR TO APPLICATION OF COATING.

NO.	DESCRIPTION	BY	CHKD	APPR	DATE
1	REV. D. MESH FROM SECT. C3	RD			3/7/89
2	ADDED 3/4" SLOT & LABEL C-1 & C-3	RD			3/7/89
3	REVISED SECTION C-1	RD			3/7/89
4	ADDED COUPLING NOTE	RD			3/7/89
5	THICKENED CURB, IN SUMP SECT. C-3 & C-4	RD			3/7/89
6	RAV'D 2" DRAIN LINE & BALL VALVE	RD			3/7/89
7	RAV'D 2" DRAIN LINE FROM SUMP SECT. C-4	RD			3/7/89
8	VERT. BAR SPACING WAS 48"	WLU			3/7/89
9	ADDED NOTE 5 & PIPE STRAINER	WLU			3/7/89

BH1  
3/7/89

TYPICAL CONCRETE CONSTRUCTION DETAILS	
SAFETY-KLEEN CORP.	
777 IN TOWER ROAD, ELLEN, ILLINOIS 60120 PHONE 312/497-0000	
NO.	DESCRIPTION
1	ADDED NOTES 6 THRU 12
2	REMOVED DRAIN PLIN SHOWN CORRECTED POSITION OF SUMP GRATING SUPPORT
3	ADDED NOTE 5 & PIPE STRAINER
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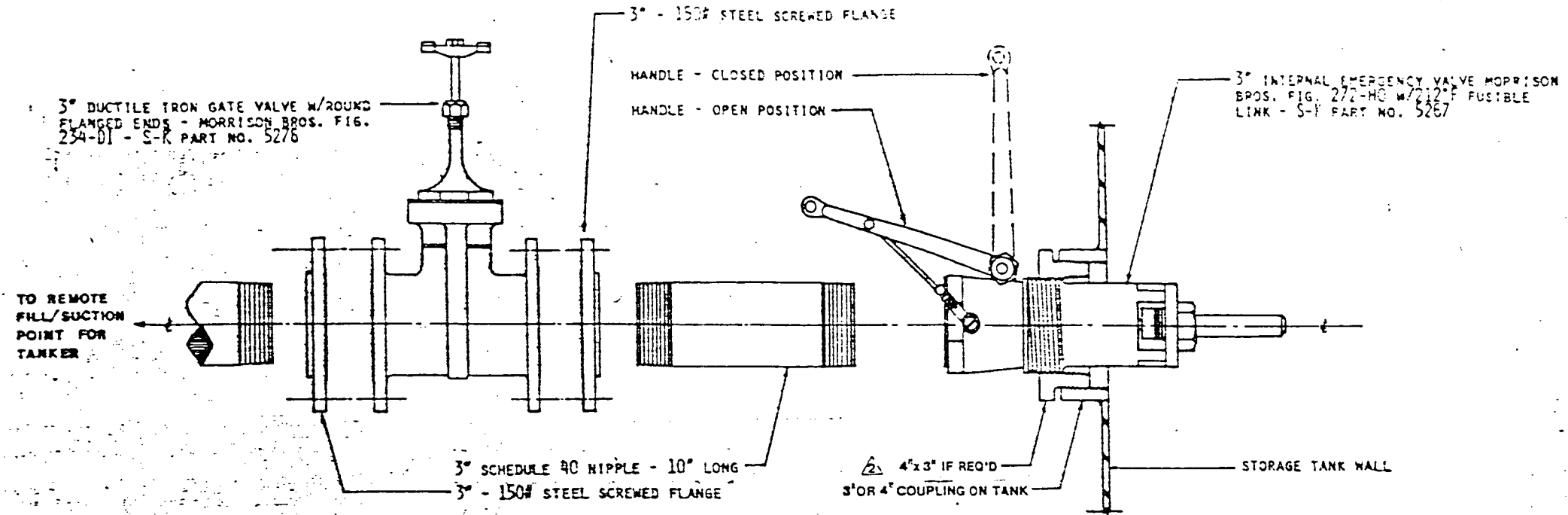
FOR SERVICE CENTER BRANCH

D11322

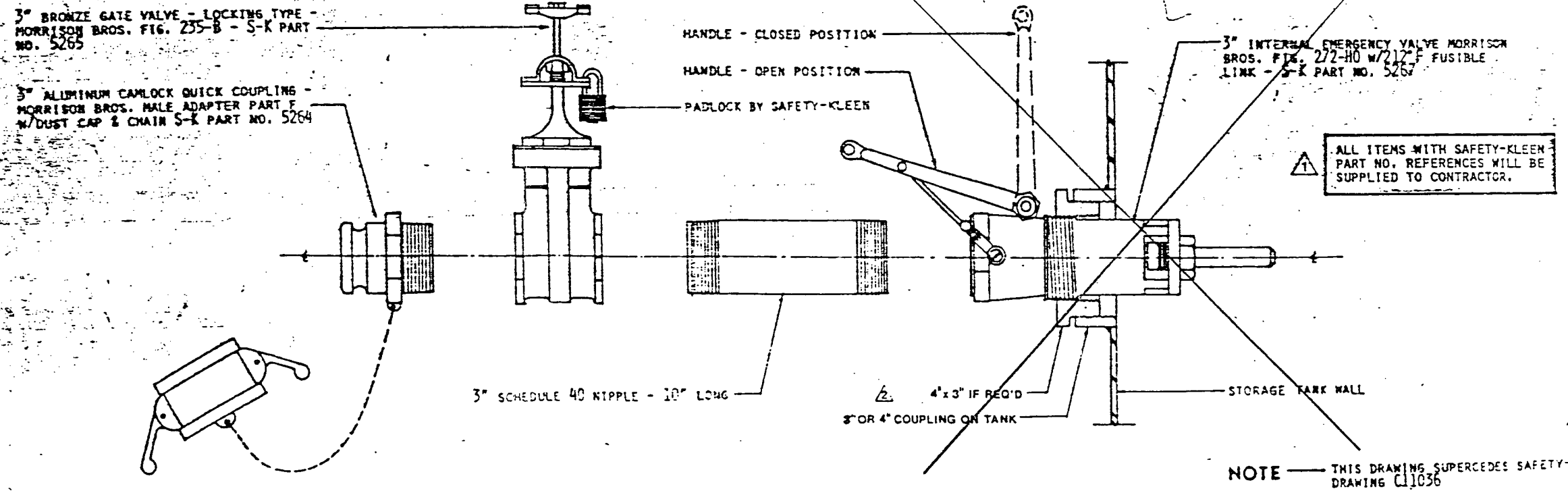
K







— STANDARD INSTALLATION FOR PIPING OF ALL STORAGE TANKS —



NOTE — THIS DRAWING SUPERCEDES SAFETY-KLEEN DRAWING C11036

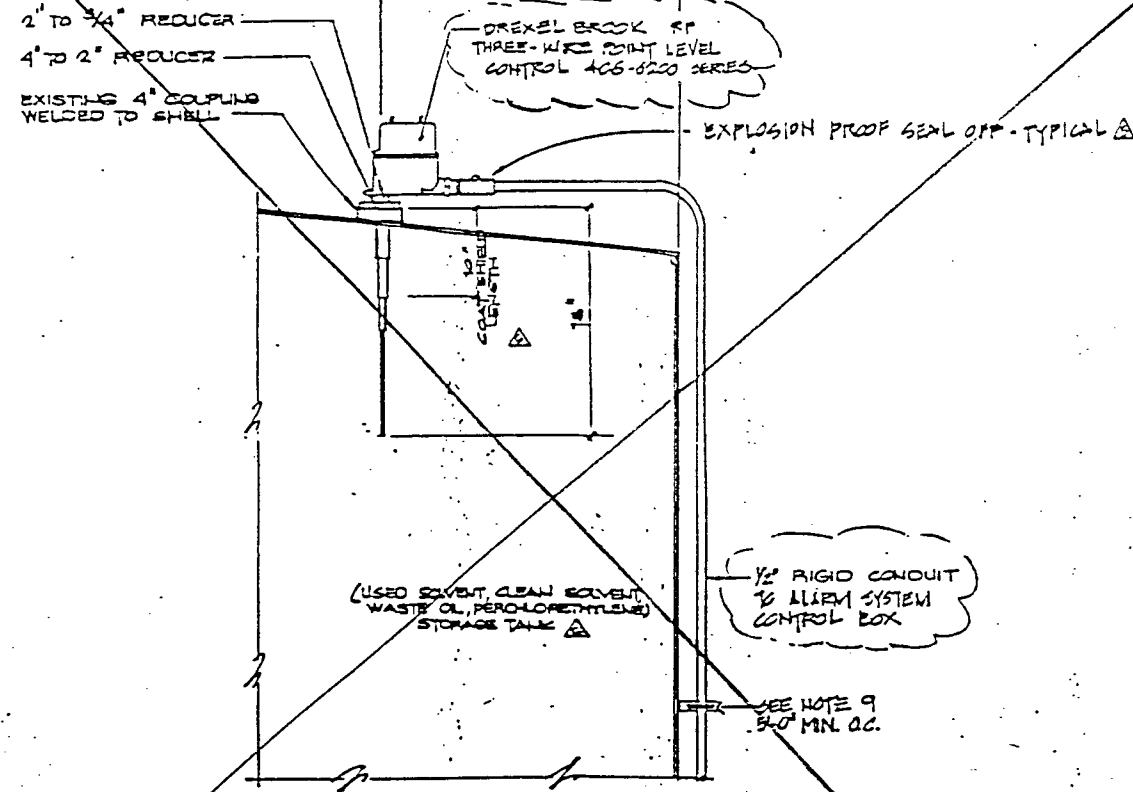
— ADDITIONAL INSTALLATION FOR PIPING OF NEW TANKS FOR STORAGE OF USED SOLVENT —  
(FOR LOCATIONS PRONE TO FREEZING ONLY - SEE SAFETY-KLEEN DRAWING D11124 —)

<b>Safety-Kleen Corp.</b>		1000 E. 10TH AVE. S. MINNAPOLIS, MN 55404		PHONE 275-0111	
<b>EMERGENCY &amp; GATE VALVE INSTALLATION DETAILS</b>				NO	SCALE
FOR: SERVICE CENTER BRANCH				WLS	12-5-83
CONSTRUCTION & OR IMPROVEMENTS				C11302	

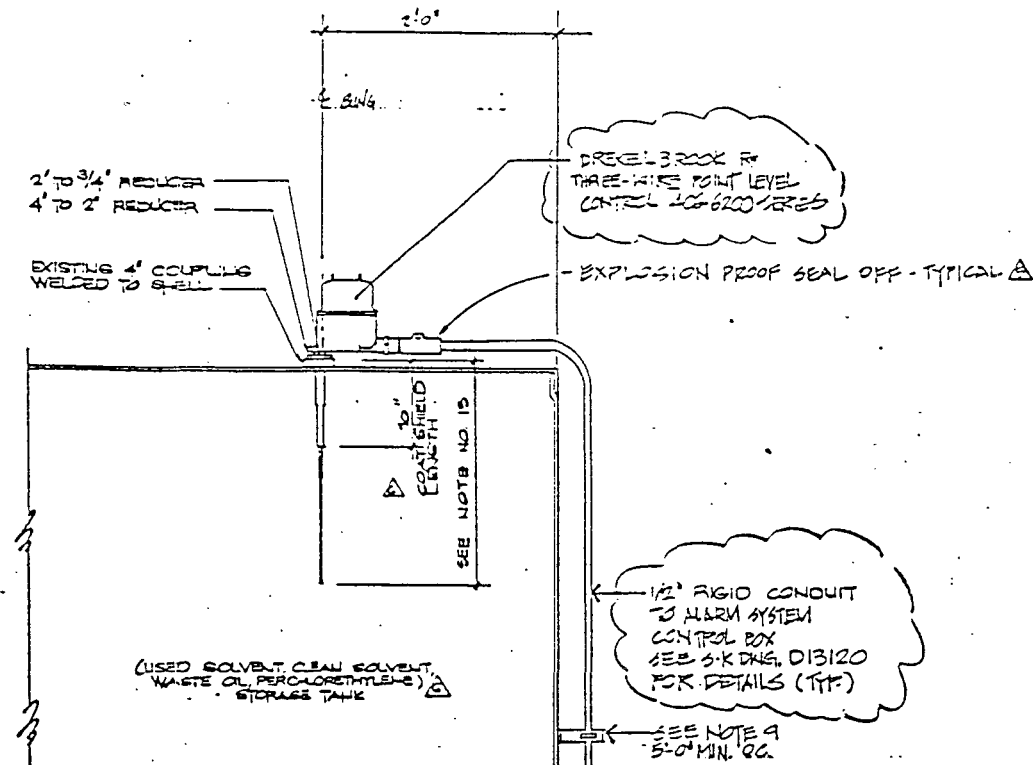
2	ADDED CLARIFICATION	RD	3/24/86
3	ADDED NOTE	WJ	12/23/84
REV	DESCRIPTION	BY	

# GENERAL NOTES

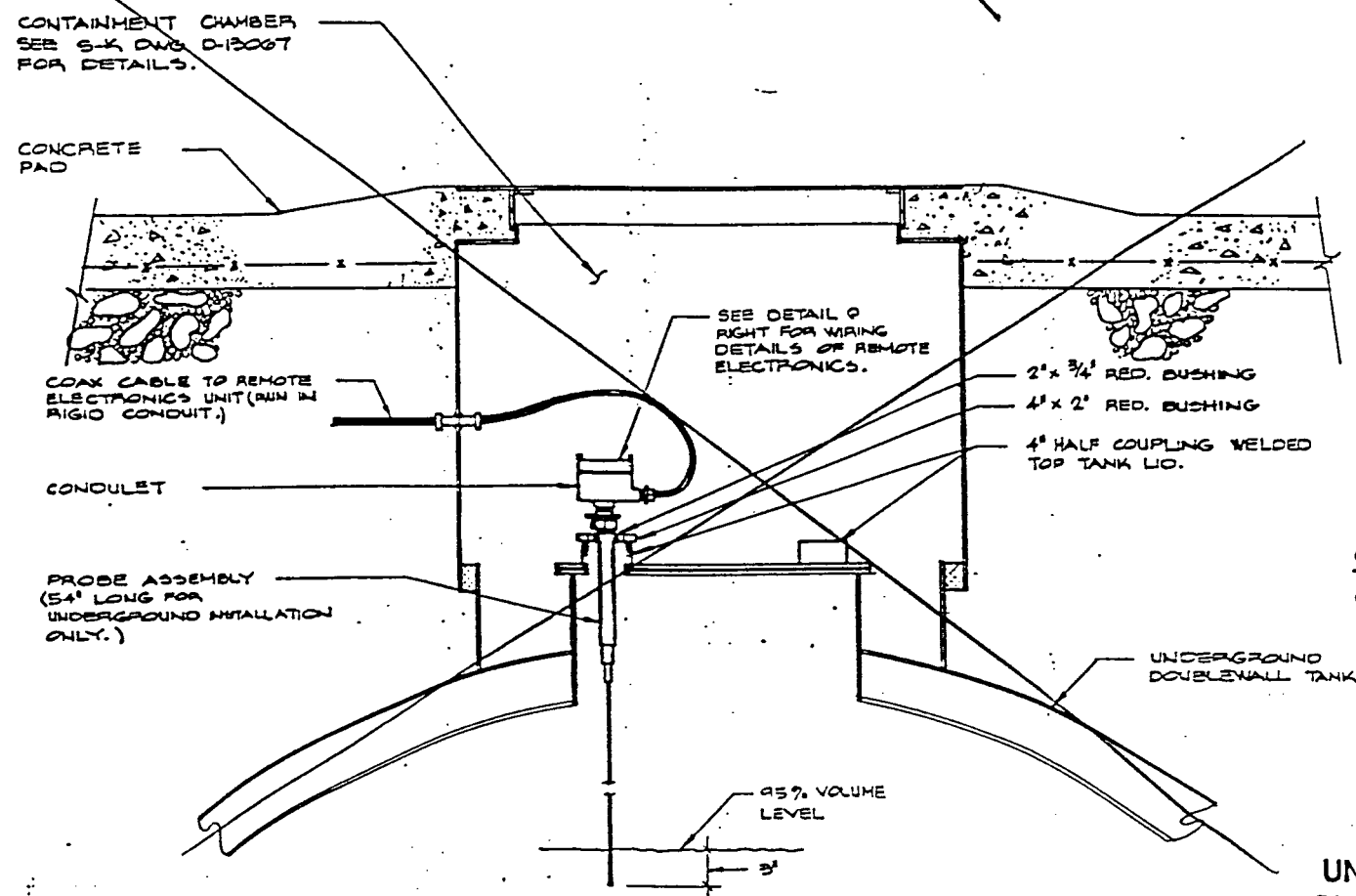
1. POWER REQUIREMENT IS TO 24 VDC
2. OUTPUT - 10 W (ALARM STATE)  
15 W (NORMAL STATE)
3. OPERATING TEMP. -40°F TO +140°F
4. SHIELD-TO-GROUND LEADING:  
25 OHM MAX. RESISTANCE
5. LIFE EXPECT: LESS THAN 2 YR. SECT  
IN OPERATING POINT FOR UNIT IN  
EXPLOSION-PROOF HOUSING FROM 5 V  
FIELD 1 BY 150, OR 450 W, AT A  
DISTANCE OF 5 FT. FROM EXPOSED  
CABLE OR SIGNAL WIRE.
6. FAIL-SAFE: SWITCHABLE ON EITHER  
LOW-LEVEL FAIL-SAFE (LLFS) OR  
HIGH-LEVEL FAIL-SAFE (HLFS).
7. HOUSING: RMA 12-WATERPROOF  
EXPLOSION PROOF FOR CLASS I GROUPS  
A, B, C, D, AND CLASS II GROUPS E, F, G,  
DIV. 1 OR 2.
8. SEE INDIVIDUAL SERVICE CENTER SITE PLANS  
FOR RELATIVE LOCATIONS OF THESE DETAILS.
9. CONTRACTOR TO SUPPLY & INSTALL CONDUIT  
SUPPORTS & BRACKETS AS REQUIRED.
10. THIS DRAWING CONTAINS INFORMATION  
PROPRIETARY TO SAFETY-KLEEN CORP. ANY  
REPRODUCTION, DISCLOSURE OR USE OF THIS  
DRAWING IS EXPRESSLY PROHIBITED BY  
SAFETY-KLEEN.
11. ALL ITEMS SHOWN WITH A SAFETY-KLEEN PART  
NUMBER WILL BE SUPPLIED BY SAFETY-KLEEN  
CORP. (E.G. SK-11111)
12. IF INDIVIDUAL SERVICE CENTER CONDITIONS  
ARE NOT COVERED BY DETAILS SHOWN HERE,  
PLEASE CONTACT TECHNICAL SERVICES AT THE  
CORPORATE OFFICE FOR ASSISTANCE.
13. CALCULATIONS FOR LENGTH OF PROBE INSIDE  
OF TANK ARE SET TO ACTIVATE THE ALARM  
AT THE 95% VOLUME LEVEL.
14. ALL CALIBRATION OF UNIT SHALL BE DONE  
IN ACCORDANCE WITH OXYGEN-BROOKS  
RECOMMENDATIONS. CALIBRATION SHALL  
BE DONE AFTER ALL COMPONENTS OF  
SYSTEM ARE IN PLACE.
15. ALL TANKS SHALL BE GROUNDED PRIOR  
TO INSTALLATION OF ALARM SYSTEM.



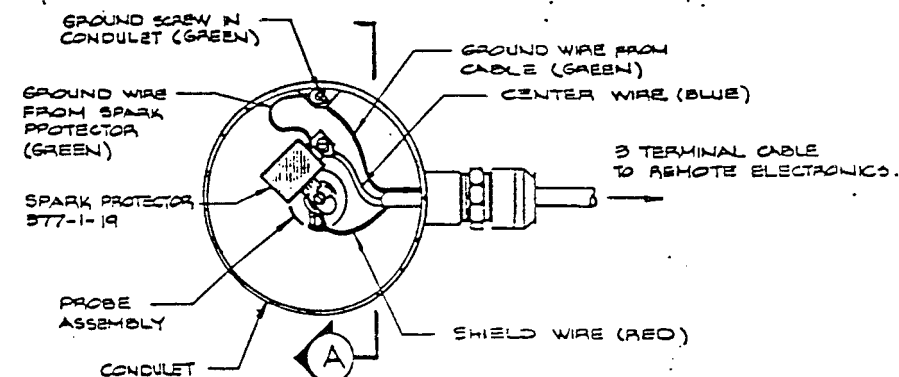
ABOVEGROUND VERTICAL TANK INSTALLATION



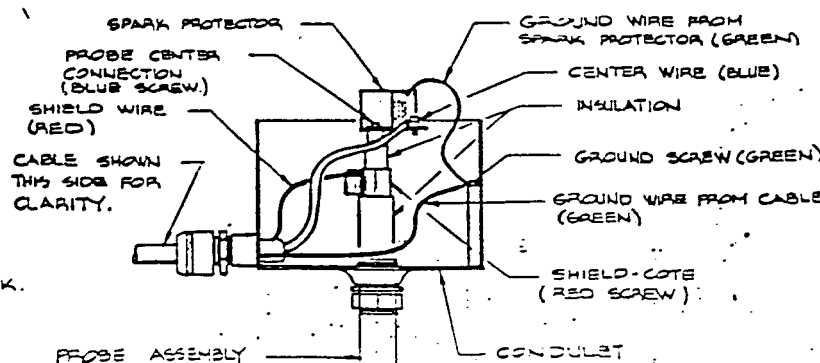
ABOVEGROUND HORIZONTAL TANK INSTALLATION



UNDERGROUND TANK INSTALLATION



WIRING DETAIL  
PLAN VIEW

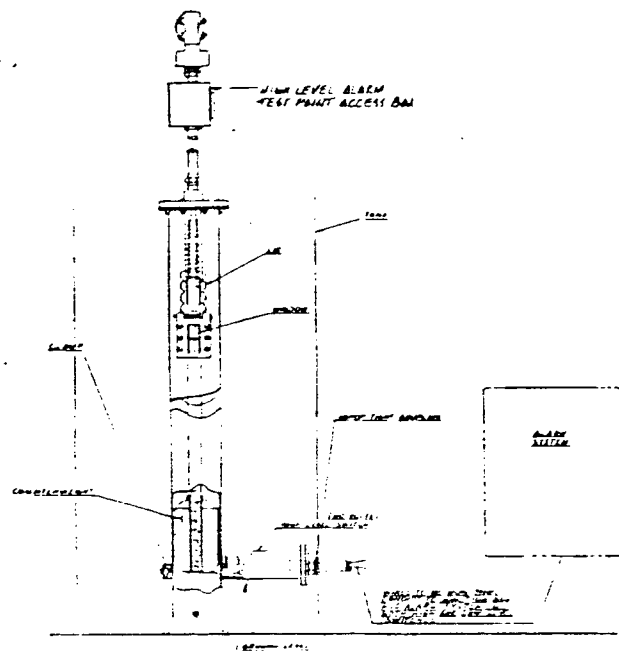


SECTION A

## NOTE:

WORK THIS DWG. WITH SK DWGS  
D-13929 AND D-14218

REVIEW UNDERGROUND INSTALLATION ADD TO DETAILS & CHANGE NO. 10	20	11-14-82
ADD TO DETAILS & CHANGE NO. 11	MA	7-20-83
ON VERT. & HOR. TANK INSTALLATION	PLB	11-20-81
ADD EXPLOSION PROOF SEAL OFF NOTE	PLB	11-20-81
CHANGE: PROBE DEPTH, NOTE 13	PLB	11-20-81
<b>Safety-Kleen Corp.</b> 1711 BO TOWER ROAD • BLOOMINGDALE, ILL. 60010 PHONE 708/417-4100		
HIGH LEVEL ALARM SYSTEM TRANSMITTER TO TANK INSTALLATION DETAILS		
NONE		
6-22-83	1/2" 5000' CABLE 1 HAZ. 1/2"	25-11-83
20	1/2" 9' WAS 18" 24" WAS 18"	25-11-83
	1/2" 1000' SEAL OFF	18-11-83
FOR SERVICE CENTER BRANCH		D13102

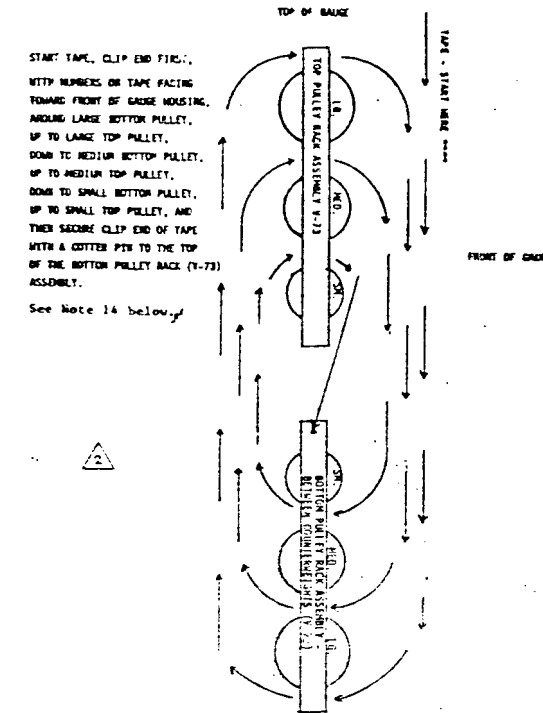


MODEL 7-S OR 9-S GAUGES

HIGH LEVEL ALARM PACKAGE  
SUPPLIED BY SAFETY-KLEEN  
P.O. BOX 100  
RUSHVILLE, INDIANA 46183

HIGH LEVEL ALARM INSTALLATION

- POSITION OF TANK GAUGE ENTRY ON THE VERTICAL SIDE
1. DETERMINE THE EXACT POINT OF TANK ENTRY ON THE SIDE.
  2. CONSIDER THE EXACT SIZE AND LOCATION OF ENTRY ON THE SIDE.
  3. DETERMINE THE EXACT POINT OF TANK ENTRY ON THE SIDE.
  4. CONSIDER THE EXACT SIZE AND LOCATION OF ENTRY ON THE SIDE.
  5. DETERMINE THE EXACT POINT OF TANK ENTRY ON THE SIDE.



ENLARGED DETAIL SHOWING HOW TAPES IS WOUND ON PULLEY RACK ASSEMBLY OF MOORMANN MODEL 7-S.  
CUT OFF EXCESS TAPES AT FLOAT.

INSTALLATION INSTRUCTIONS - MODEL 7-S

1. Locate gauge position on ground - mark top edge of tank directly above ground location.
2. Measure, cut and thread 2" pipe (see manual on print).
3. Use pipe dope on all connections.
4. Assemble both A-30 elbows and 2" pipe as shown on print.
5. Screw (1) elbow A-30 onto 2" pipe with reducing bushing, close nipple and union as shown on print; other A-30 elbow onto 2" nipple in tank then screw other end of 2" pipe into tank elbow, make straight with tank marking.
6. Level 2" pipe, use temporary wood brace or alignment flange, if necessary.
7. Set gauge housing with eccentric cap assembled on ground directly below overhanging elbow.
8. Measure, for 1" pipe reducing bushing in elbow to eccentric cap V-71 on gauge housing) allow for threads, cut and thread 1" pipe.
9. Screw 1" pipe into elbow, then remove V-71 eccentric cap from housing and put on 1" pipe. CAUTION - Be sure eccentric cap is straight and 1" outlet is farthest away from tank.
10. Fasten pulley rack with large pulley up to eccentric cap using stainless steel pin.
11. Assemble other pulley rack in counterweights with large pulley down.
12. Place counterweights on ground directly beneath eccentric cap pulley rack.
13. Remove A-33 caps from both elbows.
14. Thread tape from tank elbow with numbers up and clip ends first through 2" pipe and over elbow pulleys down through 1" pipe and out eccentric cap, straight down and around bottom pulley in C/W and up and over top pulley in eccentric cap, down to medium pulley up and over medium pulley, down and around small pulley on C/W and up and around small pulley on eccentric cap, down and fasten to lug on counterweight pulley rack-use stainless steel pin. CAUTION-Do not thread tape over or under cross bars in pulley rack. Use caution-do not kink or bend tape.
15. Fasten tape to float with tape clamp (see per print) CAUTION - Do not kink tape clamp too tight as this may damage tape.
16. Place eccentric cap gasket on housing top and insert counterweight assembly into housing. CAUTION - Do not allow C/W to drop or rest as this may cause damage to bearings, also be sure the tape is in groove of pulleys and not on the edge.
17. Fasten housing to eccentric cap with observation window directly below 1" pipe.
18. Place outside strand of tape over tape guide in observation window. CAUTION - Do not bend or kink tape, and put ONLY ONE (1) strand of tape over the tape guide.
19. If tank is empty, adjust tape reading at 1-3/8" (float draft) If it is partially full see reading exactly with stick, make mark; tape reading - adjustments with the float by slipping tape through tape clasp. Minor adjustments (within 1" make with observation finger).
20. In setting the reading on the gauge, 1/4", 1/2" or over 1/8" is not close enough, be particular, set gauge to the exact amount of liquid in tank.
21. CAUTION - Let float down in tank easily. Do not let it drop.
22. Assemble observation frame and lid A-34-A-38 place on housing, tighten for vapor-proofing.
23. Fix base for housing either, concrete, wood post, or steel plate welded to tank. CAUTION - Do not weld gauge housing to tank.
24. In most cases, condensation forms inside the tank and gauge. A drain plug has been provided for draining at the bottom of housing. In most cases this is necessary 2 times a year (spring & fall), however, in extreme cases draining is required more often.

GENERAL NOTES

1. TANK GAUGE ASSEMBLY SUPPLIED BY SAFETY-KLEEN CORP.
2. SEE INDIVIDUAL SERVICE CENTER SITE PLANS FOR LOCATION OF THE INSTALLATION.
3. GAUGE MUST BE ORDERED WITH THE PERFORATED TAPE FOR FUTURE REMOTE READ-OUT SYSTEM.
4. HIGH/LOW LEVEL ALARM SWITCH INFORMATION, MATERIAL LIST & INSTALLATION INSTRUCTIONS INCORPORATED ONTO DRAWING.
5. IF REQUIRED, ADDITIONAL VERBAL INSTALLATION INSTRUCTIONS CAN BE OBTAINED BY CALLING MOORMANN BROS. MFG. CO., RUSHVILLE, INDIANA - (317) 952-3590 - ASK FOR: BOB GAINES OR JIM RAVENCRAFT

MATERIAL LIST  
Model 7-S

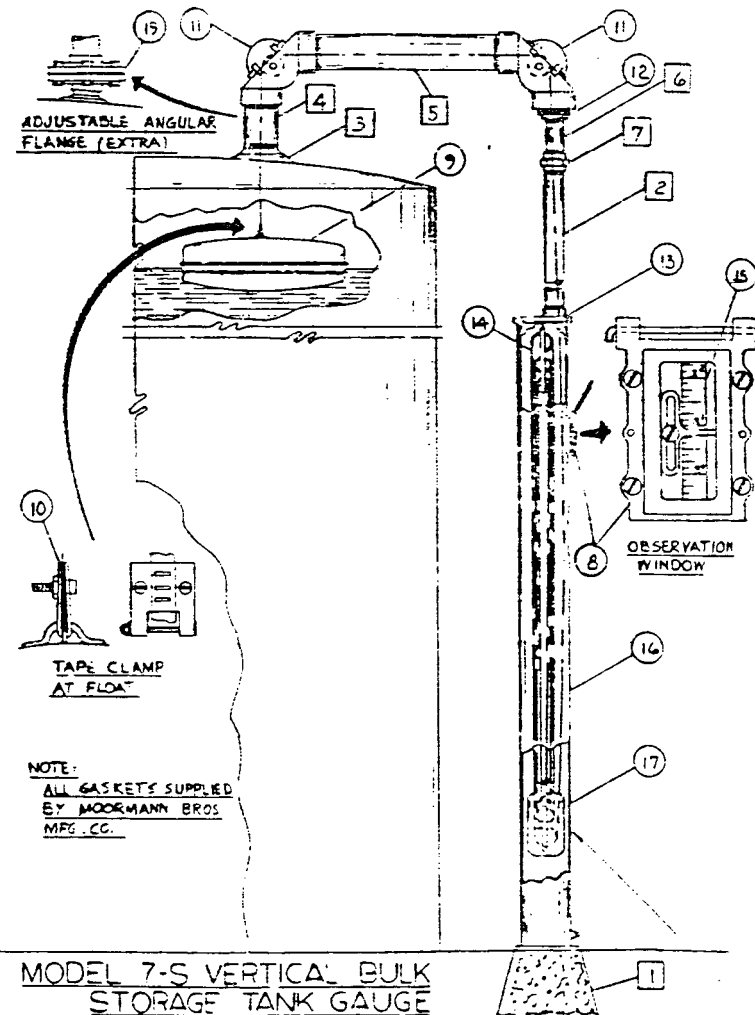
For All Vertical Tanks Up To & Including 35'

Material Supplied by CONTRACTOR

1. Gauge housing Base Support
2. 1" Galvanized Pipe (cut to length).
3. Tank Roof Flange.
4. 2" Tank Opening Pipe.
5. 2" Galvanized Pipe (cut to length).
6. 1" Galvanized Nipple (any length).
7. 1" Galvanized Union.

Material Supplied by Moormann Bros. (SAFETY-KLEEN)

PART NAME	PART No.	QUANTITY Per Unit
8. Observation Window Assembly	A-34-A-38	1
9. Float	V-75	1
10. Stainless Steel Tape Clamp & Screws	V-93	1
11. Elbow Assembly Complete	A-30, A-32	2
12. 2" to 1" Reducing Bushing	V-71	1
13. Eccentric Cap Complete with Nuts & Bolts	V-73	2
14. Pulley Rack Assembly	V-49	1
15. Luffin Stainless Steel High Visibility Tape	V-77	1
16. Rust-Proofed Steel Gauge housing	V-72	2
17. Counterweight	V-72	2
18. Condensation Drain Plug	V-72	1
Frame & Lid Assembly for Observation Window	A-34, A-38	1
Gaskets - Set for Observation Window	V-81, V-82	1
Gasket - Elbow Cap	V-83	2
Gasket - V-71 Eccentric Cap	V-84	1
Glass - Window	V-86	1
Stainless Steel Indicator Finger for Observation Window	V-94	1
Wire Pin - Stainless Steel	V-96	5



MODEL 7-S VERTICAL BULK STORAGE TANK GAUGE

REV	DESCRIPTION	DATE
1	ADDED TANK GAUGE INFO	10/1/82
2	ADDED TANK GAUGE INFO	10/1/82
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SAFETY-KLEEN CORP.

MOORMANN BROS. TANK GAUGE INSTALLATION

For Service Center Branch Improvement &/or Construction

AT0243

# Sikagard® 62

High-Build Protective Coating

## Technical Data



<b>Description:</b>	Sikagard 62 is a 2-component, solvent-free, high-solids, moisture-insensitive epoxy resin. It produces a high-build, protective, dampproofing, and waterproofing vapor-barrier system. Sikagard 62 conforms to ASTM C-881, Type I and IV, Grade 2, epoxy resin.
<b>Where To Use:</b>	Use as a high-build, corrosion-resistant, protective coating, or as a seamless flooring system on dry and can't-dry substrates.
<b>Advantages:</b>	<ul style="list-style-type: none"><li>● Protects dry and can't-dry substrates.</li><li>● Exceptional tensile strength.</li><li>● Good chemical resistance for long-term protection.</li><li>● Convenient B:A = 1:1 mixing ratio.</li><li>● Easy, paint-like viscosity.</li><li>● Durable, smooth finish permits wipe-off graffiti-removal.</li><li>● Available in 3 standard colors; gray, red, and tan. Special color matches available upon request.</li><li>● Excellent bonding to all common structural substrates.</li><li>● Super abrasion resistance for long-term wear.</li><li>● Sikagard 62, Gray, after cure, is approved for contact with potable water.</li><li>● All colors are USDA-approved for use in food plants.</li></ul>
<b>Coverage:</b>	225-400 sq ft/gal (4-7 mils)
<b>Packaging:</b>	4-gal units; 1-qt units, 12/case.

**Typical Data for Sikagard 62:**

(Material and curing conditions @ 73F and 50% R.H.)

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**Shelf Life:** 2 years in original, unopened containers.
 

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**Storage Conditions:** Store dry at 40-95F. Condition material to 65-85F before using.
 

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**Color:** Gray, red, tan.
 

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**Mixing Ratio:** Component 'A' : Component 'B' = 1:1 by volume.
 

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**Viscosity:** Approx 2,700 cps.
 

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**Pot Life:** Approx 35 min.
 

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**Application Life:** 20-25 minutes.
 

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**Tack-Free Time:** Approx 4 hr.
 

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**Open Time:** Light foot traffic - 5-7 hr.  
Rubber-wheel traffic - 8-10 hr.
 

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**Immersion and  
chemical exposure:** 3 days
 

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**Tensile Properties (ASTM D-638):**


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14 day	Tensile Strength	6,400 psi
	Elongation at Break	2.7 %

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**Abrasion (Taber Abrader):**


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7 day	Weight loss, 1,000 cycles (H-22 wheel, 1,000-gm weight)	0.61 gm
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**Abrasion Resistance (ASTM D-968):**


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14 day	Abrasion Coefficient	51 liters/mil
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**Adhesion (ASTM D-3359):**


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1 day	Adhesion Classification	4A
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**Water Absorption (ASTM D-570):**


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7 day	Total Water Absorption (2-hour boil)	0.9%
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**Limitations:**

- Minimum substrate temperature for application 50F.
- Do not apply over wet, glistening surface.
- Material is a vapor barrier after cure.
- Do not apply to surfaces where vapor can condense and freeze.
- Do not encapsulate saturated concrete in areas of freezing and thawing.
- Do not apply to porous surfaces exhibiting moisture-vapor transmission during application. Consult Technical Service.
- Minimum age of concrete prior to application is 21-28 days, depending on curing and drying conditions.
- Do not apply to exterior substrate on-grade. . .epoxy resin coatings will weather and chalk upon exposure to sunlight.
- For spray applications only, thin with Sika Epoxy Thinner at 5% by volume. Thin only when required.

**Caution:**

**Component 'A' - Irritant** - Contains epoxy resins. Prolonged contact with skin may cause irritation. Avoid eye contact.

**Component 'B' - Corrosive** - Contains amines. Contact with skin may cause severe burns. Avoid eye contact.

Product is a strong sensitizer. Use of safety goggles and chemical-resistant gloves recommended. Remove contaminated clothing. Avoid breathing vapors. Use adequate ventilation. Use of a NIOSH/MSA organic vapor respirator recommended.

**First Aid:**

In case of skin contact, wash thoroughly with soap and water. For eye contact, flush immediately with plenty of water for at least 15 minutes; contact physician immediately. For respiratory problems, remove person to fresh air. Wash clothing before re-use.

**Clean Up:**

Ventilate area. Confine spill. Collect with absorbent material, flush area with water. Dispose of in accordance with current, applicable local, state, and federal regulations. Uncured material can be removed with approved solvent. Cured material can only be removed mechanically.

**KEEP CONTAINER TIGHTLY CLOSED  
NOT FOR INTERNAL CONSUMPTION**

**KEEP OUT OF REACH OF CHILDREN  
FOR INDUSTRIAL USE ONLY**

**CONSULT MATERIAL SAFETY DATA SHEET FOR MORE INFORMATION**

\*SIKA WARRANTS ITS PRODUCTS TO BE FREE OF MANUFACTURING DEFECTS AND THAT THEY WILL MEET SIKA'S CURRENT PUBLISHED PHYSICAL PROPERTIES WHEN APPLIED IN ACCORDANCE WITH SIKA'S DIRECTIONS AND TESTED IN ACCORDANCE WITH ASTM AND SIKA STANDARDS. THERE ARE NO OTHER WARRANTIES BY SIKA OF ANY NATURE WHATSOEVER, EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE IN CONNECTION WITH THIS PRODUCT. SIKA CORPORATION SHALL NOT BE LIABLE FOR DAMAGES OF ANY SORT, INCLUDING REMOTE OR CONSEQUENTIAL DAMAGES, RESULTING FROM ANY CLAIMED BREACH OF ANY WARRANTY, WHETHER EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR FROM ANY OTHER CAUSE WHATSOEVER. SIKA SHALL ALSO NOT BE RESPONSIBLE FOR USE OF THIS PRODUCT IN A MANNER TO INFRINGE ON ANY PATENT HELD BY OTHERS.

**Executive Office:** P.O. Box 297, Lyndhurst, NJ 07071 - Tel 201-933-8800 - FAX 201-933-9379

**Regional\* and District Sales Offices**

AL .....	404-761-7143	MA, Boston .....	617-247-3922	PA, Carnegie .....	412-279-1176
CA, San Diego .....	619-741-9291	MD, Baltimore .....	301-583-1861	PA, King of Prussia .....	215-783-5604
*CA, Santa Fe Springs .....	213-941-0231	*MI, Southfield .....	313-354-6555	SC, Spartanburg .....	803-573-8867
CA, Union City .....	415-487-2294	MN, Anoka .....	612-427-1652	TN .....	404-761-7143
CO, Denver .....	303-458-7452	MO, Kansas City .....	816-921-1022	TX, Greenville .....	214-454-6030
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FL, Ft. Lauderdale .....	305-583-2725	*NJ, Lyndhurst .....	201-933-8800	TX, Plano .....	214-424-7744
*FL, Tampa .....	813-933-5259	NY, Albany .....	518-452-7453	VA, Midlothian .....	804-379-9843
GA, Atlanta .....	404-761-7143	NC .....	803-581-0223	VT, Montpelier .....	802-229-4905
IL, St. Charles .....	708-513-0570	OH, Brooklyn Heights .....	216-749-7225	WA, Seattle .....	206-762-3829
IN, Indianapolis .....	317-843-0274	*OH, Columbus .....	614-476-3335	WI, Milwaukee .....	414-272-3100

**Export Division**

NJ, Lyndhurst ..... 201-933-8800

Telefax ..... 201-804-1020

June, 1990



**Chemical Resistance:**

Specimen: Two coats- 10 mils

Cured 10 days

Substrate: asbestos cement

CHEMICAL	TEST TEMP.	STORAGE TIME AND EVALUATION				
		1 Day	1 Month	2 Months	6 Months	12 Months
Water	75F 100F 140F	A A A	A A A	A A A	A A A, D	A A A, D
Sodium Chloride Solution (Saturated)	75F 100F	A A	A A	A A	A A	A A
Sodium Hydroxide 30%	75F	A	A	A	A	A
Cement Water (Saturated)	75F	A	A	A	A	A
Detergent Solution (5% Ajax)	75F 140F	A A	A A	A A	A A, D	A A, D
Hydrochloric Acid 10%	75F	A	A	A	A	A
Sulfuric Acid 10%	75F	A	A	A	B	B
Oxalic Acid 10%	75F	A	A, D	A, D	A, D	A, D
Citric Acid 10%	75F	A	A, D	A, D	A, D	A, D
Fuel Oil (Home Heating)	75F	A	A	A	A	A, D
Gasoline (Unleaded)	75F	A	A	A	A	A, D
Iso-Octane	75F	A	A	A	A	A, D
Toluol	75F	A	A	A	A	A, D
Silage	75F	A	A	A, D	A, D	B, D
Synthetic Silage	75F	A	A	B, D	B, D	B, D
Liquid Manure	75F	A	A	A	A	A, D
Ethyl Alcohol	75F	A	C	—	—	—

A: Resistant in permanent contact  
B: Temporary resistance

C: Destroyed  
D: Discolored

## How To Use

**Surface Preparation:** Surface must be clean and sound. It may be dry or damp, but free of standing water. Remove dust, laitance, grease, curing compounds, impregnations, waxes, foreign particles, and disintegrated materials.

**Preparation Work: Concrete** - Sandblast or use other approved mechanical means.

**Steel** - Sandblast to white-metal finish.

**Mixing:** Pre-mix each component. Proportion equal parts by volume of Component 'A' and Component 'B' into a clean mixing container. Mix with a low-speed (400- 600-rpm) drill and Sika paddle for 3 minutes, until uniform in color.  
Mix only that quantity that can be used within its application life.

**Application:** Apply coating using high-quality rollers or brushes, or spray. Two coats are recommended. Apply second coat as soon as the first coat is tack-free and the traffic of application will not damage the first coat. The second coat, however, **must** be applied within 48 hours since a longer delay will require additional surface preparation.  
For slip-resistance, add approximately ½ lb/gal of Sikagard 62 Granules to the mixed material and apply as first coat. Saturate roller or brush with material and apply first to a disposable cardboard or other surface to distribute the granules evenly on the equipment.  
**Do not** spray with Sikagard 62 Granules in the coating. When spraying, use the following or similar equipment: Binks Model #18 Air Atomized Spray Gun (#68 fluid nozzle, #68 PB air nozzle, #68 fluid needle, #83-5661, 2-gal pressure fluid tank).  
For Sikagard 62 Flooring System information consult your Technical Data Sheet or call Technical Service.

# Sikaflex<sup>®</sup>-1a

Elastomeric sealant/adhesive

## Technical Data



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<b>Description:</b>	Sikaflex-1a is a premium-grade, high-performance, moisture-cured, 1-component, polyurethane-base, non-sag elastomeric sealant.
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<b>Where to Use:</b>	<ul style="list-style-type: none"><li>● Designed for all types of joints where maximum depth of sealant will not exceed ½ in.</li><li>● Excellent for small joints and fillets...windows, door frames, reglets, flashing, and many construction adhesive applications.</li><li>● Suitable for vertical and horizontal joints; readily placeable at 40F.</li><li>● Has many applications as an elastic adhesive between materials with dissimilar coefficients of expansion.</li></ul>
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<b>Advantages:</b>	<ul style="list-style-type: none"><li>● Easy, low-cost, ready to use.</li><li>● Eliminates time, effort, and equipment for mixing, filling cartridges, pre-heating or thawing, and cleaning of equipment.</li><li>● High elasticity - cures to a tough, durable, flexible consistency with exceptional cut- and tear-resistance.</li><li>● Excellent adhesion - bonds to most construction materials...without primer in most cases.</li><li>● Long life.</li><li>● Excellent resistance to aging, weathering.</li><li>● Proven in tough climates around the world.</li><li>● USDA-approved: chemically acceptable to the U.S. Department of Agriculture for use in meat and poultry processing area.</li><li>● Odorless, non-staining.</li><li>● Paintable with water-, oil-, and rubber-base paints.</li><li>● Jet fuel resistant.</li><li>● Meets Federal Specification TT-S-00230C, Type II, Class A.</li><li>● Meets ASTM C-920, Type S, Grade NS, Class 25.</li><li>● Meets Canadian Standard 19-GP-16A, Type II.</li><li>● EPA-approved for potable-water contact.</li><li>● Urethane-based, suggested by EPA for radon reduction.</li></ul>
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<b>Coverage:</b>	10.3-fl-oz cartridge seals 12.4 lineal ft of ½- x ¼-in. joint. 20-fl-oz uni-pac sausage seals 24 lineal ft of ½- x ¼-in. joint.
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<b>Packaging:</b>	Disposable 10.3-fl-oz, moisture-proof composite cartridges, 24/case, and uni-pac sausages, 20-fl-oz, 20/carton; Available on special order 1.8- and 4.5-gal pails, 50-gal drums, and 10.3-fl-oz uni-pac sausages.
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**Typical Technical Data Sikaflex-1a:**

(Material and curing conditions 73F and 50% R.H.)

**Colors:** White, colonial white, aluminum gray, limestone, black, dark bronze, capitol tan. Special architectural colors on request.

<b>Shelf Life:</b>	10.3-fl-oz cartridges	12 months
	10.3- and 20-fl-oz uni-pac sausages	12 months
	1.8-gal pails	4 months
	4.5-gal pails	4 months
	50-gal drums	4 months

**Storage Conditions:** Store at 40-95F. Condition material to 65-85F before using.

**Application Temperature:** 40 to 100F. Sealant should be installed when joint is at mid-range of its anticipated movement.

**Service Range:** -40 to 167F

<b>Curing Rate:</b>	Tack-free Time	6 to 8 hours (TT-S-00230C)
	Tack-free to touch	3 hours
	Final cure	5 to 8 days

**Recovery** >90%

**Shore A Hardness (ASTM D-2240):**  
21 day 40± 5

**Tensile Properties (ASTM D-412):**

21 day	Tensile Stress	140 psi
	Elongation at Break	700%
	Modulus of Elasticity 25%	40 psi
	50%	60 psi
	100%	80 psi

**Lap-Shear Strength (ASTM D-1002), modified, glass substrate**

21 day	50F	120 psi
	73F	125 psi
	122F	125 psi

**Adhesion in Peel (TT-S-00230C):**

Substrate	Peel Strength	Adhesion Loss
Aluminum	25 lb	10%
Glass	20 lb	5%
Concrete	20 lb	0%

**Weathering Resistance:** Excellent

**Ozone Resistance:** Exceptional

**Chemical Resistance:** Good resistance to water, diluted acids, and diluted alkalines. Consult Technical Service for specific data.

**Radon Reduction:** Approximately 97% reduction in radon. Independent laboratory evaluation. Actual results available upon request, consult Technical Service.

**Caution:**

**FHSLA Toxicity Test  
(16 CFR 1500)**

Primary skin irritant  
Eye irritant  
Acute oral toxicity  
Acute inhalation  
Acute dermal toxicity

**FHSLA Toxicity  
Category**

Skin irritant  
Eye irritant  
Non-toxic orally  
Not toxic by inhalation  
Not toxic dermally

**Combustible:** Keep away from open flames and high heat. Contains xylene; avoid breathing vapors. Use with adequate ventilation.

**Irritant:** Avoid skin and eye contact. Use of NIOSH/MSA approved organic vapor respirator, safety goggles, and chemical-resistant gloves recommended. Remove contaminated clothing and shoes.

**First Aid:** In case of skin contact, wash thoroughly with soap and water. For eye contact, flush immediately with plenty of water for at least 15 minutes; contact physician. Wash clothing before re-use. Discard contaminated shoes.

**Clean Up:** Uncured material can be removed with approved solvent. Cured material can only be removed mechanically. For spillage, collect, absorb, and dispose of in accordance with applicable local, state, and federal regulations.

**KEEP CONTAINER TIGHTLY CLOSED  
NOT FOR INTERNAL CONSUMPTION**

**KEEP OUT OF REACH OF CHILDREN  
FOR INDUSTRIAL USE ONLY**

**CONSULT MATERIAL SAFETY DATA SHEET FOR MORE INFORMATION**

SIKA WARRANTS ITS PRODUCTS TO BE FREE OF MANUFACTURING DEFECTS AND THAT THEY WILL MEET SIKA'S CURRENT PUBLISHED PHYSICAL PROPERTIES WHEN APPLIED IN ACCORDANCE WITH SIKA'S DIRECTIONS AND TESTED IN ACCORDANCE WITH ASTM AND SIKA STANDARDS. THERE ARE NO OTHER WARRANTIES BY SIKA OF ANY NATURE WHATSOEVER, EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE IN CONNECTION WITH THIS PRODUCT. SIKA CORPORATION SHALL NOT BE LIABLE FOR DAMAGES OF ANY SORT, INCLUDING REMOTE OR CONSEQUENTIAL DAMAGES, RESULTING FROM ANY CLAIMED BREACH OF ANY WARRANTY, WHETHER EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR FROM ANY OTHER CAUSE WHATSOEVER. SIKA SHALL ALSO NOT BE RESPONSIBLE FOR USE OF THIS PRODUCT IN A MANNER TO INFRINGE ON ANY PATENT HELD BY OTHERS.

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**Export Division**

NJ, Lyndhurst ..... 201-933-8800

Telefax ..... 201-804-1020

March, 1990



## How To Use

<b>Surface Preparation:</b>	Clean all surfaces. Joint walls must be sound, clean, dry, frost-free, and free of oil and grease. Curing compound residues and any other foreign matter must be thoroughly removed. Install bond breaker tape or backer rod to prevent bond at base of joint.
<b>Priming:</b>	Priming is not usually necessary. Most substrates only require priming if testing indicates a need or where sealant will be subjected to water submersion after cure. Consult Sikaflex Primer Technical Data Sheet or Technical Service for additional information on priming.
<b>Application:</b>	Recommended application temperatures: 40-100F. For cold weather application, store units at approximately 70F; remove just prior to using. For best performance, Sikaflex-1a should be gunned into joint when joint slot is at mid-point of its designed expansion and contraction. Place nozzle of gun into bottom of the joint and fill entire joint. Keep the nozzle in the sealant, continue on with a steady flow of sealant preceding the nozzle to avoid air entrapment. Avoid overlapping of sealant to eliminate entrapment of air. Tool as required. For use in horizontal joints in traffic areas, the absolute minimum depth of the sealant is ½ in. and closed cell backer rod is recommended over open cell to offer greater support.
<b>Limitations:</b>	<ul style="list-style-type: none"><li>● Allow 1-week cure at standard conditions when using Sikaflex-1a in total water-immersion situations.</li><li>● Avoid exposure to high levels of chlorine.</li><li>● Maximum depth of sealant must not exceed ½ in.; minimum depth is ¼ in.</li><li>● Maximum expansion and contraction should not exceed 25% of average joint width.</li><li>● Do not cure in the presence of curing silicone sealants.</li><li>● Avoid contact with alcohol, and other solvent cleaners, during cure.</li><li>● Do not apply when moisture-vapor-transmission condition exists, from the substrate, as this can cause bubbling within the sealant.</li><li>● Use opened cartridges and uni-pac sausages the same day.</li><li>● When applying sealant, avoid air-entrapment.</li><li>● Since system is moisture-cured, permit sufficient exposure to air.</li><li>● White color tends to yellow slightly when exposed to ultra-violet rays.</li><li>● The ultimate performance of Sikaflex-1a depends on good joint design and proper application with joint surfaces properly prepared.</li><li>● Minimum depth of sealant in horizontal joints subject to traffic is ½ in.</li></ul>

APPENDIX B  
Design Review Documentation

APPENDIX B  
Design Review Documentation

TABLE OF CONTENTS

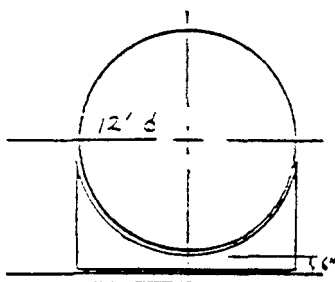
<u>Title</u>	<u>Page No.</u>
Tank Seismic Response Calculation - 20K Tank . . . . .	B- 1
Gravity Load Calculation - 20K Tank . . . . .	B- 2
Containment Wall Strength . . . . .	B- 6
Containment Volume Calculation . . . . .	B- 7
Venting Calculation - 20K Tank . . . . .	B- 8
Piping System Review (Used Antifreeze) . . . . .	B- 9
NFPA 30 - Piping, Valves and Fittings Compliance Checklist . .	B-10

Seismic Analysis, 20k Tank  
S-K, Boynton Beach, FL  
By: BMW Date: 11/7/91

TERA, Inc.

Job No.: 91-206-1  
File: Calculation  
Sheet: 1 of 1

- Ref.: 1. ASCE 7-88, Sec. 9, Zone 0  
2. Gravity Loads



Base Shear:

$$Z := 0.125 \quad (\text{ref. 1})$$

$$I := 1.0 \quad (\text{ref. 1})$$

$$K := 2.0 \quad (\text{ref. 1})$$

$$CS := 0.14 \quad (\text{ref. 1})$$

$$Wtc = 192451.018 \quad (\text{ref. 2})$$

$$V := Z \cdot I \cdot K \cdot CS \cdot Wtc \quad (\text{ref. 1})$$

$$V = 6735.786 \quad \text{lb}$$

$$h2 := 12.5 \text{ ft}, \quad D = 12 \text{ ft}$$

Overturning Moment:

$$Mo := V \cdot \left[ \frac{h2}{2} \right] \quad \text{--->} \quad Mo = 42098.66 \quad \text{ft-lb}$$

Righting Moment of Tank:

$$Mr := Wtc \cdot \left[ \frac{D}{2} \right] \quad Mr = 1.155 \cdot 10^6 \quad \text{ft-lb}$$

$$Mr > Mo \quad \text{----->} \quad \text{Ok}$$

Lateral Displacement:

Coefficient Of Friction Necessary For Displacement To Occur,

$$f := \frac{V}{Wtc} \quad \text{----->} \quad f = 0.035 \quad f < 0.29 \quad \text{Ok}$$

NO ANCHORAGE REQUIRED FOR SEISMIC LOAD CONDITIONS

Gravity Loads, 20k Tank  
S-K, Boynton Beach, FL  
By: BMW Date: 11/6/91

TERA, Inc.

Job No.: 91-208-1  
File: Foundation  
Sheet: 1 of 4

- Ref.: 1. S-K Dwg. No. D10570, Rev. 7, 9/12/83  
2. Tank Farm, Fig. II.C.2-1A, Branch Permit Documentation  
3. UL 142, Sections 5-8

Tank Self-Weight:  $D := 12 \text{ ft}$ ,  $t1 := 0.250 \text{ in}$ ,  $h1 := 4.0 \text{ ft}$   
 $w := 490 \text{ pcf}$ ,  $L := 24 \text{ ft}$

Head Weight,  $Wh := \frac{\pi}{4} \cdot D^2 \cdot \frac{t1}{12} \cdot w \cdot 2 \text{ ----> } Wh = 2309.071 \text{ lb}$   
(ref. 3)

Shell Weight,  $Ws := \pi \cdot D \cdot L \cdot \frac{t1}{12} \cdot w \text{ ----> } Ws = 9236.282 \text{ lb}$   
(ref. 3)

Weight of Saddles, (3 ea.):

Base Plates,  $Bp := \frac{8}{12} \cdot 12 \cdot \frac{0.5}{12} \cdot 3 \cdot w \text{ ----> } Bp = 490 \text{ lb}$

Saddle Plates,  $Sp := 1 \cdot 15.8 \cdot \frac{t1}{12} \cdot 3 \cdot w \text{ ----> } Sp = 483.875 \text{ lb}$

Side Plates,  $sp := \frac{8}{12} \cdot h1 \cdot \frac{t1}{12} \cdot 6 \cdot w \text{ ----> } sp = 163.333 \text{ lb}$

$W := Wh + Ws + Bp + Sp + sp \text{ ----> } W = 12682.561 \text{ lb}$

Misc. Fittings & Apprtnces @ 10%,  $Ms := 0.1 \cdot W \text{ ----> } Ms = 1268.256 \text{ lb}$

Tot. Tank Weight,  $Wt := W + Ms \text{ ----> } Wt = 13950.817 \text{ lb}$

Weight Of Contents:  $SG := 1.07$   $\Gamma := 62.4 \text{ pcf}$   
 $V := 20000 \text{ gal.}$ ,  $v := 7.481 \text{ gal/cu.ft.}$

$Wc := \frac{V}{v} \cdot \Gamma \cdot SG \text{ ----> } Wc = 178500.201 \text{ lb}$

Total Weight, Tank And Contents,  $Wtc := Wt + Wc$

$Wtc = 192451.018 \text{ lb}$

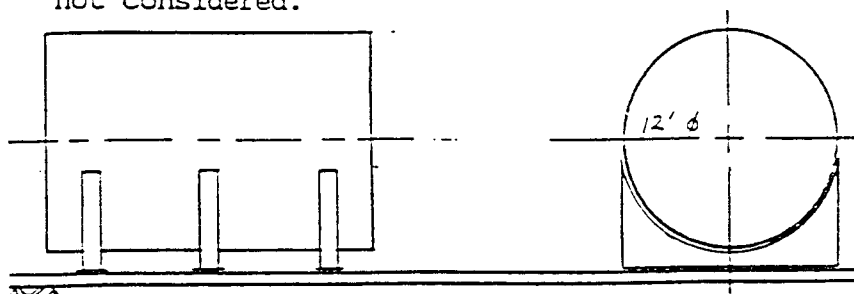
Support Strength, 20k Tank  
 S-K, Boynton Beach, FL  
 By: BMW Date: 11/7/91

TERA, Inc.

Job No.: 91-203-1  
 File: Foundation  
 Sheet: 2 of 4

- Ref.: 4. S-K Dwg. No. D11322, Rev. K, 7/27/89  
 5. ACI 318-89  
 6. Portland Cement Association Bulletin No. ISO29.02P

NOTE: Tank is in an enclosed containment area, therefore wind loads are not considered.



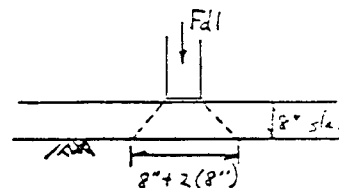
Check Strength Of Slab To Distribute Load:

$$W_t = 13950.817 \text{ lb}$$

$$W_c = 178500.201 \text{ lb}$$

Factored Dead Load,  $F_{dl} := 1.4 \cdot (W_t + W_c)$

$$F_{dl} = 269431.425 \text{ lb/ft}$$



Bearing On Concrete: (3 base plates 8" wide by 12' long)

$$\text{Bearing Area, } A_b := 3 \cdot \frac{8}{12} \cdot 12 \text{ ---> } A_b = 24 \text{ sq.ft.}$$

$$\text{Bearing Stress, } f_b := \frac{F_{dl}}{A_b \cdot 144} \text{ ---> } f_b = 77.96 \text{ psi}$$

For  $f_c := 3000 \text{ psi}$ , and  $\phi := 0.7$

$$f_{ba} := \phi \cdot 0.85 \cdot f_c \text{ ---> } f_{ba} = 1785 \text{ psi (ref. 5)}$$

$$f_{ba} > f_b \text{ ----> ok}$$



Support Strength, 20k Tank  
S-K, Boynton Beach, FL  
By: BMW Date: 11/7/91

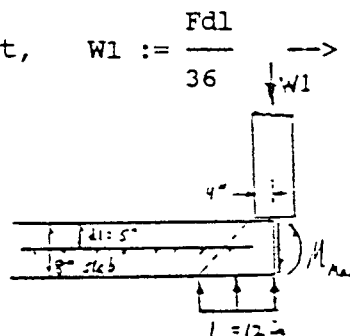
TERA, Inc.

Job No.: 91-208-1  
File: Foundation  
Sheet: 3 of 4

Check Bending:  $L := 12$  in., (assume load for one support is distributed equally over its length (12 ft.))

For A One Foot Length Of One Support,  $W1 := \frac{Fdl}{36}$  --> Weight Used For  
Maximum Moment Calc. Then Becomes:

$$W_{mm} := \frac{W1}{2}$$



Maximum Moment,  $M_m := W_{mm} \cdot \frac{L}{2}$  ---->  $M_m = 22452.619$  in-lb/ft

Calculate Ultimate Moment,  $M_u$ :

$\phi := 0.9$  (ref. 3)  $A_s := 0.30$  sq. in./ft (ref. 4)  
 $f_y := 60000$  psi  $b := 12$  in.  $d_l := 5$  in.

$\rho := \left[ \frac{A_s}{b \cdot d_l} \right]$   $\rho = 0.005$   $f_c := 3000$  psi

$A_c := 8 \cdot 12$  sq.in. -->  $\rho_1 := \frac{A_s}{A_c}$  ---->  $\rho_1 = 0.003$  ok

$M_u := \phi \cdot A_s \cdot f_y \cdot d_l \cdot \left[ 1 - \frac{0.59 \cdot \rho \cdot f_y}{f_c} \right]$  ---->  $M_u = 76221$  in-lb/ft

Check Soil Pressure In Above Model:

$\frac{W_{mm}}{2 \cdot L} \cdot 12 = 1871.052$  psf < 2500 psf, ok

$M_u > M_m$  -----> OK, Slab Will Distribute Load

Support Strength, 20k Tank  
 S-K, Boynton Beach, FL  
 By: BMW Date: 11/8/91

TERA, Inc.

Job No.: 91-208-1  
 File: Foundation  
 Sheet: 4 of 4

Check Subgrade Bearing:

Calculate Total Weight Resting On Soil:

Wtanks := 438314 lb (weight of other tanks & contents)

Wvault := 211738 lb (weight of containment vault)

Wt = 13950.817 lb (weight of waste E.G. tank)

Wc = 178500.201 lb (weight of waste E.G.)

Wb := 240425 lb (estimated weight of the building)

Ag := 72.333 · 31.417 (gross outside area of vault)

Ag = 2272.486 sq.ft.

Studies Conducted (See Ref. 6) Indicate That The Loads Listed Above Will Be Spread Over The Full Area Of The Containment Vault With Only Minor, Localized Bending In The Containment Slab. Based On This, Approximate Subgrade Bearing Is Taken To Be:

$$\text{Fac} := \frac{\text{Wtanks} + \text{Wvault} + \text{Wt} + \text{Wc} + \text{Wb}}{\text{Ag}} \quad \text{---->} \quad \text{Fac} = 476.539 \text{ psf}$$

According To Ref. 4, The Allowable Subgrade Bearing Pressure,

$$\text{Fal} := 2500 \text{ psf}$$

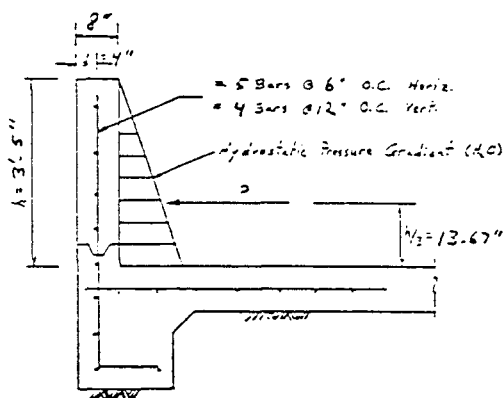
$$\text{Fal} > \text{Fac} \quad \text{----->} \quad \text{ok}$$

Containment Wall Strength  
S-K, Boynton Beach, FL  
By: BMW Date: 11/8/91

TERA, Inc.

Job No.: 91-208-1  
File: Calculation  
Sheet: 1 of 1

Ref.: 1. Containment Inspection Record, This Report  
2. ACI 318-89



$$SG := 1.07 \quad \Gamma := 62.4 \text{ pcf}$$

$$h := 3.417 \text{ ft (ref. 1)}$$

$$P := \left[ 0.5 \cdot SG \cdot h^2 \right] \cdot \Gamma$$

$$P = 389.788 \text{ lb/ft, unfactored}$$

$$Pf := 1.4 \cdot P \text{ (ref. 2)}$$

$$Pf = 545.703 \text{ lb/ft, factored}$$

$$\phi := 0.9 \text{ (ref. 2)}$$

$$As := 0.2 \text{ sq.in.}$$

$$Ac := 8 \cdot 12 \text{ sq.in.}$$

$$fy := 60000 \text{ psi}$$

$$b := 12 \text{ in.}$$

$$\rho_1 := \frac{As}{Ac}$$

$$d2 := 4 \text{ in.}$$

$$fc := 3000 \text{ psi}$$

$$Ac$$

$$\rho := \frac{As}{b \cdot d2}$$

---->

$$\rho = 0.004$$

$$\rho_1 = 0.002 \text{ ok}$$

$$Mu := \phi \cdot As \cdot fy \cdot d2 \cdot \left[ 1 - \frac{0.59 \cdot \phi \cdot fy}{fc} \right] \text{ ----> } Mu = 41076 \text{ in-lb/ft}$$

$$Mh := Pf \cdot \frac{12 \cdot h}{3} \text{ ----> } Mh = 7458.669 \text{ in-lb/ft}$$

$$Mu > Mh \text{ -----> } \text{Ok}$$

$$\text{Safety Factor, } SF := \frac{Mu}{Mh} \text{ ----> } SF = 5.507$$

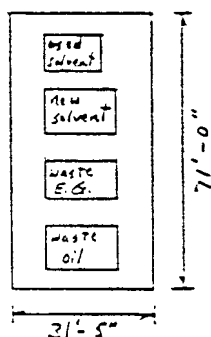
These Calculations Are Made Even More Conservative By The Assumption That The Containment Area Is Full Of Ethylene Glycol, Not Water.

Containment Volume, 20k Tank  
S-K, Boynton Beach, FL  
By: BMW Date: 11/8/91

TERA, Inc.

Job No.: 91-208-1  
File: Calculation  
Sheet: 1 of 1

Ref.: 1. Containment Inspection Record, This Report



$$L := 72.333 \text{ ft}, \quad W := 31.417 \text{ ft}$$

$$\text{Total Area, } A := L \cdot W$$

$$A = 2272.486 \text{ sq.ft.}$$

$$\text{Average Wall Height, } H := 3.167 \text{ ft}$$

$$\text{Gross Volume, } V := A \cdot H$$

$$V = 7196.963 \text{ cu.ft.}$$

Tank Volume To Be Subtracted,

$$Tv := \frac{20000}{7.481}$$

$$Tv = 2673.439 \text{ cu.ft.}$$

Volume Of Misc. Equipment, @ 1% Of Gross Volume, To Be Subtracted,

$$Mv := 0.01 \cdot V \text{ ----> } Mv = 71.97 \text{ cu.ft.}$$

Displacement Of Three Horizontal Tanks, Dia. = 12 ft; Two Of 24 ft, One Of 18 ft In Length, To Be Subtracted,

$$R := 72 \text{ in} \quad i := 32 \text{ in} \quad d := R - i \text{ ---> } d = 40 \text{ in}$$

$$R \cdot \arcsin\left[\frac{d}{R}\right] - \left[d \cdot \sqrt{R^2 - d^2}\right]$$

$$Vdis := \frac{\quad}{144}$$

$$Vdis1 := Vdis \cdot 2 \cdot 24$$

$$Vdis2 := Vdis \cdot 18$$

$$Vdis1 = 898.27 \text{ cu.ft.} \quad Vdis2 = 336.851 \text{ cu.ft.}$$

$$D1 := Vdis1 + Vdis2$$

Displacement Of 2" Raised Pad,  $Vp := 65.0 \cdot 25.417 \cdot 0.1667$

$$Vp = 275.406 \text{ cu.ft.}$$

Net Volume Remaining,  $Vn := V - Tv - Mv - D1 - Vp$

$$Vn = 2941.026 \text{ cu.ft.} \quad (\text{conservative estimate})$$

CONTAINMENT VOLUME IS SUFFICIENT

SUBJECT: <u>Tank Venting</u>		JOB NO.: <u>91-208-1</u>
<u>20 K Horizontal Tank-S-K</u>		FILE: <u>Calculation</u>
BY: <u>T.F.T.</u>	DATE: <u>11/6/91</u>	SHEET: <u>1</u> OF: <u>1</u>

 **TERA, Inc.**

- Ref: 1. Safety-Kleen TANK Drawing No. D12966
2. Morrison Bros. Co., 1989 Ed. Venting Guide For Aboveground Storage Tanks
3. UL 142 - 6<sup>th</sup> Ed., Sept. 14, 1987, Standard For Steel Aboveground Tanks For Flammable And Combustible Liquids.

TANK Capacity : 20,000 Gallons

TANK Size ; 12'  $\phi$  x 24' L

Wetted Area = 848 ft<sup>2</sup> - Table B-1 Ref-2

Venting Capacity = 476,880 ft<sup>3</sup>/hr Table 10-1 Ref-2

Normal Vent min 2.5" Table 10-2 Ref-3

Vent Combination - Ref-2 (OR Approved Equivalent)

3" Fig 548 - 80ZP - 38,800

8" Fig 244 - 160ZP - 465,000

---

503,800 ft<sup>3</sup>/hr

Loose Bolt Manway used AS the emergency vent must be 16"  $\phi$  Min. And the cover must be able to be lifted 1.5" Min. - Sec 10.6, Page 12 Ref-3

The combination of the 3" Normal Vent And Loose Bolt 24" Manway meets the Above Requirements

Since the used Antifreeze liquid is not flammable OR combustible, the listed emergency vent Requirements do not apply

USED ANTIFREEZE  
PIPING SYSTEM REVIEW

Safety-Kleen used antifreeze may be a hazardous waste (under characteristic leaching procedure standards) but it is not a flammable or combustible liquid as defined by NFPA 30 "Flammable and Combustible Liquids Code". Although not by definition required, NFPA 30 is an appropriate guideline or standard for the design of piping systems which handle hazardous liquids.

NFPA 30 generally requires that pipe, valves, fittings, and other pressure-containing components meet the material, pressure, and temperature limitations of ANSI B31.3 "Chemical Plant and Petroleum Refinery Piping" or ANSI B31.4 "Liquid Petroleum Transportation Piping Systems". This system operates outdoors under ambient temperature conditions. This falls within the ANSI materials specification range of -20 to 200°F. The normal operating pressure for the system piping will be the pressure required to overcome friction and lift the liquid to the top of the tanks. The system piping components will therefore normally operate at less than 30 psi. If the system pump was turned on in a blocked condition (i.e., with all discharge valves closed) the system components between the pump and the discharge valves would experience a pressure limited by the pump discharge relief valve. Pumps used for loading or unloading these tanks must have a relief valve set for no more than 200 psi.

Components rated for ANSI 125 or 150 lb (or better) class service should be suitable for use in this service. The normal system operating pressure is well within the allowable pressure-temperature ratings for both those classes. The 200 psi to which some components might occasionally be exposed is also within the allowable ambient temperature pressure range for ANSI 150 lb. class and is less than the allowable hydrostatic test pressure for ANSI 125 lb. class components.

In summary, compliance with the items on the "TERA Piping, Valve, and Fitting NFPA 30 Checklist" indicates compliance with the requirements of the NFPA 30 system piping.

PIPING, VALVES, AND FITTINGS

NFPA 30-1990 Compliance Checklist

for Safety-Kleen Corp. Aboveground Tank Systems

Branch Location: Boynton Beach, Florida Review By: TFT Date: 10/31/91

- N/A 1. Pumps to be ITT Marlow 20EVP-A, 30 EV-A, or 1-1/2 HR49EC series pumps.
- YES 2. Steel piping meets ASTM A53, A106, A120, or A135 specifications.
- YES 3. Wall thickness of threaded pipe meets ANSI B16.10 specifications for Schedule 80 for sizes 1-1/2" and smaller and Schedule 40 for sizes 2" and larger. Wall thickness of welded pipe of all sizes meets Schedule 40 requirements as a minimum.
- N/A 4. Dumpster hose assembly to be S-K Part No. 5237 (per Safety-Kleen drawing D10452).
- YES 5. Valves Morrison Brothers (S-K standard items) or meet ANSI 125 or 150 lb. class requirements.
- YES 6. Flanges and fittings meet ANSI B16 125 lb. (for cast iron and non-ferrous materials) or 150 lb. class (for steel and malleable iron) requirements.
- YES 7. Valves and piping components of low melting point or non-ductile materials (i.e., brass, bronze, aluminum, plastic, rubber, and cast iron) located within containment areas meeting 40 CFR 264.193 requirements.
- YES 8. Tank connections below the liquid level through which liquid can normally flow provided with an internal emergency shut-off valve (with fusible link) and a manual valve close to the tank.
- YES 9. Tank connections below the liquid level through which liquid does not normally flow provided with a liquid-tight plug or blind.
- N/A 10. Used solvent tank fill line drop-tube provided with vacuum breaker in line external to tank and/or hole in top of drop-tube inside of tank to prevent siphoning of liquid from tank.

PIPING, VALVES, AND FITTINGS

NFPA 30-1990 Compliance Checklist

for Safety-Kleen Corp. Aboveground Tank Systems

(Continued)

Branch Location: Boynton Beach, Florida Review By: TFT Date: 10/31/91

Tank fill and emptying connections (i.e., tank truck connections) are:

SEE  
NOTE

- 1 11. outside of buildings in a location free of ignition sources;
- YES 12. not less than five feet from any building opening;
- YES 13. furnished with provisions for liquid-tight closure when not in use (i.e., valve and hose connection cap);
- YES 14. properly identified (i.e., marked clean and used);
- YES 15. provided with check valves. (Not required for Antifreeze)
- YES 16. Prior to being placed in service all piping will be hydrostatically tested at 115 psig or pneumatically tested at 85 psig for a minimum of 20 minutes. Pneumatic tests shall include a preliminary check at not more than 25 psig. All piping joints and components shall be examined for leakage during the test.
- YES 17. Exceptions to the above items corrected to comply with NFPA 30 and/or ANSI B31.3 specifications.

Safety-Kleen piping, valves and fittings in compliance with this checklist will meet the requirements of NFPA 30 - 1990, as well as Article 79 of the Uniform Fire Code, 1991 Edition. These components should be checked with other local fire code requirements, which may be more stringent. It should be noted that the used antifreeze liquid in this system is not flammable or combustible.

NOTE 1: Entire system is in a building which is separated from other facility operations and meets all location requirements.



APPENDIX C  
Description of Waste

APPENDIX C  
Description of Waste

TABLE OF CONTENTS

<u>Title</u>	<u>Page No.</u>
Characteristics of Waste . . . . .	C-1
Composition of Waste . . . . .	C-2
Compatibility Letter from Safety-Kleen . . . . .	C-3

CHARACTERISTICS OF WASTE

The used antifreeze is collected from customers in 3,500-gallon tanker trucks and transferred from the tanker truck to the used antifreeze tank in the tank farm of the center. Periodically, trucks are dispatched from recycling centers to evacuate the tank.

Used antifreeze is considered to be toxic according to characteristic leaching procedure standards (D004-D011, D018, D019, D021-D030 and D032-D043). A typical composition, and chemical physical analysis is attached.

A letter from Safety-Kleen addressing compatibility of used antifreeze with system components is attached.

## Antifreeze Wastes

### Physical Properties and TCLP Metals Analysis, ppm

Parameter		pH	SG	FP	As	Ba	Cd	Cr	Pb	Hg	So	Ag
Reg. Limit		<2 or >10	na	< 100	5	100	1	5	5	0.2	1	5
LAB SITE												
W	DU	7.5	1.04	> 200	< 0.05	< 0.3	< 0.05	< 0.05	0.3	< 0.01	< 0.05	< 0.05
W	EL	8	1.13	> 200	< 0.05	0.3	< 0.05	< 0.05	< 0.1	< 0.01	< 0.05	< 0.05
W	WL	8.5	1.05	> 200	< 0.05	< 0.3	< 0.05	< 0.05	0.2	< 0.01	< 0.05	< 0.05

### TCLP Semi Volatiles Analysis, ppm

Parameter		cresol	2,4-DNT	Cl6-benz	Cl6-13-but	Cl6-oth	nitrobenz	Cl5-phenol	pyridine	2,4,5-TCP	2,4,6-TCP
Reg. Limit		200	0.13	0.13	0.5	3	2	100	5	400	2
LAB SITE											
W	DU	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.2	< 0.2	< 0.04	< 0.04
W	EL	0.2	< 0.07	< 0.07	< 0.07	< 0.07	< 0.07	< 0.35	< 0.35	< 0.07	< 0.07
W	WL	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.25	< 0.25	< 0.05	< 0.05

### TCLP Volatiles Analysis, ppm

Parameter		benzene	CCl4	Clbenz	Cl1Cl3	1,4-DCB	1,2-DCA	1,1-DCE	MEK	PCE	TCE	VChloride
Reg. Limit		0.5	0.5	100	6	7.5	0.5	0.7	200	0.7	0.5	0.2
LAB SITE												
W	DU	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 2.0	0.13	0.97	< 0.20
W	EL	0.32	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 2.0	0.12	< 0.10	< 0.20
W	WL	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 2.0	0.51	< 0.10	< 0.10

SAFETY-KLEEN CORPORATION

FAX TRANSMITTAL SHEET

DATE: April 4, 1991

FROM: PAUL DITTMAR  
SAFETY-KLEEN CORP.  
TECHNICAL CENTER  
P.O. BOX 92050  
ELK GROVE VILLAGE, IL 60009-2050  
PHONE: (312)694-2700  
FAX: (312)694-2733

TO: BOB SPEAK

LOCATION: TERA CORP.

FAX NO.: (713)981-7713

NUMBER OF PAGES, INCLUDING TRANSMITTAL SHEET: 1

SUBJECT: MATERIAL OF CONSTRUCTION FOR WASTE OIL AND SPENT ANTIFREEZE

According to Breslube's Vice President of Engineering, Glenn Casbourne, carbon steel is used now for waste oil tanks. For the record, he confirms that carbon steel is the material of choice for both waste oil and spent antifreeze.

Regards,



Paul Dittmar,  
Manager of Process and Product Development

cc: Glenn Casbourne

file: MC91047

APPENDIX D  
Inspection Records

APPENDIX D  
Inspection Records

TABLE OF CONTENTS

<u>Title</u>	<u>Page No.</u>
Ultrasonic Thickness Measurements . . . . .	D-1
New Tank Inspection Record . . . . .	D-2
New Containment Inspection Record . . . . .	D-3
Tank & Pipe Leak Test Report - Ques Tec Corp. . . . .	D-4
Photographs . . . . .	D-7

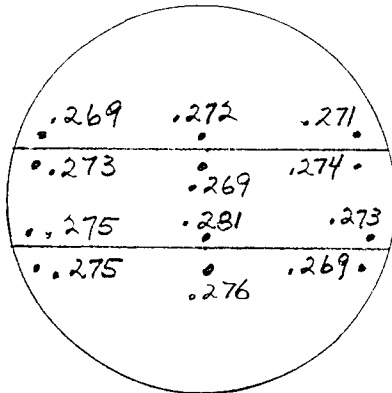
SUBJECT: Safety-Kleen  
Boynton Beach, Fl.  
 BY: TFT DATE: 11/5/91

**TERA, inc.**

JOB NO.: 91-203-1  
 FILE: Inspection Record  
 SHEET: 1 OF: 1

# TANK THICKNESS MEASUREMENTS 20,000 GALLON HORIZONTAL

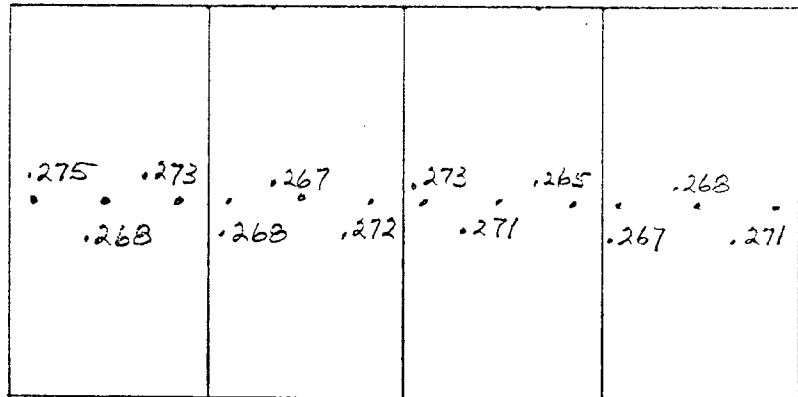
South End



N.E.

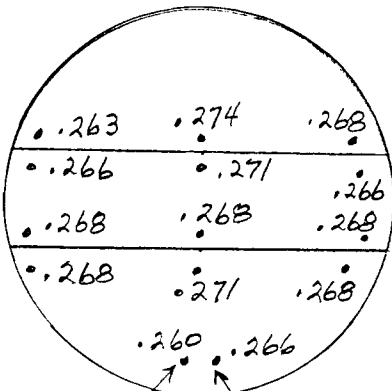
West Side

S.E.



MEASUREMENTS MADE THROUGH PAINT

North End

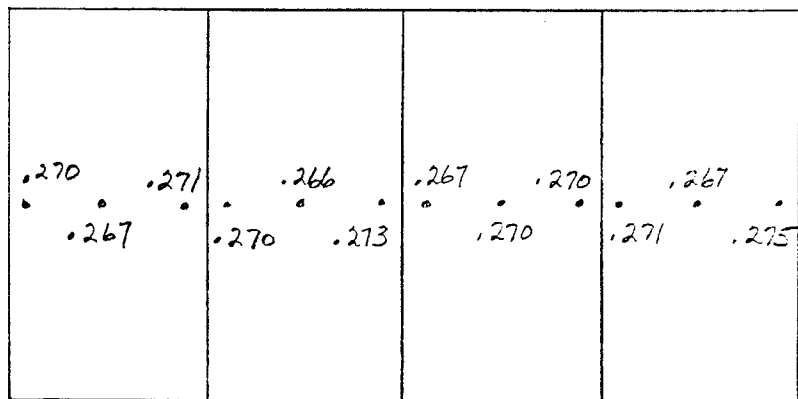


BARE METAL Through PAINT

N.E.

East Side

S.E.



UL 142 Requirement - .240 Min.

Paint Allowance .006

3" Load/Unload Pipe  
 .003 Paint Allowance

.218 .225 .223 .223

ANSI B31.3 Min. Wall Thickness .189



NEW TANK INSPECTION RECORD

Sheet: 1 of 1  
Job No.: 91-208-1  
Date: 10/31/91  
By: TFT  
YEAR BUILT: 1990

CLIENT: Safety-Kleen Corp.  
PLANT LOCATION: Boynton Beach, Florida  
TYPE INSPECTION: Interior/Exterior  
ITEM NO.: CODE: UL 142  
SERVICE: Used Antifreeze Storage  
CAPACITY: 20,000 gal TANK/DRUM TYPE: Horizontal integral saddles  
DIAMETER: 12 feet LENGTH: 24 feet

	<u>END HEAD</u>	<u>SHELL</u>	<u>FLOOR</u>	<u>JACKET</u>
MATERIALS:	Mild Steel	Mild Steel	N/A	N/A
SHELL CONDITION:		Satisfactory		
END HEAD CONDITION:		Satisfactory		
FLOOR CONDITION:		N/A		
JACKET CONDITION:		N/A		
SUPPORT TYPE:		Three (3) integral saddles		
FOUNDATION TYPE/CONDITION:		Reinforced concrete/satisfactory		
INTERNAL STRUCTURE CONDITION:		Satisfactory		
WELDED/FLANGED JOINT CONDITION:		Satisfactory		
NOZZLE CONDITION:		3" normal vent - satisfactory		
LINING/COATING CONDITION:		Exterior paint - satisfactory		
INSULATION CONDITION:		N/A		
SIGNS OF CRACKS:		None		
SIGNS OF PUNCTURES:		None		
SIGNS OF COATING DAMAGE:		None		
SIGNS OF CRACKS OR MATERIAL DAMAGE:		None		
SIGNS OF CORROSION:		None		
SIGNS OF OTHER STRUCTURAL DAMAGE OR PROBLEMS:		None		

TIGHTNESS TEST? No TYPE: RESULTS:  
OPERATING CONDITIONS: MAX TEMP: Amb. MAX PRESS: Amb VAC: N/A  
REFERENCE INSPECTION RECORDS: Documentation on tank and associated pipe testing from Donegan's Plumbing included in this Appendix.

COMMENTS: This tank system was originally installed as a used oil system. The use was changed to used antifreeze before the system was put into service. The system is still not in service until certification is received. The tank is new and has been installed with no internal or external damage visible by inspection.

NEW CONTAINMENT INSPECTION RECORD

Sheet: 1 of 1  
CLIENT: Safety-Kleen Corp. Job No.: 91-208-1  
PLANT LOCATION: Boynton Beach, Florida Date: 11/1/91  
TYPE: Vault By: TFT  
LEAK DETECTION TYPE: Visual YEAR BUILT: 1990  
SERVICE: Used Antifreeze Storage  
CAPACITY: 50,000 gal. LARGEST TANK CAPACITY: 20,000 gallon

	<u>ROOF/TOP HD.</u>	<u>WALL/SHELL</u>	<u>FLOOR</u>
CONSTRUCTION MATLS:	Masonry Building	RC	RC
INTERIOR COATING/LINING OF CONTAINMENT:	Sikagard-62		
EXTERIOR COATING/LINING OF PRIMARY CONTAINMENT:	Paint		
JOINT TREATMENTS:	Sikaflex-1A		
ROOF/TOP HEAD CONDITION:	Satisfactory		
WALL/SHELL CONDITION:	Satisfactory		
FLOOR CONDITION:	Satisfactory		
SUPPORT TYPE:	Slab on grade		
FOUNDATION CONDITION:	Satisfactory		
INTERNAL STRUCTURE CONDITION:	Satisfactory		
JOINT CONDITION:	Satisfactory		
LINING/COATING CONDITION:	Small areas of flaking coating		
LIQUID REMOVAL METHOD:	Sump - hand pump or truck pump		
SIGNS OF CRACKS:	None		
SIGNS OF PUNCTURES:	None		
SIGNS OF COATING DAMAGE:	Small areas of flaking coating		
SIGNS OF CRACKS OR MATERIAL DAMAGE:	None		
SIGNS OF CORROSION:	None		
SIGNS OF OTHER STRUCTURAL DAMAGE OR PROBLEMS:	None		
OPERATING CONDITIONS:	MAX TEMP: Amb.	MAX PRESS: Atm.	VAC: No
REFERENCE INSPECTION RECORDS:	None		

COMMENTS: This is a new facility with the tank farm being the foundation of its own masonry building. Only minor coating touch-up is required on a few areas of the base where coating has lifted.

# Donegan's Plumbing Service, Inc.

1845 S.W. FOURTH AVENUE, A-12 • DELRAY BEACH, FLORIDA 33444 • (407) 276-1942

TO: TOM TROLLER  
TERA COMPANY

FROM: DAN DONEGAN

DATE: NOVEMBER 14, 1991

RE: SAFETY KLEEN SERVICE CENTER TANKAGE  
QUANTUM PARK - 5610 ALPHA DRIVE; BOYNTON BEACH, FL

PER OUR PHONE CONVERSATION OF NOVEMBER 13, 1991:

DONEGAN'S PLUMBING PRESSURE TESTED TANK NUMBER TWO (USED OIL) WITH THREE TO FIVE POUNDS AIR PRESSURE ON SEPTEMBER 10, 1990. THIS WAS INSPECTED AND APPROVED BY THE CITY OF BOYNTON BEACH ON SEPTEMBER 11, 1990.

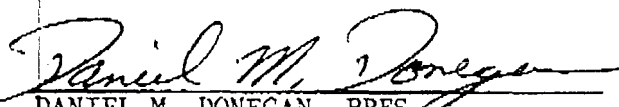
NOW  
USED  
ANTIFREEZE

SHORTLY THEREAFTER, PIPING FOR TANK FARM WAS AIR TESTED AND APPROVED.

I AM SENDING A COPY OF BOYNTON BEACH PERMIT WITH OUR NOTATIONS OF INSPECTIONS CALLED AND COMPUTER READ-OUT OF BOYNTON BEACH INSPECTIONS AND APPROVALS.

THIS INFORMATION WILL BE FAXED AND HARD COPIES WILL FOLLOW IN MAIL.

PLEASE DO NOT HESITATE TO CONTACT ME IF I CAN BE OF FURTHER SERVICE.

  
DANIEL M. DONEGAN, PRES.

1 B2 CITY OF BOYNTON BEACH 11/14/91  
2 BP405101 PERMIT ACTIVITY INQUIRY 3:47:54

3  
4 PERMIT CONTROL #: 90 0000073 000 000  
5 PROPERTY ADDRESS: 05610 ALPHA DR  
6 APPLICATION TYPE: PL PLUMBING

7 PERMIT ISSUED INSP TYPE DATE INSP DESCRIPTION RESULT

8  
9 FL 00 03/06/90 FIRE 0000 02/24/91 WC FIRE MARSHALL INSPEC AP  
10 PL00 0000 09/11/90 CDP SEE COMMENTS BELOW AP  
11 PL00 0001 10/30/90 CDP SEE COMMENTS BELOW AP  
12 PL00 0002 01/30/91 BF SEE COMMENTS BELOW NR  
13 PL03 0000 09/07/90 CDP FIRST ROUGH PLUMBING AP  
14 PL07 0000 09/18/90 BLD 200 PSI PRESSURE TES AP  
15 PL07 0001 09/18/90 BLD 200 PSI PRESSURE TES AP  
16 PL07 0002 09/12/90 BLD 200 PSI PRESSURE TES AP  
17 PL07 0003 02/26/91 BF 200 PSI PRESSURE TES AC  
18 PL07 1001 09/14/90 CDP 200 PSI PRESSURE TES AP  
19 PL99 0000 03/01/91 CDP FINAL AP  
20 PL99 0001 03/04/91 WC FINAL AP

21  
22  
23 CMD 7 - END OF JOB CMD 3 - PREVIOUS SCREEN ROLL UP - SCAN FORWARD  
24 ROLL DOWN - SCAN BACKWARD  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43

← AIR PRESSURE 5/5 k  
OK TANK #2



# 'FAILURE TO COMPLY WITH THE MECHANICS' LIEN LAW CAN RESULT IN THE PROPERTY OWNER PAYING TWICE FOR BUILDING IMPROVEMENTS'

## CITY OF BOYNTON BEACH BUILDING DEPARTMENT

Date Applied: 03/05/90

Prepared by: LYNNHLE

Date Issued: 03/05/90

Permit No: 9000000733

### NOTICE

IN ADDITION TO THE REQUIREMENTS OF THIS PERMIT, THERE MAY BE ADDITIONAL RESTRICTIONS APPLICABLE TO THIS PROPERTY THAT MAY BE FOUND IN THE PUBLIC RECORDS OF THIS COUNTY.

Permit Type:

### PLUMBING PERMIT

City	Range	Twnshp.	Section	Sub Dvsn.	Block	Lot	Plat/Book/Page	
08	43	45	17	Q8	000	0462		
Property Address							Zoning	Reviewed by
ALPHA DR 5610							PID	LAH
Subdivision Name							Legal Address	
							QUANTUM PARK AT B.B. PLAT 4	
Owner's Name/Address/Telephone				Contractor's Name/Address/License/Telephone				
DEUTSCH/IRELAND PROPERTIES 110 TOWER-21ST FL-110 SE 6 STR PORT LAUDERDALE FL 33301-9415 7734-3555				DONEGAN'S PLUMBING SERVICE INC 1845 SW 4TH AVENUE A-12 DELRAY BEACH FL 33444 276-1942				
Additional Description				General/Architect/Engineer				
TENANT SAFETY KLEEN APPROVED ON 03-09-1573								
Construction				BFE FFE FLZ				
Occupancy				Sq. Ft. Valuation Improvements				
				18,800.00 PLUMBING				
Schedule of Fees				* THIS PERMIT FEE IS NOT REFUNDABLE *				

PERMIT FEE PAID 350.00 DATE- 3/06/90

464 4954

area drain up  
10/27/90 1200  
1/29/91-11:45  
partial on  
task from piping

9/6/90 - Pressure test on used oil tank  
9/10/90 - Air pressure test on 2 tanks  
2:45 - for Tues (afternoon insp. request)  
9/11/90 - for Wed - Tank 3, Tank 4  
9/13/90 - for FRIDAY -

493

AUTHORIZED SIGNATURE

CALL 738-7483 FOR INSPECTIONS BEFORE 4:30 P.M.





TANK FARM BUILDING

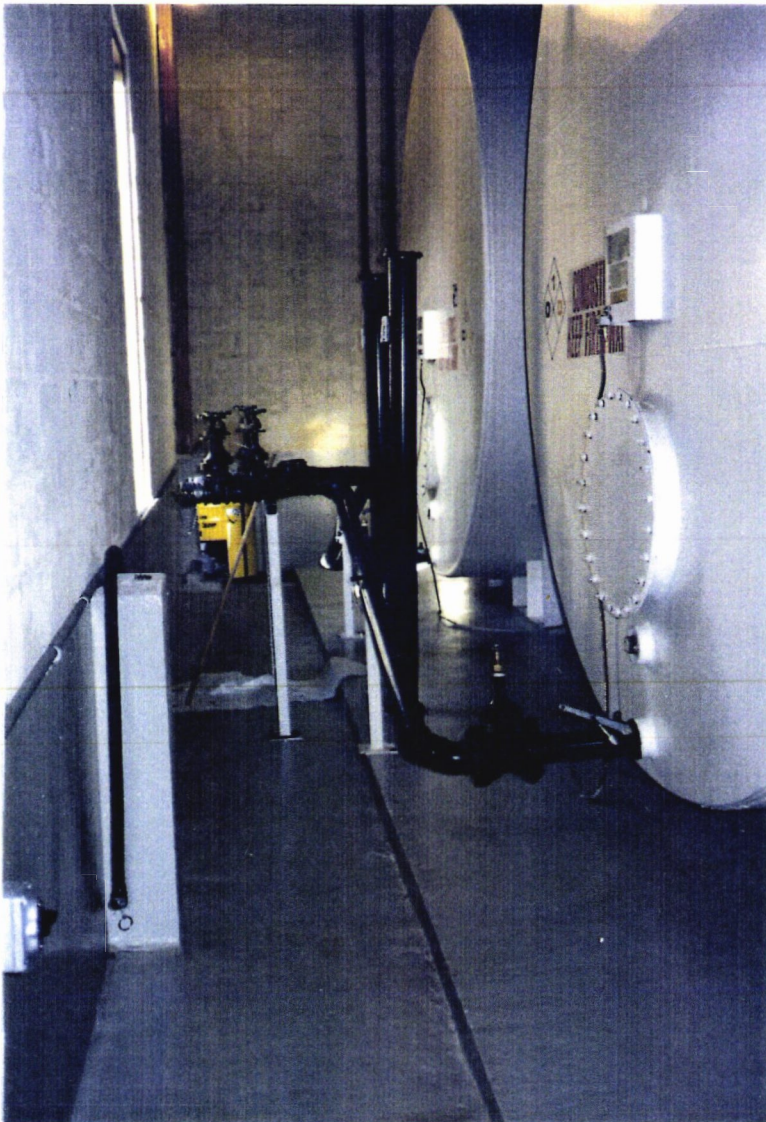


TRUCK PAD

BOYNTON BEACH BRANCH FACILITY

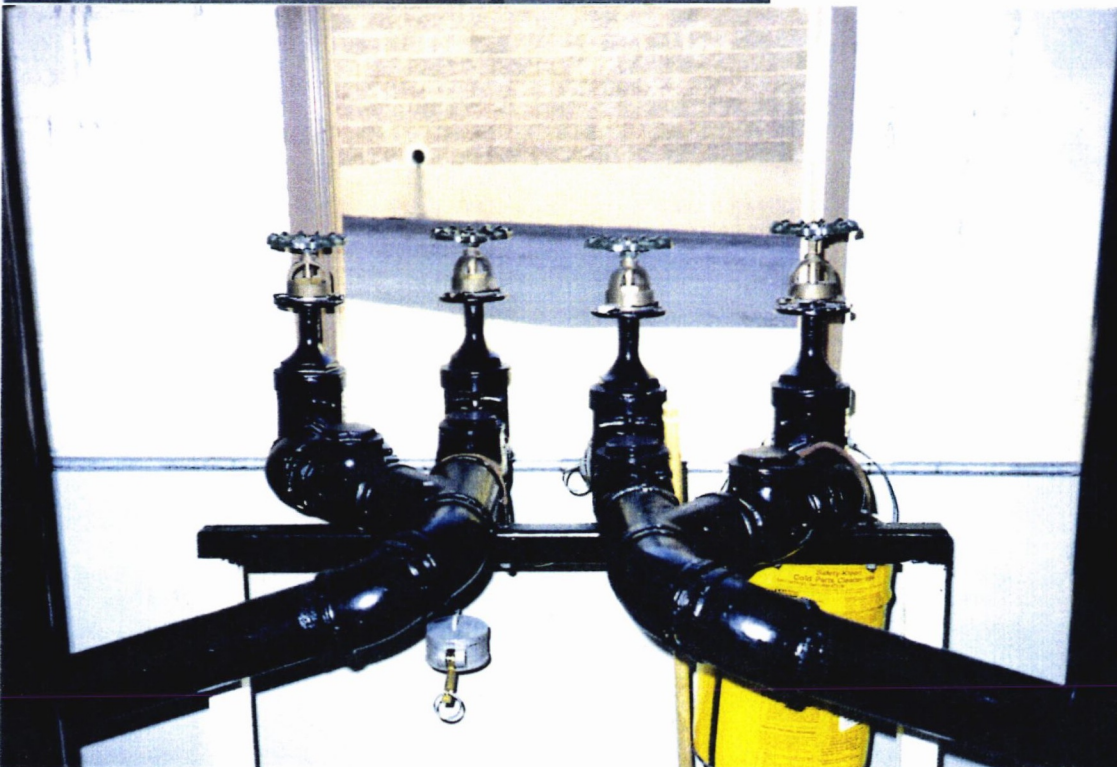


91-208-1  
D-7b



USED ANTIFREEZE TANK  
LIQUID LEVEL GAUGE

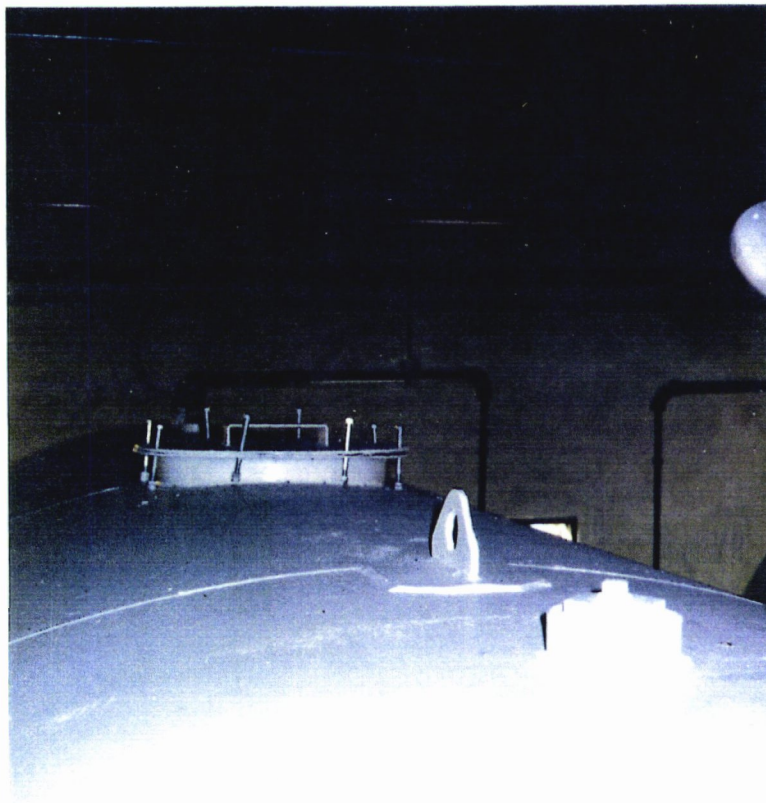
LOAD/UNLOAD  
PIPING AND HOOK-UP





91-208-1  
D-7c





HIGH LEVEL ALARM; LIQUID LEVEL GAUGE;  
EMERGENCY VENT (MANWAY W/ LOOSE BOLTS)

USED ANTIFREEZE TANK

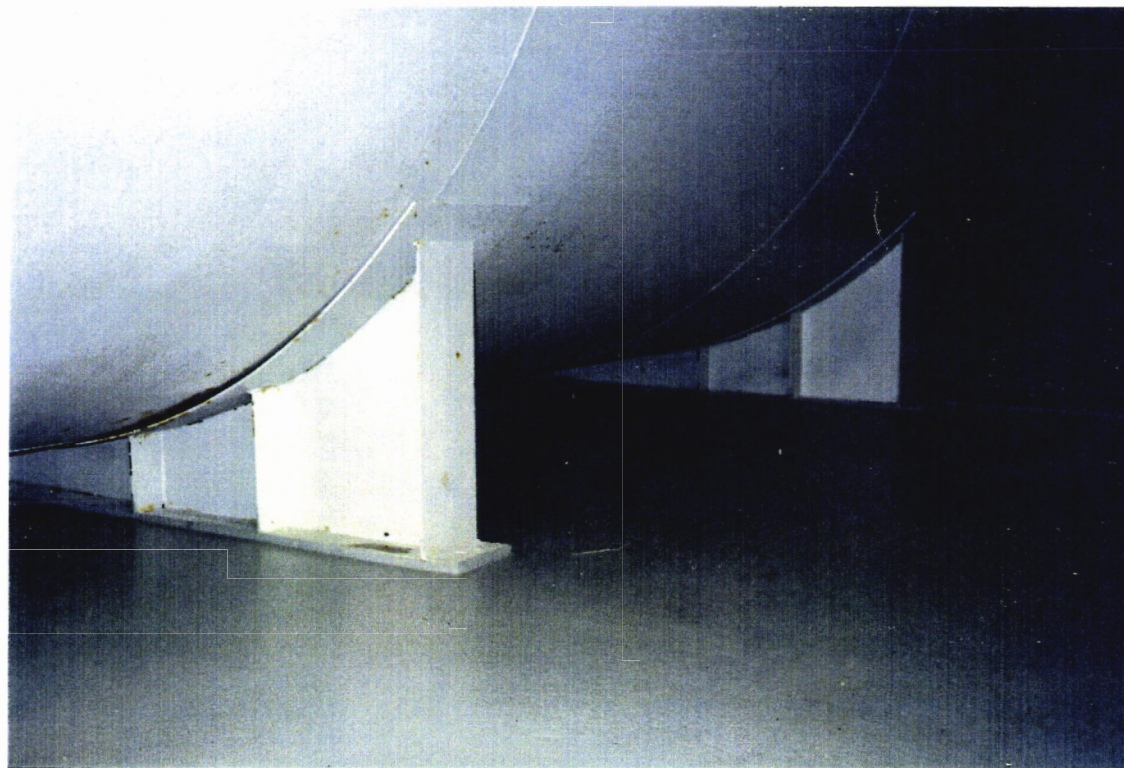


NORMAL 3" VENT





INTERNAL TANK WELDS



INTEGRAL TANK SUPPORTS

**ATTACHMENT II.C.2**  
**TANK SYSTEM SPECIFICATIONS**

Revision 2 - 12/06/91



## **ATTACHMENT II.C.2**

### **TANK SYSTEM SPECIFICATIONS**

The facility includes five aboveground steel tanks (Figure II.C.2-1). Used mineral spirits contained in drums returned by the customers are transferred via the wet dumpster into a 15,000-gallon tank, awaiting bulk shipment to the recycle center. The spent antifreeze is transferred from a tanker truck into a 20,000-gallon tank. The other three tanks consist of one 15,000-gallon mineral spirits product tank, one 20,000-gallon nonhazardous waste oil tank, and one 5,000-gallon dry cleaning product tank. These three tanks are not considered RCRA tanks.

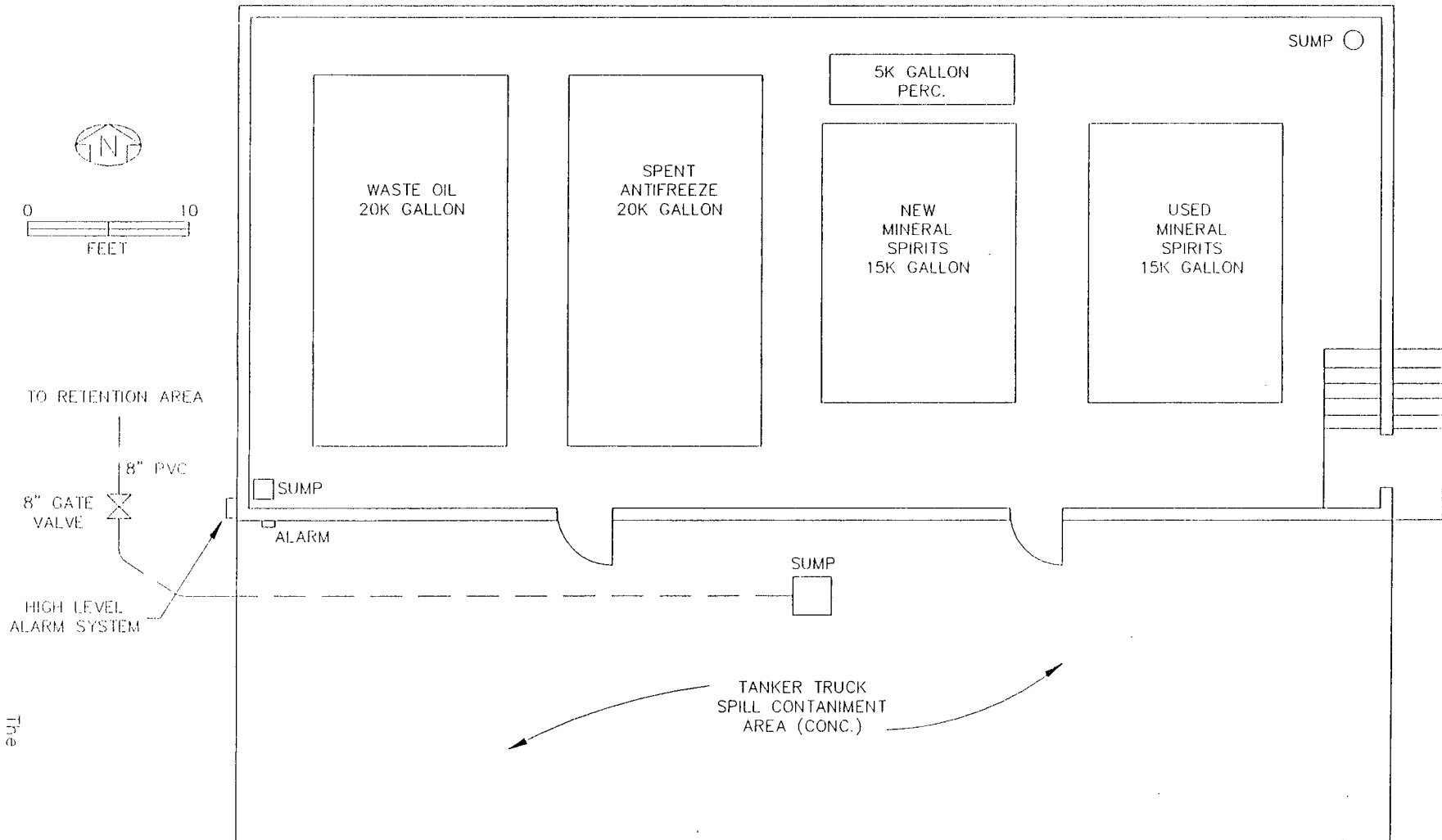
#### **MATERIAL COMPATIBILITY**

Mineral spirits (petroleum naphtha) is compatible with the mild steel tank structure; in fact, mineral spirits are often used as a light hydrocarbon coating to prevent rusting of metal parts. As with all petroleum storage vessels, water will accumulate over time due to condensation. The mineral spirits has a specific gravity less than water and the water will accumulate in the bottom of the tank. There is the potential for corrosion of the tank at the mineral spirits/water interface. Experience, however, has shown that the corrosion potential at the interface is minimal when compared to the potential for corrosion from soil conditions. Antifreeze and water are soluble in all proportions and no separate water plume will form in this tank.

#### **TANK DESIGN AND OPERATION PROCEDURES**

Spent mineral spirits from parts washers is accumulated in the 15,000-gallon aboveground storage tank by transfer through the return and fill station. Containers are poured into the dumpsters (barrel washers) in the return and fill station, and material in the dumpster is pumped into the storage tank for spent solvent. The return and fill station has secondary containment.

Figure II.C.2-1  
 Tank Farm  
 Safety-Kleen Corp. Facility  
 Boynton Beach, Florida



13112.28/31128TF/110791-2

II.C.2-1A

Revised 12/06/91



The barrel washers are located within the mineral spirits return and fill shelters. The return/fill shelters have been coated with Sikagard® 62. When recoating is required in the future, it will be performed using Semstone® 140 or equivalent. The drawings (Figures II.C.2-2(a) through II.C.2-2(j)) provide detail information on the barrel washers.

Used solvent is returned from customers via drums and poured into the barrel washers. The barrel is then placed on roller brushes contained within the barrel washer. As the machine is turned on, the barrel rotates on the brush and the outside of the barrel is cleaned. There is also a nozzle that sprays a stream of solvent into the bottom of the barrel to clean the inside of the barrel. The machine is turned off and the barrel is removed. The procedure takes approximately five seconds per barrel. The barrel is then refilled using a pump and nozzle (Figure II.C.2-3) similar to a gasoline pump.

The used solvent goes to a sump in the bottom of the barrel washer and is automatically pumped to the used mineral spirits storage tank. There is a basket in the sump that collects sludge. Approximately twice a day, this basket is removed and sludge is removed and placed into a sludge drum for recycle.

The barrel washer is a totally enclosed unit. A small amount of mist is generated while operating the unit. This is controlled by closing the lid of the unit. Spent antifreeze is transferred from a tanker truck into the bulk tank.

The tanks are designed and constructed to be compatible with the materials stored in them. Typical construction and installation standards for the aboveground tanks are shown in Figures II.C.2-4(a) and II.C.2-4(b). All tanks are vented in accordance with National Fire Protection Association (NFPA) standards, and the tanks are equipped with high-level alarms. The design and installation of the tank alarm system is shown in Figures II.C.2-5(a) through II.C.2-5(d). The tank seams are lapped with full fillet welds.

The barrel washers are located within the mineral spirits return and fill shelters. The return/fill shelters have been coated with Sikagard® 62. When recoating is required in the future, it will be performed using Senstone<sup>m</sup>® 40 or equivalent. The drawings (Figures II.C.2-2(a) through II.C.2-2(j)) provide detail information on the barrel washers.

Used solvent is returned from customers via drums and poured into the barrel washers. The barrel is then placed on roller brushes contained within the barrel washer. As the machine is turned on, the barrel rotates on the brush and the outside of the barrel is cleaned. There is also a nozzle that sprays a stream of solvent into the bottom of the barrel to clean the inside of the barrel. The machine is turned off and the barrel is removed. The procedure takes approximately five seconds per barrel. The barrel is then refilled using a pump and nozzle (Figure II.C.2-3) similar to a gasoline pump.

The used solvent goes to a sump in the bottom of the barrel washer and is automatically pumped to the used mineral spirits storage tank. There is a basket in the sump that collects sludge. Approximately twice a day, this basket is removed and sludge is removed and placed into a sludge drum for recycle.

The barrel washer is a totally enclosed unit. A small amount of mist is generated while operating the unit. This is controlled by closing the lid of the unit. Spent antifreeze is transferred from a tanker truck into the bulk tank.

The tanks are designed and constructed to be compatible with the materials stored in them. Typical construction and installation standards for the aboveground tanks are shown in Figures II.C.2-4(a) and II.C.2-4(b). All tanks are vented in accordance with National Fire Protection Association (NFPA) standards, and the tanks are equipped with high-level alarms. The design and installation of the tank alarm system is shown in Figures II.C.2-5(a) through II.C.2-5(d). The tank seams are lapped with full fillet welds.

The weld is done with an E70 electrode and can withstand a 4-psi air pressure test (which is performed by the manufacturer). All tanks are new and unused.

Attachment II.C.1 provides an independent assessment of the tank system. The mineral spirits assessment by Wishmeier & Associates includes a detailed description of the tank system components and operation. The assessment of the ethylene glycol tank was prepared by TERA, Inc. The following is a concise description of the main features of the tank system.

All tanks are aboveground, underlain by a 71' x 32'4" x 6" concrete slab, surrounded by a 36" concrete dike and are in an enclosed building. The dike has been sealed with a chemical resistant coating. Therefore, no surface run-on or precipitation would be in contact with the wastes stored in the tank farm and no run-off collection and management system is deemed necessary. Gauges are used to measure liquid levels in tanks and float switch-activated automatic high level alarms (which consist of a strobe light and siren) will signal the tank's being 95 percent full. This alarm allows an operator more than two minutes to stop operations and avoid overfilling the tank. In addition, the gauges of the tank must be read before filling and before and during the filling of a tanker truck (the available volume of which must be noted prior to emptying the tank) to prevent overfilling of the truck. A suction pump equipped with the tanker truck is used to withdraw used mineral spirits from the tank. No other equipment or standby equipment is used in the operation of the aboveground tanks. The secondary containment under the tanks and return/fill station must be cleaned within 24 hours of a spill. The used mineral spirits tank may be operated at a maximum volume of 14,250 gallons (95 percent). The spent antifreeze tank may be operated at a maximum volume of 19,000 gallons (95 percent).



Material which collects in the tank dike and return/fill station can be removed using a "wet/dry" vacuum, sorbents, or mop.

"No smoking" signs are posted on the entrance to the tank farm and return/fill station.

## TECHNICAL BULLETIN

March 1988

### DESCRIPTION AND USES:

SEMSTONE 140 is Sentry's primary epoxy floor topping system for concrete. Self-priming and semi-leveling, it will typically be aggregate filled and spray applied to yield an economical and highly serviceable floor for areas subject to harsh chemical exposure.

SEMSTONE 140 is a two component system that possesses the following characteristics in common with all members of Sentry's 140 family of products:

- excellent resistance to:
  - chemical attack;
  - thermal shock;
  - wear and impact.
- superior bonding qualities;
- high cohesive strength, coupled with the flexibility necessary to resist cracking;
- low permeability;
- low odor;
- 100 % solids.

Example uses include:

Process slabs  
Tank farm floors  
Chemical loading and unloading areas  
Spill containment areas  
Waste proof coating for secondary containment systems

### PACKAGING/COVERAGE:

SEMSTONE 140 is available in 1 gallon and 5 gallon units. Each unit consists of a premeasured Part A component and a premeasured Part B component.

Coverage rates are effected by the condition of the surface being coated. The following are theoretical coverage rates:

32 sq. ft. per gallon at 50 mils.  
12.8 sq. ft. per gallon at 125 mils.

Coverage can be increased by up to 100% when extended with silica aggregate. (See paragraph 3 of the application guidelines under MIXING AND APPLICATION.)

Application thickness depends upon expected service conditions. Consult Sentry Polymers or your local representative for specific recommendations.

## SEMSTONE® 140

### Sprayable Epoxy Floor Topping



P.O. BOX 2075A  
1100 E. HWY 322  
SPRINGPORT, TX 77341  
800-233-0312  
713-393-1600 (Houston)  
800-233-0344 (Outside TX & AL)

## TYPICAL PROPERTIES - WET:

Solids, by Volume \_\_\_\_\_ 100%  
Weight per Mixed Gallon \_\_\_\_\_ 9.3 lbs  
Pot Life @ 75°F \_\_\_\_\_ 45 - 60 minutes  
(significantly less at elevated temperatures)  
Cure Time @ 75°F:  
Foot Traffic \_\_\_\_\_ 12 hrs.  
Light Vehicular Traffic \_\_\_\_\_ 24 hrs.  
Chemical Service \_\_\_\_\_ 36 hrs.  
Primer \_\_\_\_\_ Not Required  
Nonflammable

## TYPICAL PROPERTIES - CURED:

Color \_\_\_\_\_ Light Gray (selected other colors available)  
Hardness \_\_\_\_\_ ASTM D - 2240 Shore D \_\_\_\_\_ 70 - 75  
Compressive Strength \_\_\_\_\_ ASTM C - 579 \_\_\_\_\_ 14,000 psi  
Tensile Strength \_\_\_\_\_ ASTM D - 638 \_\_\_\_\_ 3,000 psi  
Tensile Elongation \_\_\_\_\_ ASTM D - 638 \_\_\_\_\_ 6%  
Flexural Strength \_\_\_\_\_ ASTM D - 790 \_\_\_\_\_ 11,000 psi  
Flexural Modulus  
of Elasticity \_\_\_\_\_ ASTM C - 722 \_\_\_\_\_ Complies with Epoxy Type B  
Abrasion Resistance \_\_\_\_\_ ASTM D - 1044 \_\_\_\_\_ 55 mg  
(CS17 wheels)  
Water Vapor Transmission \_\_\_\_\_ ASTM E - 96  
WVT \_\_\_\_\_ 0.0120 grain per hr ft<sup>2</sup>  
Permeability \_\_\_\_\_ 0.0042 perm. in.

## RELATED AND ANCILLARY PRODUCTS:

SEMSTONE 140 - S Epoxy Coating and Lining  
SEMSTONE 140 - SL Epoxy Self-Leveling Floor Coating  
SEMSTONE 140 - CT Epoxy Floor Coating - Cold Temperature Formulation  
SEMSTONE 300 Epoxy Polymer Concrete  
SEMSTONE 500 Epoxy Putty  
SEM-CRETE Rapid Hardening Underlayment Mortar  
SEMSTONE Scrim

Refer to separate technical bulletin on each product for uses, application instructions, etc.

## STORAGE AND SHELF LIFE:

Keep SEMSTONE 140 components tightly sealed in their original containers until ready for use. Store at 50° - 75°F, out of direct sunlight. Properly stored, SEMSTONE 140 has a minimum shelf life of one year.

Refer to batch number on label for date of manufacture.

# CHEMICAL RESISTANCE GUIDE

This guide is intended as an aid in determining the potential usefulness of SEMSTONE 140 as a protective barrier against chemical exposure. Each application should be evaluated according to its particular circumstances and conditions.

KEY: 1 = Suitable for constant immersion  
2 = Suitable for shorter term containment and continual spillage  
3 = Suitable for intermittent spills when followed promptly with water flushing  
NR = Not recommended  
C = Consult Sentry Polymers

	RATING		RATING		RATING
Acetic Acid, 10%	2	Cam Oil	1	Naphthalene	1
Acetic Acid, 30%	3	Crude Oil, Sour	1	Nitric Acid, 5%	3
Acetic Acid, Glacial	3	Crude Oil, Sweet	1	Nitric Acid, 30%	NR
Acetone	NR	Cyclohexane	3	Nitric Acid, 80%	NR
Acrylic Acid, up to 25%	NR	Cyclohexanol	3	Nitric Acid/Sulfuric Acid	NR
Acrylonitrile	NR	Cyclohexanone	3	Nitrobenzene	NR
Alum		Dichlorobenzene	NR	n-Octyl Alcohol	1
(Aluminum Potassium Sulfate)	1	Diesel Fuel	1	Oil	1
Aluminum Chloride	1	Diethyl Benzene	NR	Oil	NR
Aluminum Fluoride	1	Ethyl Alcohol	2	Oleum	NR
Aluminum Hydroxide	1	Ethyl Benzene	NR	Oleic Acid	3
Aluminum Nitrate	1	Ethyl Chloride	NR	Oxalic Acid	3
Aluminum Sulfate	1	Ethylene Dichloride	NR	Perchloroethylene	3
Ammonia	3	Ethylene Glycol	1	Perchloric Acid	NR
Ammonium Bisulfite	1	Fatty Acids	1	Phenol	NR
Ammonium Chloride	1	Ferric Chloride	1	Phosphoric Acid, 80%	1
Ammonium Hydroxide	1	Ferric Nitrate	1	Phosphoric Acid, 85%	2
Ammonium Nitrate	1	Ferric Sulfate	1	Phosphorous Acid	3
Ammonium Sulfate	1	Ferrous Chloride	1	Potassium Carbonate	1
n-Amyl Alcohol	NR	Fluoboric Acid	2, C	Potassium Chloride	1
Aniline	NR	Formaldehyde	1	Potassium Dichromate	2
Barium Chloride	1	Formic Acid	3	Potassium Hydroxide	1
Barium Hydroxide	1	Fuel Oil	1	Potassium Nitrate	1
Barium Sulfate	1	Gasoline	1	Propionic Acid	2
Barium Sulfide	1	Glycerine	1	Silver Nitrate	1
Benzene	2	Heptane	1	Sodium Acetate	1
Benzene Sulfonic Acid	1	Hexane	1	Sodium Bicarbonate	1
Benzoic Acid	1	Hydrobromic Acid	2	Sodium Bisulfate	1
Black Liquor, Pulp Mill	1	Hydrochloric Acid, 15%	1	Sodium Bisulfite	1
Bleach Liquor, Pulp Mill	1	Hydrochloric Acid, 37%	2	Sodium Carbonate	1
Boric Acid	1	Hydrofluoric Acid	C	Sodium Chloride	1
Brine	1	Hydrogen Peroxide	2	Sodium Chlorate	NR
Bromine, Liquid	NR	Hydrogen Sulfide	1	Sodium Hydroxide, 10%	1
Bromine Gas (Dry & Wet)	NR	Isobutyl Alcohol	1	Sodium Hydroxide, 50%	1
n-Butyl Alcohol	2	Jet Fuel	1	Sodium Hypochlorite	2, C
Butyl Cellulosic Solvent	3	Kerosene	1	Sodium Sulfate	1
n-Butyric Acid	NR	Lactic Acid	2	Sodium Sulfide	1
Calcium Chloride	1	Lauryl Chloride	1	Stannic Chloride	1
Calcium Chloride	1	Lead Acetate	1	Stannous Chloride	1
Calcium Hydroxide	1	Linseed Oil	2	Stearic Acid	1
Calcium Hypochlorite	2, C	Lithium Bromide	1	Styrene	1
Calcium Nitrate	1	Lithium Chloride	1	Sugar/Sucrose	1
Calcium Sulfate	1	Lithium Hypochlorite	2, C	Sulfur Dioxide	1
Calcium Sulfite	1	Lithium Hydroxide	1	Sulfuric Acid, 10%	1
Carbon Dioxide Gas	1	Magnesium Bisulfite	1	Sulfuric Acid, 50%	1
Carbon Disulfide	NR	Magnesium Carbonate	1	Sulfuric Acid, 98%	1
Carbon Tetrachloride	NR	Magnesium Chloride	1	Tall Oil	1
Chlorine Dioxide	3	Magnesium Hydroxide	1	Tannic Acid	1
Chlorine Gas (Dry & Wet)	3	Magnesium Sulfate	1	Tartaric Acid	1
Chlorine Water	2	Maleic Acid	2	Toluene	1
Chlorobenzene	NR	Mercuric Chloride	1	Toluene Sulfonic Acid	1
Chloroform	NR	Mercurous Chloride	1	Trichloroacetic Acid	1
Chromic Acid, 15%	3	Methyl Alcohol	2	Trichloroethylene	1
Chromic Acid, 50%	3	Methyl Chloride	NR	Trisodium Phosphate	1
Citric Acid	1	Methylene Chloride	NR	Urea	1
Copper Chloride	1	Methyl Ethyl Ketone	NR	Water, Deionized	1
Copper Cyanide	1	Mineral Spirits	2	Water, Demineralized	1
Copper Nitrate	1	Monochloroacetic Acid	3	Water, Distilled	1
Copper Sulfate	1	Muratic Acid	1	Xylene	1
		Nacantha	1	Zinc Chloride	1
				Zinc Sulfate	1

## APPLICATION GUIDELINES

### TEMPERATURE CONSIDERATIONS

1. The temperature of the surface to be coated, and the ambient air temperature should be at least 50° F while applying SEMSTONE 140 and while it cures.

In general, we recommend against applying SEMSTONE 140 if the temperature is expected to drop below 50°F. Instead, use SEMSTONE 140-OT.

2. Twenty-four hours before application, all materials (components A and B, aggregate, etc.) should be stored at a 70° - 85°F, to facilitate handling.

### SURFACE PREPARATION - GENERAL

Surfaces must be dry and free of dirt, dust, oil, grease, chemicals and other contaminants immediately prior to applying each coat of SEMSTONE 140.

### SURFACE PREPARATION OF CONCRETE

1. New concrete generally should be cured a minimum of 28 days.

NOTE: Check with Sentry Polymers for recommendations regarding concrete cured less than 28 days.

2. Concrete must be structurally sound and must not contain any accelerators or curing compounds.
3. Remove all oil and grease.
4. Remove all surface laitance and expose sound concrete.

We recommend abrasive blasting to do this. However, other methods, such as acid etching and neutralizing, may be used.

5. In general, any existing coating should be completely removed.

In certain instances this may not be necessary, but consult with Sentry Polymers first.

Always remove coatings which have failed due to lack of adhesion or thermal shock.

6. Locate all expansion joints, control joints, floor drains, equipment base plates and mid-floor termination points. Handle them as per Sentry's Construction Details Sheet No. 87-1.
7. Degraded concrete on horizontal surfaces should be restored using SEMSTONE 300 Epoxy Polymer Concrete or SEM-CRETE.
8. Fill all honeycombs, form voids, etc. in vertical surfaces using SEMSTONE 300 Epoxy Putty or SEM-CRETE.

### SURFACE PREPARATION OF INCIDENTAL STEEL

Equipment base plates, etc. to be coated along with the concrete should be abrasive blasted to a near white metal finish with a 1 - 2 mil anchor profile. (Ref.SSPC-SP-10)

### MASKING

Mask surfaces that are not to be coated. This material is difficult to remove, once applied.

### APPLICATION EQUIPMENT

1. SEMSTONE 140 may be applied using a spray rig, notched trowel, brush or roller.
2. Spraying Aggregate Filled Material

We recommend the use of a peristaltic spray rig, such as the Carousel Pump by Quik Spray, Fort Clinton, Ohio.

DO NOT use a plural component or a single component airless rig with aggregate filled material.

Set up the peristaltic rig with a 1 inch ID, 15 foot long material line and a 3 foot pole spray gun.

Prewet the hoses by pumping a small amount of mixed SEMSTONE 140 (see paragraphs 1 and 2 under MIXING AND APPLICATION) without aggregate through the lines and hose gun; about 1/2 gallon should be sufficient.

### 3. Spraying Material Without Aggregate

We recommend the use of a plural component or single component airless rig when the material will be sprayed without aggregate. The penstatic rig can also be used.

Plural Component Airless Spray Equipment (Graco Bulldog Hydra-Cat or equal):

Set equipment at a 4 to 1 volumetric mix ratio. Use a Graco Silver Gun, or equivalent, equipped with a reversible, self-cleaning tip, orifice size .035 - .041 inch.

Single Component Airless Spray Equipment (Graco "King" 45 to 1 Hydro Spray Pump, or equal); set up as follows:

No screens, filters or surge tank.

Spray hose should be 1/2" or 3/4" ID, and a maximum of 30 feet in length.

Use Graco Golden Mastic Gun, or equivalent, equipped with a reversible, self-cleaning tip, orifice size .035 - .041 inch.

Inlet air pressure should be a minimum of 100 psi. Recommended operating pressure is 60 - 100 psi.

### 4. Always use spray equipment in accordance with manufacturer's instructions.

### 5. Care of Spray Rig Hoses

Take care to prevent the mixed material from setting up in your hoses. For best results, keep your hoses as short as possible, purge them immediately if work is interrupted, keep them out of direct sunlight and insulated from hot surfaces.

## MIXING AND APPLICATION

1. The components must be individually agitated immediately prior to use.

Part A - Blend each Part A component to a uniform consistency in its individual container, using a Jiffy type mixer.

Part B - Stir each Part B component to a uniform color in its individual container.

2. If using a plural component spray rig, skip this step. Otherwise, do this:

Pour the entire contents of Part B into the container holding Part A, and mix thoroughly for two minutes using a Jiffy type mixer.

The pot life of the mixture will be approximately 45-60 minutes @ 75°F; significantly less time at elevated temperatures.

The longer the material is in the bucket after mixing, the shorter its pot life will be. So, use it immediately.

3. SEMSTONE 140 may be extended by adding silica sand. This can provide a more economical floor topping and is also useful when coating rough or mildly eroded concrete.

a. Do not add sand to SEMSTONE 140 unless your coating thickness will be at least 75 mils.

b. Use only clean, dry, bagged 20/40 mesh round silica sand.

c. Pour half the mixed SEMSTONE 140 into another clean, 5 gallon bucket.

d. Slowly add sand to each bucket while blending with a Jiffy type mixer. Do both buckets right away.

e. You may add up to 3 parts, by weight, of sand to 1 part, by weight, of SEMSTONE 140.

At 2 to 1 you get a mixture of good flow and consistency.

At 3 to 1, you will obtain a stiff fluid mixture and extend coverage by 100%. This is the optimum mixture for spray applications.

- f. The mixture may be sprayed or applied by notched trowel.

If spraying, work the pole gun in a circular motion to achieve an even coating thickness.

4. When working a large or congested area, it may be desirable for applicator to wear spiked shoes.
5. To obtain a nonskid surface, broadcast your grit media onto the coated surface before the coating jells.
6. SEMSTONE 140 is semiheveling. When used on an area that has a pitch or slope, use a 2 to 1 silica sand mixture (see 3 paragraph above) in order to keep the material from sliding.
7. To coat vertical surfaces, we generally recommend our SEMSTONE 140-S Epoxy Coating and Lining system.

However, for convenience, and when service conditions are not rigorous, SEMSTONE 140 may be used to coat short verticals, such as curbs. Multiple coats will probably be required to obtain a coating free of pin holes. We recommend a minimum of three coats. Allow each coat to cure tack free before applying the next coat. Prepare the surface between coats in accordance with paragraph 8.

**DO NOT USE AGGREGATE ON VERTICAL SURFACES.**

8. Prepare surfaces for intercoat adhesion as follows:
  - a. Allow SEMSTONE 140 to cure until jelled before recoating.
  - b. If the surface cures firm to the touch, but less than 24 hours, it must be washed with soap and water, rinsed and dried before recoating.
  - c. Surfaces cured beyond 24 hours must be washed with soap and water, rinsed, dried and lightly sanded or abrasive blasted.

9. If work is interrupted, and at the end of the day, terminate the coating in a straight line.

10. As it cures, SEMSTONE 140 will sometimes develop a thin, oily film on its surface.

This film may be easily removed by washing with soap and water.

## CLEANUP

Before it jells, SEMSTONE 140 may be cleaned from tools and equipment using hot, soapy water.

After SEMSTONE 140 jells, Xylene or MEK will be required. Chlorinated solvents may be used if flammable solvents are not allowed.

## SAFETY PRECAUTIONS

### FOR INDUSTRIAL USE ONLY.

Avoid contact with eyes and skin; do not ingest or inhale.

When working with SEMSTONE 140, always wear chemical goggles, rubber gloves, and appropriate work clothing.

When spraying in a confined area, also wear a fresh air hood and make provision for forced ventilation.

When spraying in an open area, an organic mist respirator can replace the fresh air hood.

Prolonged or repeated exposure to SEMSTONE 140 may cause skin irritation or allergic reactions.

Refer to material safety data sheets regarding individual components.

**ATTACHMENT II.C.7**  
**TANK SYSTEM SECONDARY CONTAINMENT**



## ATTACHMENT II.C.7

### TANK SYSTEM SECONDARY CONTAINMENT

#### TANK CONTAINMENT

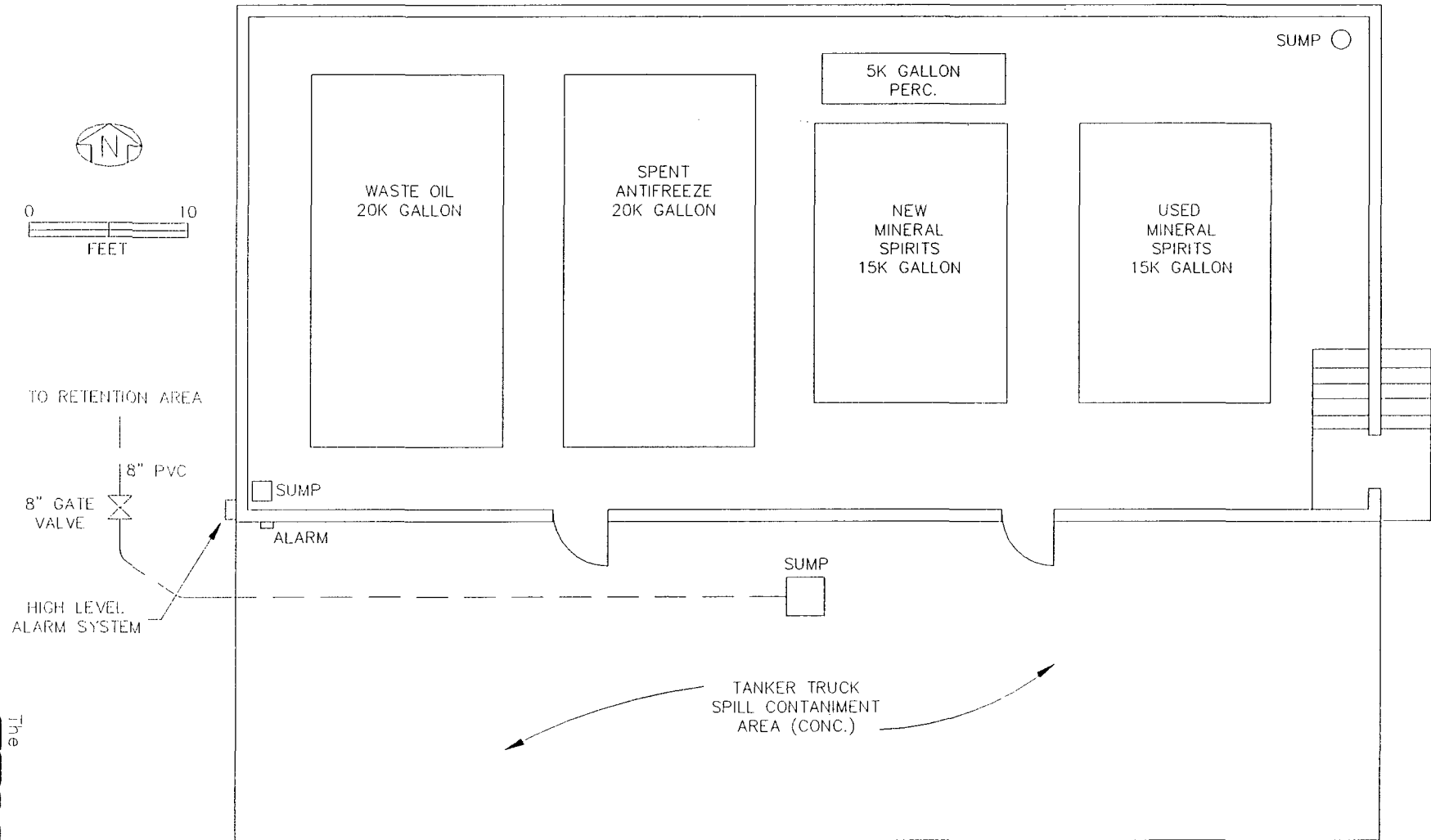
All tanks are aboveground, underlain by a 71' x 32'4" x 6" concrete slab, surrounded by a 36" concrete dike and in an enclosed building. The dike has been sealed with a chemical resistant coating. When recoating occurs in the future, the coating used will be Semstone 140 or equivalent. No surface run-on or precipitation would be in contact with the wastes stored in the tank farm and no run-off collection and management system is deemed necessary. The layout of the tank storage building is provided in Figure II.C.7-1. Containment calculations are in Figure II.C.7-2.

#### RETURN/FILL CONTAINMENT

The return/fill shelter is located inside the center portion of the main building. The floor is sloped to a containment trench located in the center of the return/fill shelter. The entire area is coated with a chemical resistant coating. The barrel washers are on a raised grating which measures 54'0" x 78'0" (Figure II.C.7-3).

The area is designed such that the route trucks can be backed inside the building and the garage doors shut so that no precipitation can get into the return/fill shelter containment area. The containment capacity for the return/fill area is 3,626 gallons which exceeds the storage capacity of the two dumpsters (275 gallons per dumpster). The containment calculations are presented in the tank system assessment report (Attachment II.C.1).

Figure II.C.7-1  
 Tank Farm  
 Safety-Kleen Corp. Facility  
 Boynton Beach, Florida



II.C.7-1A

**ATTACHMENT II.C.9**  
**CONTROLS AND SPILL PREVENTION**

## ATTACHMENT II.C.9

### CONTROLS AND SPILL PREVENTION

The tank system is designed to minimize the potential for spills and to control any spills which may occur. The tank area prevention and control system includes proper tanks, and containment walls and trenches. The return/fill shelter consists of dumpsters (barrel washers) located inside a containment area.

The prevention and control system minimizes the opportunity for an uncontrolled release of material to the environment.

#### DESCRIPTION OF FACILITY

The facility utilizes five aboveground steel tanks. Used mineral spirits housed in containers returned by the customers are transferred via the wet dumpster into a 15,000-gallon tank, awaiting bulk shipment to the recycle center. The spent antifreeze is transferred from a tanker truck into the 20,000-gallon tank. The other three tanks consist of one 15,000-gallon mineral spirits product tank, one 20,000-gallon nonhazardous waste oil tank, and one 5,000-gallon dry cleaning product tank. These three tanks are not considered RCRA tanks.

#### MATERIAL COMPATIBILITY

Mineral spirits (petroleum naphtha) is compatible with the mild steel tank structure. In fact, mineral spirits is often used as a light hydrocarbon coating to prevent rusting of metal parts. As with all petroleum storage vessels, water will accumulate over time due to condensation. The mineral spirits has a specific gravity less than water and the water will accumulate in the bottom of the tank. There is the potential for corrosion of the tank at the mineral spirits/water interface. Antifreeze and water are soluble in all proportions and no separate water plume will form in this tank.



Spent mineral spirits from parts washers is accumulated in a 15,000-gallon aboveground storage tank via the return and fill station. Used solvent is returned from customers via containers and poured into the barrel washers. The barrel is then placed on roller brushes contained within the barrel washer. As the machine is turned on, the barrel rotates on the brush and the outside of the barrel is cleaned. There is also a nozzle that sprays a stream of solvent into the bottom of the barrel to clean the inside of the barrel. The machine is turned off and the barrel is removed. The procedure takes approximately five seconds per barrel.

The used solvent goes to a sump in the bottom of the barrel washer and is automatically pumped to the used mineral spirits storage tank. There is a basket in the sump that collects sludge. Approximately twice a day, this basket is removed and sludge is removed and placed into a sludge container for recycle.

The barrel washer is a totally enclosed unit. A small amount of mist is generated while operating the unit. This is controlled by closing the lid of the unit. The spent antifreeze is transferred from a tanker truck into the bulk tank.

## TANKS

The tanks are designed and constructed to be compatible with the materials stored in them. Typical construction and installation standards for the aboveground tanks are discussed in Attachment II.C.2. All tanks are vented in accordance with National Fire Protection Association (NFPA) standards, and the tanks are equipped with high level-alarms. The tank seams are lapped with full fillet welds. The weld is done with an E70 electrode and can withstand a 4-psi air pressure test (which is performed by the manufacturer).

Attachment II.C.1 provides an independent assessment of the tank systems. This assessment includes a detailed description of the tank systems' components and operation. The following is a concise description of the main features of the tank system.

All tanks are aboveground, underlain by a 71' x 32'4" x 6" concrete slab, surrounded by a 36" concrete dike and are in an enclosed building. The dike has been sealed with a chemical resistant coating. Therefore, no surface run-on or precipitation would be in contact with the wastes stored in the tank farm and no run-off collection and management system is deemed necessary. Gauges are used to measure liquid levels in tanks and float switch-activated automatic high level alarms (which consist of a strobe light and siren) will signal the tank's being 95 percent full. This alarm allows an operator more than two minutes to stop operations and avoid overfilling the tank. In addition, the gauges of the tank must be read before filling and before and during the filling of a tanker truck (the available volume of which must be noted prior to emptying the tank) to prevent overfilling of the truck. A suction pump equipped with the tanker truck is used to withdraw used mineral spirits from the tank. No other equipment or standby equipment is used in the operation of the aboveground tanks. The secondary containment under the tanks and return/fill station must be cleaned within 24 hours of a spill. The used mineral spirits tank may be operated at a maximum volume of 14,250 gallons (95 percent). The spent antifreeze tank may be operated at a maximum volume of 19,000 gallons (95 percent).

Material which collects in the tank dike and return/fill station can be removed using a "wet/dry" vacuum, sorbents, or mop.

No smoking signs are posted on the entrance to the tank farm and return/fill station.

**ATTACHMENT II.C.12(a)**  
**TANK SYSTEM CLOSURE PLAN**



**ATTACHMENT II.C.12(a)**  
**TANK SYSTEM CLOSURE PLAN**

**CLOSURE INTRODUCTION**

The Safety-Kleen Corp. has constructed each service center with the intent that each will be a long-term facility for the distribution of Safety-Kleen products. No onsite disposal activity occurs at any plant and hence no disposal capacity will be exhausted that will necessitate closure of a facility. Based on current business and facility conditions, this facility is expected to remain in operation beyond the year 2000.

In the event that presently unforeseen circumstance(s) would result in the discontinuance of operations and permanent closure or sale of the facility, the following closure plan is designed to identify the steps necessary to completely close the facility at any point during its intended life, and should be used for tanks, container storage area, and equipment.

It is intended that all closures will be complete and final with removal of waste and decontamination of the facility and associated equipment, in order to eliminate the need for maintenance after closure and a chance of the escape of hazardous waste constituents into the environment.

Procedures described in this closure plan are also applicable to cleaning up spills and repairing/decontamination of facility or equipment.

An anticipated closure schedule can be seen in Figure II.C.12(a)-1. An anticipated maximum waste inventory for the tank system of the facility is presented in the following section.



- The dumpsters and the dock area will be cleaned with detergent solution and the rinsate analyzed for mineral spirits, volatile organic compounds, lead, and cadmium to determine the effectiveness of the decontamination. The area will continue to be washed and rinsed until levels are below MCLs, or PQLs if MCLs are not available.
- The rinsing fluids will be discharged through the appurtenant piping system into the storage tank, which will be subjected to a separate closure procedure as described Attachment II.C.12(a).
- The cleansed dumpster and dock structure will be reused by Safety-Kleen, or scrapped.
- The cleanup equipment and solutions disposal is the same as that listed earlier.

#### **PHASE I--OPEN THE TANK**

- Access to aboveground tanks is obtained by removing manways.
- Prior to opening the tanks, the personnel should have full face respiratory protection and protective clothing. Once the tanks have been opened, they will be provided with positive ventilation. The tanks will then be inspected to determine the approximate quantity and physical conditions of the remaining material.

## **PHASE II--REMOVING WASTE AND CLEANING TANK**

- Before removing the waste from the tank, all piping and appurtenant equipment will be flushed first with clean mineral spirits followed by a detergent solution.
- The method to remove the waste material from the tanks will depend on the physical properties and quantities of that material. Prior to any person entering the tank, an effort will be made to remove as much liquid and sludge as possible.
- Subsequent to vacuuming the majority of the material from the tank, it may be necessary to use a high pressure wash system using a clean solvent and detergent solution to rinse residual material from the walls and bottom of the tanks. The evacuated material and the rinse solution will be returned to the recycle center for reclamation. The quantity of wash fluid used will be kept to a minimum in order to limit the amount of unnecessary material. The final rinsate will be analyzed for mineral spirits, volatile organic compounds, lead, and cadmium, using SW-846 to determine the effectiveness of decontamination. The tank will continue to be washed and rinsed until levels are below MCLs, or PQLs if MCLs are not available. Rinsate will be removed using a vacuum tanker truck and will be disposed of as hazardous waste. It is anticipated that approximately 2,000 gallons of rinsate will require RCRA disposal.
- Storage tanks are considered confined spaces, i.e., spaces open or closed having a limited means of egress in which poisonous gases or flammable vapors might accumulate or an oxygen deficiency might occur.
- Confined space entry requires special operating procedures:
  - ▶ Tanks are to be washed, neutralized and/or purged (where flammable atmosphere is present) prior to being entered.

- ▶ Supply valves must be closed and "tagged" and bleeder valves left open, or supply piping should be disconnected.
  - ▶ Pumps or motors normally activated by automatic controls shall be operated manually to be sure they have been disconnected. Instrument power switches should be tagged "OFF."
  - ▶ On tanks where flammable vapors may be present, all sources of ignition must be removed.
  - ▶ All tanks must be tested for flammable vapors, toxic gases, or oxygen deficiency in that order, as applicable. The results of such tests should be displayed on the job site.
- 
- In all tank entering situations, an Oxygen Deficiency Test shall be performed prior to tank entry.
  - Under circumstances where "hot work" (welding, burning, grinding, etc.) is to be performed in or on the vessel, a test for combustible gases shall be taken. This is referred to as a "flash test."
  - In most circumstances, flash tests and oxygen deficiency tests will be performed by the supervisor of the area in which the work is being performed.
  - Under any conditions where a possibility (no matter how remote) of toxic vapors being present in the tank to be entered exists, the supervisor will arrange to have the air tested.

- ▶ There must be a set of wristlets or a rescue harness and sufficient rope at the job site to effect a rescue. Any other rescue equipment considered necessary must also be on the job site.
- ▶ Workers should wear a rescue harness if entering a tank with a large enough opening to easily effect a rescue. In tanks with small openings, only wristlets may be used. However, in cases where there are agitator shafts, containers, or other hazards in which the man's life-line would be entangled and the supervisor in charge feels that wearing the life-line may entrap a man and increase the hazard, the wearing of a harness or wristlets may be eliminated.
- ▶ A constant source of fresh air must be provided to ensure a complete change of air every few minutes. In cases of short-term entry for inspection or removal of objects, an air mask is recommended. In cases of long-term entry (generally for repair) the use of an air mover should be considered.
- ▶ When a ladder is required to enter a tank, the ladder must be secured and not removed while anyone is in the vessel. In cases where a rigid ladder could become an obstacle, a chain ladder may be used.
- ▶ Adequate illumination must be provided.
  - A flashlight or other battery-operated light must also be available to provide illumination for safety exit in the event of an electrical power failure.
  - Explosion-proof lighting must be used in any tank used to store flammable liquids.

- ▶ All electrical equipment to be used inside the tank must be in good repair and grounded.
- ▶ Others working in the immediate area shall be informed of the work being done and they shall inform the watcher or supervisor immediately of any unusual occurrence which may make it necessary to evacuate the tank.
- The "buddy" (standby observer) system:
  - ▶ Men working inside a confined space must be under the constant observation of a fully-instructed standby observer.
  - ▶ Before anyone enters the tank, the standby observer will be instructed by the person in charge of the entry that:
    - An entry authorization must be obtained from the person in charge by anyone entering the tank.
    - A rescue harness or wristlets must be on the job.
    - The standby observer must know the location of the nearest telephone (with emergency numbers posted); safety eyewash/shower; fire extinguisher; and oxygen inhalator.
    - For all "hot work" inside a tank, the standby observer must be instructed how to shut down welding/burning equipment.

- As long as personnel are inside the vessel, the standby observer must remain in continuous contact with the worker. **HE IS NOT TO LEAVE THE JOB SITE EXCEPT TO REPORT AN EMERGENCY.**
  - **UNDER NO CIRCUMSTANCES SHOULD THE STANDBY OBSERVER ENTER THE VESSEL.** If the worker(s) in the tank becomes ill or injured, the watcher is to put in effect the emergency plan described in the attached Standard Operating Procedure.
  - The standby observer still **DOES NOT ENTER THE TANK** until help is available.
  - After being instructed in his responsibilities, the standby observer will sign an instruction form indicating his understanding.
- Welding and burning within a tank:
- ▶ All welding and burning equipment must be provided with a shutoff device under the control of the standby observer; and the standby observer must know how to shut off the equipment if it becomes necessary.
  - ▶ Welding and burning equipment will only be taken into a tank immediately prior to its use and must be removed from the tank immediately after the job is finished.
  - ▶ For all "hot work" inside a tank, a properly executed flame permit, if needed, must be displayed at the job site.
  - ▶ Standard welding and burning safety precautions will always be followed.

**PHASE III--REMOVE TANK**

- Disconnect and cap all appurtenant piping.
- Disconnect and decontaminate all appurtenant pumping equipment.
- The vessels shall be removed and reused by Safety-Kleen or cut up and sold as scrap.
- The surface soil beneath the fill pipes and beneath each tank will be sampled and analyzed for volatile organic compounds, mineral spirits, lead, and cadmium.
- The secondary containment system will be disassembled. The construction materials will be tested with TCLP (pertinent constituents only). If the construction materials are classified as non-hazardous via TCLP, then they will be disposed of as a solid waste in a sanitary landfill. In the event the construction materials are identified as hazardous via TCLP, then the construction materials will be disposed of as a hazardous waste in accordance with RCRA regulations.
- Contaminated soil, if it exists, shall be removed and properly disposed of. An additional work plan to determine the extent of contamination and remediation procedures will be submitted in this case.

**PHASE IV--BACKFILLING AND REGRADING**

- Backfill any excavation with previously excavated material with proper compaction.
- Add additional backfill with proper compaction if necessary. The material must be of clean materials and easily compacted in place.
- Regrade the site to proper topography.

- Remove and dispose of nonusable debris.

### **FACILITY CLOSURE SCHEDULE AND CERTIFICATION**

- Safety-Kleen may amend the closure plan at any time during the active life of the facility. The active life of the facility is that period during which wastes are periodically received. Safety-Kleen shall amend the plan any time changes in operating plans or facility design affect the closure plan or whenever a change occurs in the expected year of closure of the facility. The plan must be amended within 60 days of the changes.
- Within 90 days of receiving the final volume of hazardous wastes, or 90 days after approval of the closure plan, if that is later, Safety-Kleen shall remove from the site all hazardous wastes in accordance with the approved closure plan. The Regional Administrator may approve a longer period if Safety-Kleen demonstrates that:

The activities required to comply with this paragraph will, of necessity, take longer than 90 days to complete; or

The following requirements are met:

- ▶ The facility has the capacity to receive additional wastes;
- ▶ There is a reasonable likelihood that a person other than Safety-Kleen will recommence operation of the site;
- ▶ Closure of the facility would be incompatible with continued operation of the site; and



- ▶ Safety-Kleen has taken and will continue to take all steps to prevent threats to human health and the environment.
- Safety-Kleen shall complete closure activities in accordance with the approved closure plan and within 180 days after receiving the final volume of wastes or 180 days after approval of the closure plan, whichever is later.
- When closure is completed, all facility equipment and structures shall have been properly disposed of, or decontaminated by removing all hazardous waste and residues.
- When closure is completed, Safety-Kleen shall submit to the certification by an independent registered professional engineer that the facility has been closed in accordance with the specifications in the approved closure plan.

**PART II K**  
**CLOSURE**



**ATTACHMENT II.K.1**

**CLOSURE PLAN**

Revision 2 - 12/06/91



**ATTACHMENT II.K.1****CLOSURE PLAN****CLOSURE INTRODUCTION**

The Safety-Kleen Corp. has constructed each service center with the intent that each will be a long-term facility for the distribution of Safety-Kleen products. No onsite disposal activity occurs at any plant and, hence, no disposal capacity will be exhausted that will necessitate closure of a facility. Based on current business and facility conditions, this facility is expected to remain in operation until the year of 2000.

In the event that some presently unforeseen circumstance(s) would result in the discontinuance of operations and permanent closure or sale of the facility, the following closure plan is designed to identify the steps necessary to completely close the facility at any point during its intended life, and should be used for tanks, container storage area, and equipment.

It is intended that all closures will be complete and final with removal of waste and decontamination of the facility and associated equipment, in order to eliminate need for maintenance after closure and chance of escape of hazardous waste constituents into the environment.

Procedures described in this closure plan are also applicable to cleaning up of spills and repairing/decontamination of facility or equipment.

**Facility Data****Tank Area**

15,000-gallon waste mineral spirits tank in a three-foot-high concrete containment area enclosed inside a building and a 20,000-gallon spent antifreeze tank. This building also

houses one 20,000-gallon nonhazardous waste oil tank, a 15,000-gallon clean mineral spirits tank, and a 5,000-gallon clean perchloroethylene tank.

Container Storage Area:

A 48' x 78' foot area with sloped floor and collection sump. The maximum total volume stored is 18,750 gallons with 6,912 gallons anticipated to be waste mineral spirits dumpster mud containers, dry cleaner wastes, antifreeze, spent immersion cleaner, paint wastes, and/or FRS wastes.

Solvent Return/Fill Shelter:

One 45-foot by 44-foot structure with two solvent return receptacles (wet dumpsters) each and ancillary equipment. Each dumpster can hold 275 gallons of waste.

**MAXIMUM INVENTORY OF WASTE**

Tank Wastes

The maximum amount of waste mineral spirits in the tank is 15,000 gallons, and spent antifreeze in the tank is 20,000 gallons.

Containerized Waste: Anticipated maximum of 6,912 gallons

This amount includes any combination of 5-, 15-, 16-, split 30- (also known as 20-gallon), 30-, 55-, and 85-gallon containers.

Dumpsters: 550 gallons (two 275-gallon dumpsters)

## CLOSURE PROCEDURE

### Container Storage Areas

- The container storage area houses containers of used immersion cleaner, mineral spirits, dumpster mud, antifreeze, paint waste, dry cleaning wastes, and FRS wastes.
- At closure, all containers will be removed and transported to the recycle center with proper packaging, labeling, and manifesting where the contents in the containers will be reclaimed and the containers will be cleaned for reuse.
- The concrete floor and spill containment areas will be cleaned with detergent solution and the rinsate will be analyzed for mineral spirits, volatile organic compounds, lead, and cadmium, using SW-846 methods, to determine the effectiveness of decontamination. The area will continue to be washed and rinsed until levels are below maximum contaminant levels (MCLs), or if MCLs are not available, practical quantification levels (PQLs) as specified in Appendix IX of 40 CFR 264.
- If the wash water or other wastes generated in the closure process are determined to be hazardous, they will be disposed of properly as a hazardous waste; otherwise, the material will be disposed of as an industrial waste. It should be noted that wash water and rinsate will not be allowed to drain to the waterway. It is anticipated that approximately 350 gallons of rinsate will require RCRA disposal.
- The equipment used to clean this area includes mops, pails, scrub brushes, a wet/dry vacuum, and containers. The mops, pails, and scrub brushes will be containerized and disposed of as hazardous waste. The wet/dry vacuum hose will be washed with a detergent solution to decontaminate it. The containers will be used to store the wastewater.



### Solvent Return/Fill Shelter Area

- This area is used to return the used mineral spirits to the storage tank.
- Closure of the solvent return receptacles (wet dumpster) will be made prior to the cleaning and removal of the storage tank.
- At closure, the sludge in the dumpsters ("dumpster mud") will be cleaned out and containerized, labeled, and manifested for proper disposal at permitted facilities.
- The dumpsters and the dock area will be cleaned with detergent solution and the rinsate analyzed for mineral spirits, volatile organic compounds, lead, and cadmium to determine the effectiveness of the decontamination. The area will continue to be washed and rinsed until levels are below detectable MCLs, or PQLs if MCLs are not available.
- The rinsing fluids will be discharged through the appurtenant piping system into the storage tank, which will be subjected to a separate closure procedure as described herein.
- The cleansed dumpster and dock structure will be reused by Safety-Kleen, or scrapped.
- The cleanup equipment and solutions disposal are the same as those listed earlier.

### PHASE I--OPEN THE TANK

- Access to aboveground tanks is obtained by removing manways.
- Prior to opening the tanks, the personnel should have full-face respiratory protection and protective clothing. Once the tanks have been opened they will be provided

with positive ventilation. The tanks will then be inspected to determine the approximate quantity and physical conditions of the remaining material.

## **PHASE II--REMOVING WASTE AND CLEANING TANK**

- Before removing the waste from the tank, all piping and appurtenant equipment will be flushed first with clean mineral spirits followed by detergent solution.
- The method to remove the waste material from the tanks will depend on the physical properties and quantities of that material. Prior to any person entering the tank, an effort will be made to remove as much liquid and sludge as possible.
- Subsequent to vacuuming the majority of the material from the tanks, it may be necessary to use a high pressure wash system using clean solvent and detergent solution to rinse residual material from the walls and bottom of the tanks. The evacuated material and the rinse solution will be returned to the recycle center for reclamation. The quantity of wash fluid used will be kept to a minimum in order to limit the amount of unnecessary material. The final rinsate will be analyzed for mineral spirits, volatile organic compounds, lead, and cadmium, using SW-846, to determine the effectiveness of decontamination. The tank will continue to be washed and rinsed until levels are below MCLs, or PQLs if MCLs are not available. Rinsate will be removed using a vacuum tanker truck and will be disposed of as hazardous waste. It is anticipated that approximately 2,000 gallons of rinsate will require RCRA disposal.
- Storage tanks are considered confined spaces, i.e., spaces open or closed having a limited means of egress in which poisonous gases or flammable vapors might accumulate or an oxygen deficiency might occur.





- Confined space entry requires special operating procedures:
  - ▶ Tanks are to be washed, neutralized and/or purged (where flammable atmosphere is present) prior to being entered.
  - ▶ Supply valves must be closed and "tagged" and bleeder valves left open, or supply piping should be disconnected.
  - ▶ Pumps or motors normally activated by automatic controls shall be operated manually to be sure they have been disconnected. Instrument power switches should be tagged "OFF."
  - ▶ On tanks where flammable vapors may be present, all sources of ignition must be removed.
  - ▶ All tanks must be tested for flammable vapors, toxic gases or oxygen deficiency, in that order, as applicable. The results of such tests should be displayed on the job site.
    - In all tank entering situations, an Oxygen Deficiency Test shall be performed prior to tank entry.
    - Under circumstances where "hot work" (welding, burning, grinding, etc.) is to be performed in or on the vessel, a test for combustible gases shall be taken. This is referred to as a "flash test."
    - In most circumstances, flash tests and oxygen deficiency tests will be performed by the supervisor of the area in which the work is being performed.

- Under any conditions where a possibility (no matter how remote) of toxic vapors being present in the tank to be entered exits, the supervisor will arrange to have the air tested.
- ▶ A set of wristlets or a rescue harness and sufficient rope must be present at the job site to effect a rescue. Any other rescue equipment considered necessary must also be on the job site.
- ▶ Workers should wear a rescue harness if entering a tank with a large enough opening to easily effect a rescue. In tanks with small openings, only wristlets may be used. However, in cases where there are agitator shafts, containers, or other hazards in which the man's life-line would be entangled and the supervisor in charge feels that wearing the life-line may entrap a man and increase the hazard, the wearing of a harness or wristlets may be eliminated.
- ▶ A constant source of fresh air must be provided to ensure a complete change of air every few minutes. In cases of short-term entry for inspection or removal of objects, an air mask is recommended. In cases of long-term entry (generally for repair) the use of an air mover should be considered.
- ▶ When a ladder is required to enter a tank, the ladder must be secured and not removed while anyone is in the vessel. In cases where a rigid ladder could become an obstacle, a chain ladder may be used.
- ▶ Adequate illumination must be provided.
- A flashlight or other battery operated light must also be available to provide illumination for a safe exit in the event of an electrical power failure.

- In any tank used to store flammable liquids, explosion-proof lighting must be used.
- ▶ All electrical equipment to be used inside the tank must be in good repair and grounded.
- ▶ Others working in the immediate area shall be informed of the work being done and they shall inform the watcher or supervisor immediately of any unusual occurrence which may make it necessary to evacuate the tank.
- The "buddy" (standby observer) system:
  - ▶ Men working inside a confined space must be under the constant observation of a fully-instructed standby observer.
  - ▶ Before anyone enters the tank, the standby observer will be instructed by the person in charge of the entry that:
    - An entry authorization must be obtained from the person in charge by anyone entering the tank.
    - A rescue harness or wristlets must be on the job.
    - The standby observer must know the location of the nearest telephone (with emergency numbers posted); safety eyewash/shower; fire extinguisher; and oxygen inhalator.
    - For all "hot work" inside a tank, the standby observer must be instructed how to shut down welding/burning equipment.

- As long as personnel are inside the vessel, the standby observer must remain in continuous contact with the worker. **HE IS NOT TO LEAVE THE JOB SITE EXCEPT TO REPORT AN EMERGENCY.**
  - **UNDER NO CIRCUMSTANCES SHOULD THE STANDBY OBSERVER ENTER THE VESSEL.** If the worker(s) in the tank becomes ill or injured, the watcher is to put in effect the emergency plan described in the attached Standard Operating Procedure.
  - The standby observer still **DOES NOT ENTER THE TANK** until help is available.
  - After being instructed in his responsibilities, the standby observer will sign an instruction form indicating his understanding.
- Welding and burning within a tank:
- ▶ All welding and burning equipment must be provided with a shutoff device under the control of the standby observer, and the standby observer must know how to shut off the equipment if it becomes necessary.
  - ▶ Welding and burning equipment will only be taken into a tank immediately prior to its use and must be removed from the tank immediately after the job is finished.
  - ▶ For all "hot work" inside a tank, a properly executed flame permit, if needed, must be displayed at the job site.
  - ▶ Standard welding and burning safety precautions will always be followed.

**PHASE III--REMOVE TANK**

- Disconnect and cap all appurtenant piping.
- Disconnect and decontaminate all appurtenant pumping equipment.
- The vessels shall be removed and reused by Safety-Kleen or cut up and sold as scrap.
- The surface soil beneath the fill pipes and beneath each tank (see Exhibit B) will be sampled and analyzed for volatile organic compounds, mineral spirits, lead, and cadmium.
- Contaminated soil, if it exists, shall be removed and properly disposed of. An additional work plan to determine the extent of contamination and remediation procedures will be submitted in this case.
- The secondary containment system will be disassembled. The construction materials will be tested with TCLP (pertinent constituents only). If the construction materials are classified as non-hazardous via TCLP, then they will be disposed of as a solid waste in a sanitary landfill. In the event the construction materials are identified as hazardous via TCLP, then the construction materials will be disposed of as a hazardous waste in accordance with RCRA regulations.

**PHASE IV--BACKFILLING AND REGRADING**

- Backfill any excavation with previously excavated material with proper compaction.
- Add additional backfill with proper compaction if necessary. The material must be of clean materials and easily compacted in place.

- Regrade the site to proper topography.
- Remove and dispose of nonusable debris.

#### **FACILITY CLOSURE SCHEDULE AND CERTIFICATION**

- Safety-Kleen may amend the closure plan at any time during the active life of the facility. The active life of the facility is that period during which wastes are periodically received. Safety-Kleen shall amend the plan any time changes in operating plans or facility design affect the closure plan or whenever a change occurs in the expected year of closure of the facility. The plan must be amended within 60 days of the changes.
- Within 90 days of receiving the final volume of hazardous wastes, or 90 days after approval of the closure plan, if that is later, Safety-Kleen shall remove from the site all hazardous wastes in accordance with the approved closure plan. The Regional Administrator may approve a longer period if Safety-Kleen demonstrates that:

The activities required to comply with this paragraph will, of necessity, take longer than 90 days to complete; or

The following requirements are met:

- ▶ The facility has the capacity to receive additional wastes;
- ▶ There is a reasonable likelihood that a person other than Safety-Kleen will recommence operation of the site;
- ▶ Closure of the facility would be incompatible with continued operation of the site; and

- ▶ Safety-Kleen has taken and will continue to take all steps to prevent threats to human health and the environment.
- Safety-Kleen shall complete closure activities in accordance with the approved closure plan and within 180 days after receiving the final volume of wastes or 180 days after approval of the closure plan, whichever is later.
- When closure is completed, all facility equipment and structures shall have been properly disposed of, or decontaminated by removing all hazardous waste and residues.
- When closure is completed, Safety-Kleen shall submit to the certification by an independent registered professional engineer that the facility has been closed in accordance with the specifications in the approved closure plan.

**INSTRUCTIONS FOR UPDATING THE  
SAFETY-KLEEN BOYNTON BEACH, FLORIDA  
OPERATING PERMIT APPLICATION FLD984167791**

<b><u>Attachments to Replace/Include</u></b>	<b><u>Reason for Replacement</u></b>
(Text pages only unless otherwise indicated)	
Cover Page and Table of Contents	
Page I.B.3-1B	Added references to antifreeze tank.
Attachment I.D.2	Removed references to drum colors.
	Removed references to drum sizes.
	Added Fluid Recovery Service (FRS) wastes.
	Added antifreeze tank description.
Attachment I.D.3	Added Fluid Recovery Service (FRS) wastes.
	Added tank as process code for ethylene glycol.
Page II.A.1(a)-2D	Added references to antifreeze tank.
Page II.A.1(c)-1A	Added references to antifreeze tank.
Attachments II.A.4(b) (text pages only)	Added antifreeze in tanks.
	Added Fluid Recovery Service (FRS) wastes.
	Removed references to drum sizes.
Attachment II.A.4(b), pages iii and II.A.4(b)-3C	Changed alternate emergency coordinator.
Page II.A.4(b)-3A	Changed reference from oil tank to antifreeze tank.



<u>Attachments to Replace/Include</u>	<u>Reason for Replacement</u>
Attachment II.A.4(b), Appendix B	Reissue letters to local authorities.
Page II.A.4(d)-5A	Changed reference from oil tank to antifreeze tank.
Attachment II.A.5, Table II.A.5-1	Added Fluid Recovery Service (FRS) wastes.
	Added antifreeze tank.
Pages II.A.6-2A, II.A.6-2B, II.A.6-2C, and II.A.6-2D	Added Fluid Recovery Service (FRS) wastes.
	Added antifreeze tank references.
Attachment II.B.1	Reference to Fluid Recovery Service (FRS) wastes on page II.B.1-2.
Attachment II.B.3	Removed references to drum color.
	Removed references to drum sizes.
	Added references to Fluid Recovery Service (FRS) wastes.
Attachment II.B.4, Table II.B.4-1	Added references to Fluid Recovery Service (FRS) wastes.
	Provided table of container sizes.
	Removed references to color of drums.
Attachment II.B.6	Changed drum sizes on page II.B.6-2.
	Added references to Fluid Recovery Service (FRS) wastes.
Attachment II.C-1 (Remove no pages)	Add new tank assessment to attachment.
Attachment II.C-2 and page II.C-2-1A	Added spent antifreeze tank assessment.
	Added reference to the 20,000-gallon spent antifreeze tank.
Attachment II.C-7 and page II.C-7-1A (text pages only)	Added reference to the 20,000-gallon spent antifreeze tank.

Attachments to Replace/Include

Reason for Replacement

Attachment II.C-9

Added reference to the 20,000-gallon spent antifreeze tank.

Attachment II.C-12(a)

Added reference to the 20,000-gallon spent antifreeze tank on page II.C.12(a)-2.

Attachment II.K.1

Added reference to the 20,000-gallon spent antifreeze tank on pages II.K.1-1 and II.K.1-2.

Added Fluid Recovery Service (FRS) wastes.

Changed drum sizes.

**RCRA OPERATING PERMIT APPLICATION  
SAFETY-KLEEN CORP.  
LOT 46B QUANTUM INDUSTRIAL PARK  
BOYNTON BEACH, FLORIDA**

FLD 984167791

April 23, 1991

Revised June 25, 1991

Revised December 6, 1991

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## TABLE OF CONTENTS

		<u>Page</u>
Permit Chronology		
Part I	General Facility Information	
	Attachment I.A.21 Permit Information	
	Attachment I.B.3 Facility Layout and Photographs	I.B.3-1
	Attachment I.B.4 Topography Map of the Site	I.B.4-1
	Attachment I.D.2 Description of Facility Operation	I.D.2-1
	Attachment I.D.3 Waste Type	I.D.3-1
Part II A	General	
	Attachment II.A.1(a) Topography Map	II.A.1(a)-1
	Attachment II.A.1(b) Wind Rose	II.A.1(b)-1
	Attachment II.A.1(c) Traffic Information	II.A.1(c)-1
	Attachment II.A.2 Financial Responsibility Information	II.A.2-1
	Attachment II.A.3 Flood Information	II.A.3-1
	Attachment II.A.4 Facility Security Information	II.A.4-1
	Attachment II.A.4(a) Security Procedures and Equipment	II.A.4(a)-1
	Attachment II.A.4(b) Contingency Plan and Emergency Procedures for Daily Business Operations	II.A.4(b)-1
	Attachment II.A.4(d) Preparedness and Prevention Procedures	II.A.4(d)-1
	Attachment II.A.4(e) Training Program	II.A.4(e)-1
	Attachment II.A.5 Waste Analysis Report	II.A.5-1
	Attachment II.A.6 Waste Analysis Plan	II.A.6-1
	Attachment II.A.7 Manifest System, Recordkeeping, and Reporting	II.A.7-1
Part II B	Containers	
	Attachment II.B.1 Containment System	II.B.1-1
	Attachment II.B.2 Waste Compatibility	II.B.2-1
	Attachment II.B.3 Waste Segregation	II.B.3-1
	Attachment II.B.4 Container Management	II.B.4-1
	Attachment II.B.5 Container Inspections	II.B.5-1
	Attachment II.B.6 Container Closure Plan	II.B.6-1

## TABLE OF CONTENTS (Continued)

		<u>Page</u>
Part II C	Tank Systems	
Attachment II.C.1	Engineering Assessment of Tank System	II.C.1-1
Attachment II.C.2	Tank System Specifications	II.C.2-1
Attachment II.C.7	Tank System Secondary Containment	II.C.7-1
Attachment II.C.9	Controls and Spill Prevention	II.C.9-1
Attachment II.C.11	Tank System Inspections	II.C.11-1
Attachment II.C.12(a)	Tank System Closure Plan	II.C.12(a)-1
Attachment II.C.12(b)	Tank System Contingent Post-Closure Plan	II.C.12(b)-1
Attachment II.C.13	Response to Leaks and Disposition of Unfit for Use Tank Systems	II.C.13-1
Part II K	Closure	
Attachment II.K.1	Closure Plan	II.K.1-1
Attachment II.K.2	Contingent Post-Closure Plan	II.K.2-1
Part II P	Information Regarding Potential Releases from Solid Waste Management Units	II.P.-1

## LIST OF FIGURES

		<u>Page</u>
FIGURE I.B.3-1	Site Layout	I.B.3-1A
FIGURE I.B.3-2	Truck Traffic Patterns	I.B.3-1B
FIGURE I.B.3-3	Traffic Volumes	I.B.3-1C
FIGURE I.B.4-1	Topographic Map	I.B.4-1A
FIGURE I.B.4-2	Floodplain	I.B.4-1B
FIGURE I.B.4-3	Surrounding Land Uses	I.B.4-1C
FIGURE I.B.4-4	Legal Boundary of the Facility	I.B.4-2A
FIGURE I.B.4-5	Well Inventory Map	I.B.4-2B
FIGURE I.B.4-6	Facility Run-Off Control System	I.B.4-2D
FIGURE II.A.1(a)-1	Floodplain	II.A.1(a)-1A
FIGURE II.A.1(a)-2	Access Control Features	II.A.1(a)-1B
FIGURE II.A.1(a)-3	Well Inventory Map	II.A.1(a)-1C
FIGURE II.A.1(a)-4	Buildings and Structures	II.A.1(a)-2A
FIGURE II.A.1(a)-5	Fire Fighting Equipment	II.A.1(a)-2B
FIGURE II.A.1(a)-6	Surface Water Flow	II.A.1(a)-2C
FIGURE II.A.1(a)-7	Truck Traffic Patterns	II.A.1(a)-2D
FIGURE II.A.1(b)-1	Wind Rose	II.A.1(b)-1A
FIGURE II.A.1(c)-1	Truck Traffic Patterns	II.A.1(c)-1A
FIGURE II.A.1(c)-2	Traffic Volumes	II.A.1(c)-1B

**LIST OF FIGURES (Continued)**

		<u>Page</u>
FIGURE II.A.3-1	Floodplain	II.A.3-1A
FIGURE II.A.4(a)-1	Security Signage	II.A.4(a)-1A
FIGURE II.A.4(b)-1	Site Layout	II.A.4(b)-3A
FIGURE II.A.4(b)-2	Safety Equipment	II.A.4(b)-3B
FIGURE II.A.4(d)-1	Location of Emergency Equipment	II.A.4(d)-5A
FIGURE II.B.1-1	Drum Storage Area	II.B.1-1A
FIGURE II.B.3-1	16-Gallon Steel Barrel	II.B.3-2A
FIGURE II.B.3-2	16-Gallon Drum Lid	II.B.3-2B
FIGURE II.B.3-3	16-Gallon Drum Clamp Ring	II.B.3-2C
FIGURE II.B.3-4	16-Gallon Drum Adapter Clip	II.B.3-2D
FIGURE II.B.3-5	Dry Cleaning Drum	II.B.3-2E
FIGURE II.B.3-6	Dry Cleaning Drum Ring	II.B.3-2F
FIGURE II.B.3-7	Dry Cleaning Drum Cover	II.B.3-2G
FIGURE II.B.3-8	Waste Paint Containers	II.B.3-2H
FIGURE II.B.5-1	Daily Inspection of Gates and Locks	II.B.5-1A
FIGURE II.B.5-2	Weekly Inspection of Safety and Emergency Equipment	II.B.5-1B
FIGURE II.B.5-3	Daily Inspection of Drum Storage Area	II.B.5-1C
FIGURE II.B.6-1	Typical Closure Schedule	II.B.6-1A
FIGURE II.C.2-1	Tank Farm	II.C.2-1A

## LIST OF FIGURES (Continued)

	<u>Page</u>
FIGURE II.C.2-2(a) - Barrel Washer Specifications FIGURE II.C.2-2(j)	II.C.2-2A
FIGURE II.C.2-3 Solvent Dispenser	II.C.2-2K
FIGURE II.C.2-4(a) - Used Solvent Storage Tank Installation Details FIGURE II.C.2-4(b)	II.C.2-3A
FIGURE II.C.2-5(a) - High Level Alarm System FIGURE II.C.2-5(c)	II.C.2-3C
FIGURE II.C.7-1 Tank Farm	II.C.7-1A
FIGURE II.C.7-2 Tank Containment Calculations	II.C.7-1B
FIGURE II.C.7-3 Return/Fill Shelter	II.C.7-1C
FIGURE II.C.11-1 Daily Inspection of Gates and Locks	II.C.11-1A
FIGURE II.C.11-2 Weekly Inspection of Safety and Emergency Equipment	II.C.11-1B
FIGURE II.C.11-3 Daily Inspection of Storage Tanks	II.C.11-1C
FIGURE II.C.12(a)-1 Typical Closure Schedule	II.C.12(a)-1A



## LIST OF TABLES

		<u>Page</u>
TABLE I.B.4-1	Well Inventory	I.B.4-2C
TABLE I.D.3-1	List of Wastes	I.D.3-1A
TABLE II.A.1(a)-1	Well Inventory	II.A.1(a)-1D
TABLE II.A.4(b)-1	Emergency Notification	II.A.4(b)-4A
TABLE II.A.4(b)-2	Telephone Notification Log	II.A.4(b)-4B
TABLE II.A.4(b)-3	Emergency Response Equipment	II.A.4(b)-14A
TABLE II.A.4(d)-1	Emergency Response Equipment	II.A.4(d)-5B
TABLE II.A.4(e)-1	Time of Training	II.A.4(e)-1A
TABLE II.A.4(e)-2	Training Plan Outline	II.A.4(e)-1B
TABLE II.A.4(e)-3	Record of Personnel Training	II.A.4(e)-1F
TABLE II.A.4(e)-4	Job Description - Branch Manager	II.A.4(e)-2A
TABLE II.A.4(e)-5	Job Description - Branch Secretary	II.A.4(e)-2B
TABLE II.A.4(e)-6	Job Description - Sales Representative	II.A.4(e)-2C
TABLE II.A.4(e)-7	Job Description - Warehouse Personnel	II.A.4(e)-2D
TABLE II.A.4(e)-8	New Branch Manager Training	II.A.4(e)-4A
TABLE II.A.5-1	Acceptance Criteria for Fluid Recovery Service (FRS) Wastes	II.A.5-7A
TABLE II.A.6-1	Parameters and Rationale for Hazardous Waste Identification	II.A.6-2A
TABLE II.A.6-2	Parameters and Test Methods	II.A.6-2B

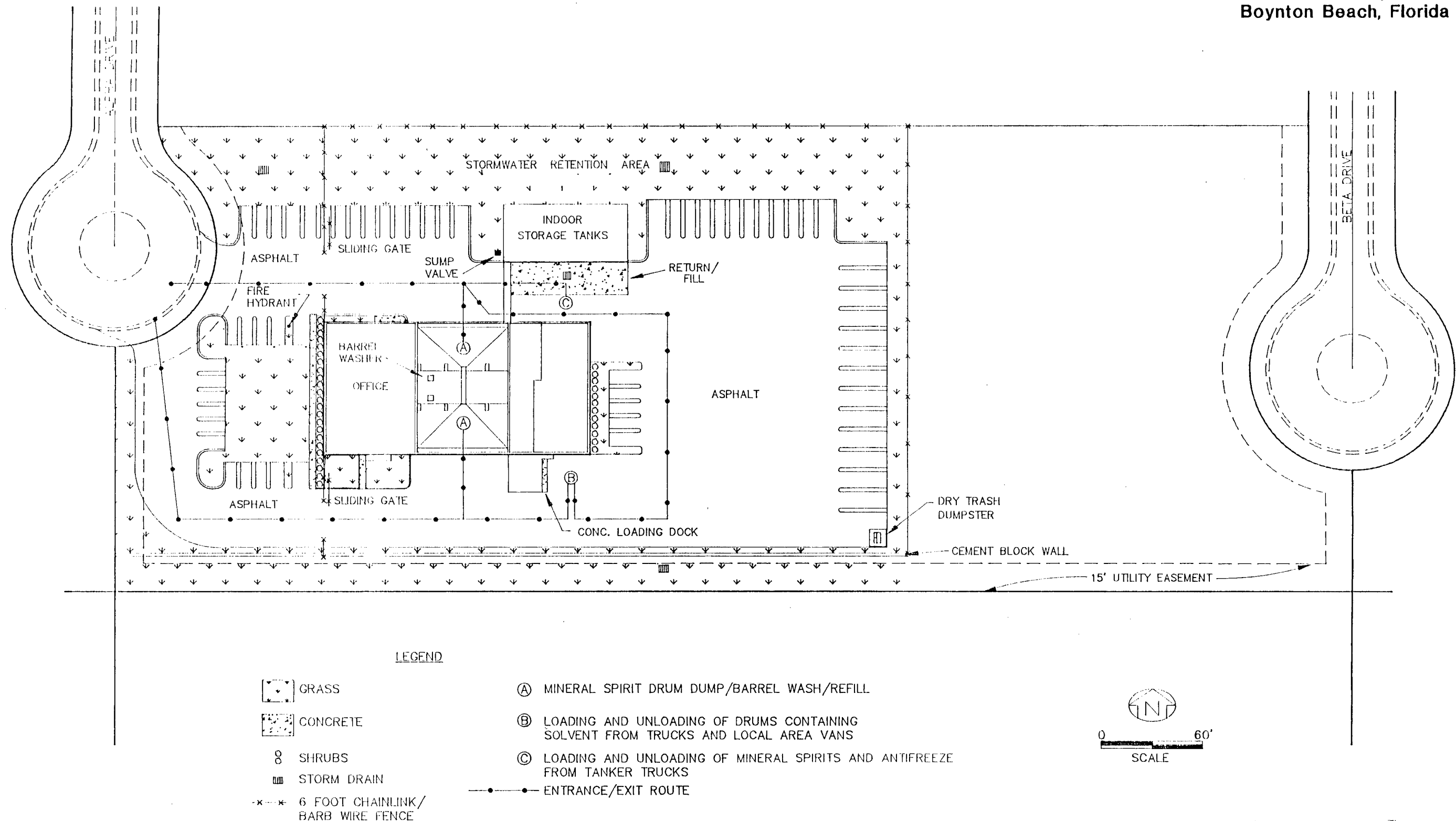
## LIST OF TABLES (Continued)

		<u>Page</u>
TABLE II.A.6-3	Methods Used to Sample Hazardous Wastes	II.A.6-2C
TABLE II.A.6-4	Frequency of Analysis	II.A.6-2D
TABLE II.B.4-1	Waste Containers	II.B.4-1A

**PART I**  
**GENERAL FACILITY INFORMATION**



Figure I.B.3-2  
Truck Traffic Patterns and Loading/  
Unloading Areas of Hazardous Waste  
Safety-Kleen Corp. Facility  
Boynton Beach, Florida



**ATTACHMENT I.D.2**  
**DESCRIPTION OF FACILITY OPERATION**



**ATTACHMENT I.D.2**  
**DESCRIPTION OF FACILITY OPERATION**

**DESCRIPTION OF THE BUSINESS**

Safety-Kleen Corp. of Elgin, Illinois is an international, service-oriented company whose customers are primarily engaged in automotive repair and industrial maintenance. Since 1968, Safety-Kleen has been offering a leasing service for hydrocarbon and chlorinated solvents and small parts washing equipment. A unique feature of this business concept is that the solvent is produced through recycling the used solvent that is leased to the customers. Approximately two-thirds of the clean solvent leased has been previously used by the customers.

The Safety-Kleen parts washing equipment, together with the solvents, are leased to customers; the leasing charge includes regularly scheduled solvent changes and machine maintenance. The business is conducted from local service centers (sales branches) located in 45 states domestically that warehouse the products and equipment required to service the customers in their sales areas. On a regular basis, service representatives furnish clean solvent to the customers, pick up the used solvent, and ensure that the leased equipment is in good working order. In 1979, Safety-Kleen expanded their scope of operations to make their solvent leasing service available to owners of parts cleaning equipment, regardless of manufacturer, using Safety-Kleen's types of solvents.

Basically, Safety-Kleen handles three types of parts washer solvents: a mineral spirits solvent and old and new formulations of immersion cleaner. The old immersion cleaner solvent is labeled under the trade name of "Immersion Cleaner and Carburetor and Cold Parts Cleaner #609." It is a two-phase system consisting of an upper aqueous (water) layer and lower non-aqueous (solvent) layer. The water phase consists of water and Dresinate TX (sodium soap of tall oil). The solvent phase is composed of methylene chloride, orthodichlorobenzene, cresylic acid, and an amines additive. A new immersion

cleaner is being marketed under the name #699 and will eventually replace the old immersion cleaner. It is a non-chlorinated solvent mixture. The solvent is composed of heavy aromatic naphtha, N-methyl-2-pyrrolidone dipropylene glycol methyl ether, monoethanolamine and oleic acid. It contains a maximum of 1 percent total chlorinated solvents.

The solvents are distributed and collected by their service representatives. Containers are transported in specially-equipped, enclosed route trucks. Clean solvents are distributed from and used solvents returned to the service center where they are stored in separate tanks for the clean and used mineral spirits bulk storage. Warehouse space is dedicated for the storage of both clean and used immersion cleaner containers. Safety-Kleen leases parts washing equipment, including partially filled containers, which double as the solvent reservoir of the parts washer. During servicing, the quantity of used solvent removed from each machine ranges from 5 to 20 gallons. The mineral spirits are collected in containers. The 609 and 699 Immersion Cleaners are also housed in containers.

The mineral spirits are transported in covered containers between the service center and customers. Upon returning to the service center, the used mineral spirits are transferred from the containers into a wet dumpster (solvent return receptacle) in which coarse solids in the mineral spirits are retained. Used mineral spirits in the wet dumpster flow into a 15,000-gallon aboveground tank for storage. Used mineral spirits solvent is picked up periodically by a bulk tank truck from the recycle facility which at the same time delivers a load of clean mineral spirits. The sludge in the wet dumpster is periodically cleaned out, containerized, and temporarily stored in the container storage area for later shipment to the recycle facility for reclamation.

Periodically, a company truck is dispatched from one of Safety-Kleen's nationwide solvent recycle facilities to the service center to deliver a load of clean solvent and pick

up a load of used solvent. Mineral spirits are transported in bulk tank trucks between the service centers and the recycle facilities. The Immersion Cleaner remain in the covered containers during transfer between the service centers and the recycle facilities. Approximately 97 percent of the solvent handled in the parts washer business is mineral spirits, while the remainder is immersion cleaner.

In 1984, Safety-Kleen began offering a service for the collection of filter cartridges and still bottoms contaminated with dry cleaning solvents (usually perchloroethylene). These wastes are containerized on the customer's premises and are periodically collected by a sales representative. The containerized waste is accumulated in a contained area of the warehouse for shipment to a Safety-Kleen recycle center. Approximately 35 percent of this waste is returned to dry cleaners as usable product.

In 1986, a paint waste reclamation program was initiated to service automobile body repair businesses. Paint gun cleaning machines are leased to customers with a reservoir of lacquer thinner (for cleaning the paint guns). On a periodic basis the reservoir is replaced and the spent solvent taken back to the facility for shipment to a reclamation facility. Wastes containing various thinners and paints are collected in containers on the customer's premises. The sales representative collects these containers and stores them in the container storage area. These wastes are periodically shipped to a reclaimer and the regenerated solvent is distributed to Safety-kleen customers for use as product.

Safety-Kleen offers generators of large quantities of Fluid Recovery Service (FRS) wastes a reclamation service through its FRS wastes collection service. Wastes containing mineral spirits, halogenated solvents, and lacquer thinners are shipped from the generator to the accumulation center in containers. The containers are then shipped to the Safety-Kleen recycle center in Lexington, South Carolina or to an independent reclaimer.



In 1990, Safety-Kleen began offering a service for the collection of spent antifreeze (ethylene glycol) from automobile service stations. These wastes are deposited into a 150-gallon translucent carboy by the customer, on the customer's premises, and the carboy is pumped into containers or a 3,500-gallon tanker truck by a sales representative. It is then placed in the container storage warehouse or a bulk tank in the tank building for shipment to a Safety-Kleen recycle center. Approximately 35 percent of this waste is returned to customers as usable product.

Safety-Kleen's solvent cycle is essentially a closed loop, moving from the service center to the customer, from the customer to the service center, from the service center to the recycle facility and then from the recycle center back to the service center. The small quantities of residue remaining in the storage tanks at the service centers and after distillation of the used solvent at Safety-Kleen's solvent recycling facilities are disposed of in accordance with applicable laws and regulations.

This closed loop supplies Safety-Kleen with most of its solvent requirements; the resultant stabilized cost benefits are passed on to its customers. Ownership of the solvent remains with Safety-Kleen; the service center managers are accountable for the quantities of clean and used solvents handled by their branch operations. The service center is basically a temporary storage and transfer facility. By FDER definition, however, these centers are considered to be the waste generator.

**ATTACHMENT I.D.3**

**WASTE TYPE**



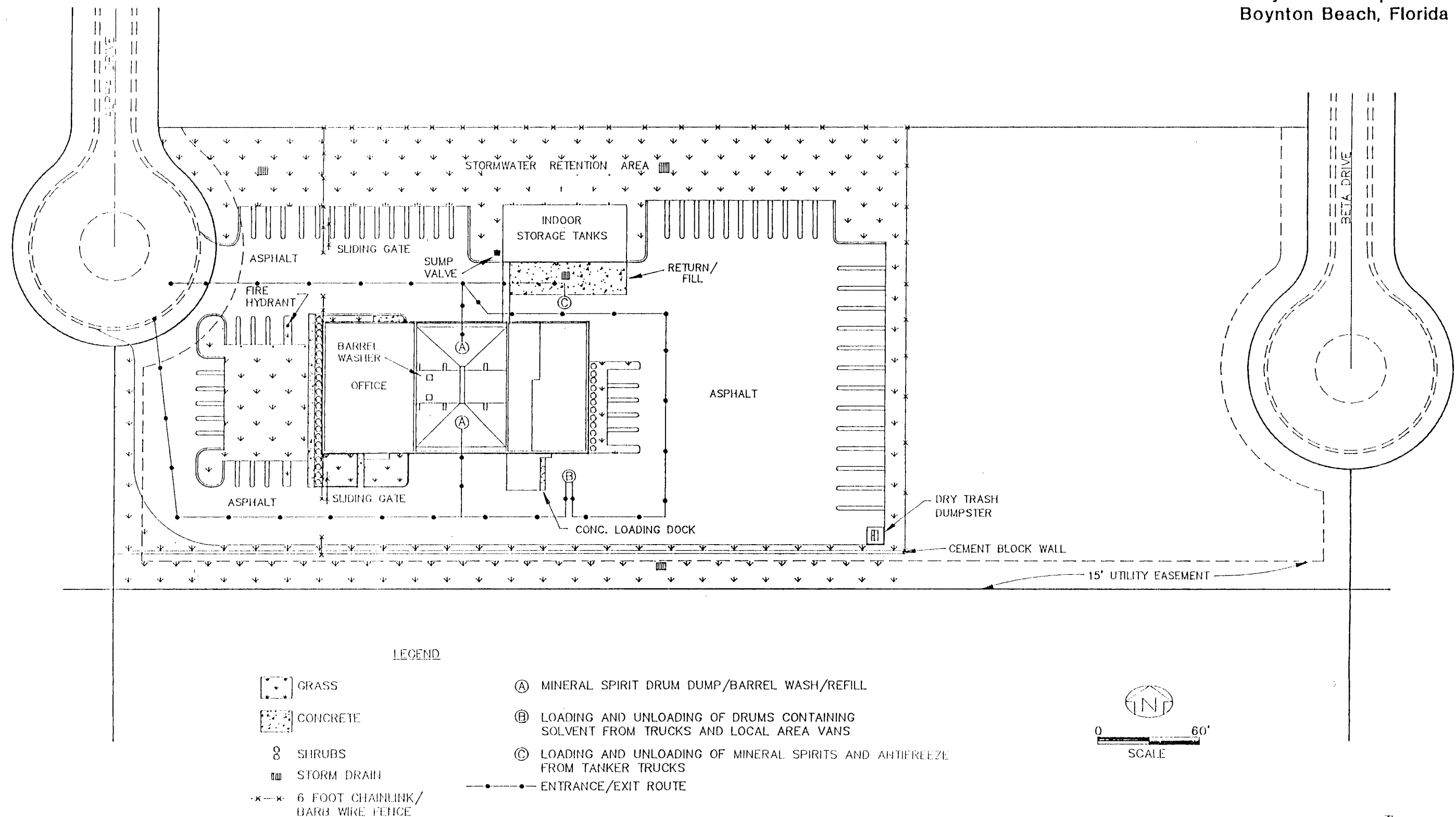
**ATTACHMENT I.D.3-1  
SAFETY-KLEEN CORP. FACILITY  
BOYNTON BEACH, FLORIDA**

<b>Waste Type</b>	<b>Process Code(s)</b>	<b>Estimated Annual Amounts (Tons)</b>	<b>Waste Codes</b>
Spent Mineral Spirits	S01 S02	993	D001 and Codes Listed in Note Below
Dumpster Sediment	S01	Included Above	D001 and Codes Listed in Note Below
Tank Bottoms	S01	Included Above	D001 and Codes Listed in Note Below
Spent Ethylene Glycol	S01 S02	5,000	Codes Listed in Note Below
Spent Immersion Cleaner (Old Formula)	S01	31	F002, F004, and Codes Listed in Note Below
(New Formula)	S01	Included Above	Codes Listed in Note Below
Dry Cleaning Waste	S01	350	D001 or F002 and Codes Listed in Note Below
Paint Waste	S01	50	D001, F003, F005 and Codes Listed in Note Below
Fluid Recovery Service (FRS) Waste	S01	250	D001, F001, F002, F003, F005, and Codes Listed in Note Below
Off Specification Perchloroethylene	S01	10	U210

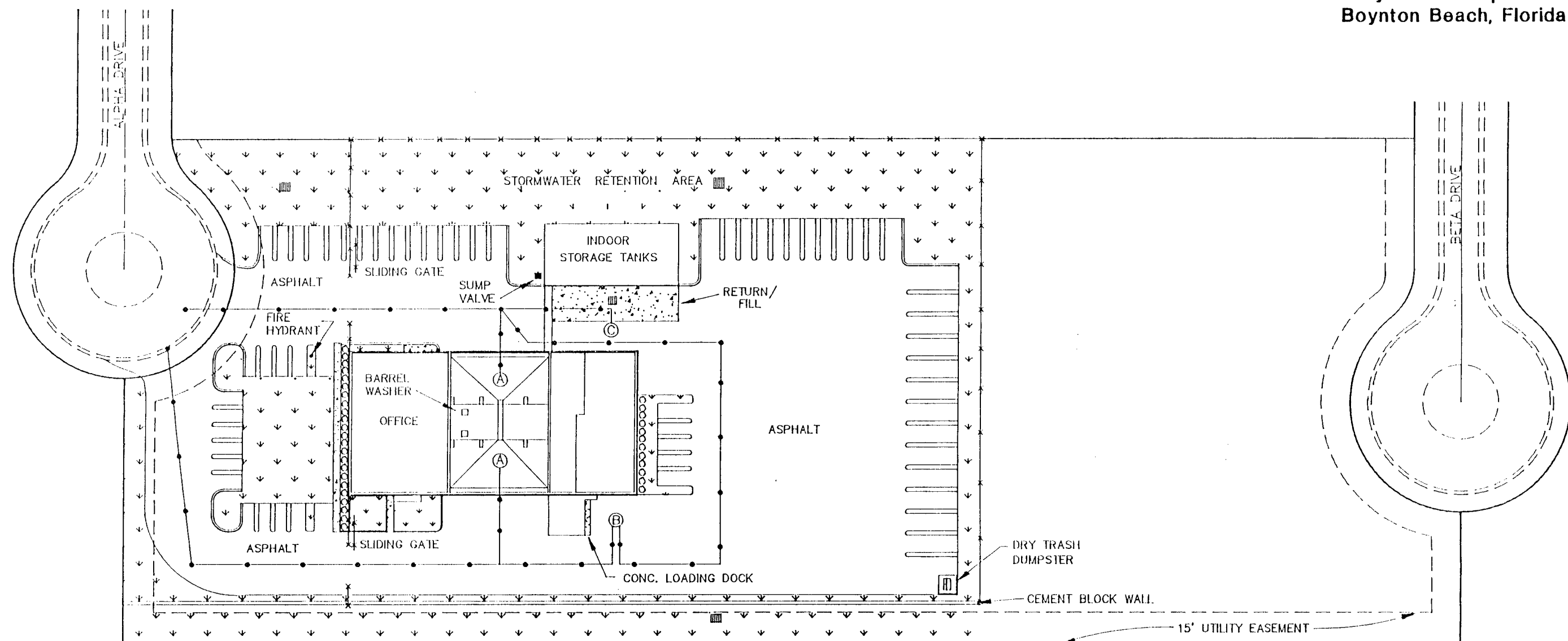
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**PART II A**  
**GENERAL**

**Figure II.A.1(a)-7**  
**Truck Traffic Patterns and Loading/**  
**Unloading Areas of Hazardous Waste**  
**Safety-Kleen Corp. Facility**  
**Boynton Beach, Florida**

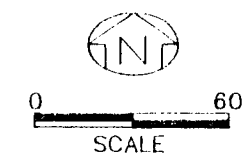


**Figure II.A.1(c)-1**  
**Truck Traffic Patterns and Loading/**  
**Unloading Areas of Hazardous Waste**  
**Safety-Kleen Corp. Facility**  
**Boynton Beach, Florida**



**LEGEND**

- |  |   |
|--|---|
| GRASS                                      | (A) MINERAL SPIRIT DRUM DUMP/BARREL WASH/REFILL                                       |
| CONCRETE                                   | (B) LOADING AND UNLOADING OF DRUMS CONTAINING SOLVENT FROM TRUCKS AND LOCAL AREA VANS |
| SHRUBS                                     | (C) LOADING AND UNLOADING OF MINERAL SPIRITS AND ANTIFREEZE FROM TANKER TRUCKS        |
| STORM DRAIN                                | —●—●— ENTRANCE/EXIT ROUTE   |
| -x-x- 6 FOOT CHAINLINK/<br>BARB WIRE FENCE |   |



**ATTACHMENT II.A.4(b)**  
**CONTINGENCY PLAN AND EMERGENCY PROCEDURES**  
**FOR DAILY BUSINESS OPERATIONS**

## TABLE OF CONTENTS

	<u>Page</u>
EMERGENCY PHONE NUMBERS	iii
GENERAL INFORMATION	II.A.4(b)-1
EMERGENCY NOTIFICATION	II.A.4(b)-3
EMERGENCY RESPONSE AGENCIES AND TEAM MEMBERS	II.A.4(b)-3
ACTIONS OF THE EMERGENCY COORDINATOR	II.A.4(b)-4
POTENTIAL SPILL SOURCES	II.A.4(b)-8
DECONTAMINATION	II.A.4(b)-12
EMERGENCY RESPONSE EQUIPMENT AND COMMUNICATION	II.A.4(b)-13
FIRE CONTROL PROCEDURES	II.A.4(b)-14
AVAILABILITY AND REVISION OF THE CONTINGENCY PLAN	II.A.4(b)-15
ARRANGEMENTS WITH LOCAL AUTHORITIES	II.A.4(b)-16
EVACUATION PLAN	II.A.4(b)-17
APPENDICES	
APPENDIX A	Material Safety Data Sheets for Known Hazardous Constituents
APPENDIX B	Letters to Local Authorities





## LIST OF FIGURES

	<u>Page</u>
FIGURE II.A.4(b)-1 Site Layout	II.A.4(b)-3A
FIGURE II.A.4(b)-2 Safety Equipment	II.A.4(b)-3B
FIGURE II.A.4(b)-3 Fire Fighting Sprinkler System	II.A.4(b)-15A

## LIST OF TABLES

TABLE II.A.4(b)-1 Emergency Notification	II.A.4(b)-3C
TABLE II.A.4(b)-2 Telephone Notification Log	II.A.4(b)-3D
TABLE II.A.4(b)-3 Emergency Response Equipment	II.A.4(b)-14A

## EMERGENCY PHONE NUMBERS

### Emergency Coordinators

<b>Primary:</b> Thomas H. Sands 9873 Lawrence Road, G205 Boynton Beach, FL 33436 Home: (407) 736-8968 Office: (407) 736-1339	<b>Alternate:</b> Jereme Breen 65 Deer Path Lake Worth, FL 33424 Home: No phone available Office: (407) 736-1339
--	--

### Emergency Notification Phone Numbers

Safety-Kleen Environmental Department  
 Telephone (708) 888-4660 (24-hour number)

National Response Center  
 Telephone (800) 424-8802

Southeast Florida District of the FDER, 1900 South Congress Avenue, Suite A, West Palm Beach, Florida (407) 433-2650 or (904) 488-1320 - 24 hours.

South Florida Water Management District, West Palm Beach, Florida (407) 686-8800

### Emergency Team to be Notified

Boynton Beach Fire Department  
 150 E. Boynton Beach Blvd.  
 Boynton Beach, FL 33435  
 (407) 738-7430

O.H. Materials Company  
 P.O. Box 551  
 Findlay, OH 45840  
 (800) 537-9540  
 (Primary Cleanup Contractor)

Boynton Beach Police Department  
 135 N.E. 1st Avenue  
 Boynton Beach, FL 33435  
 (407) 732-8132

AMO Pollution Services, Inc.  
 P.O. Box 311B  
 Canonsburg, PA 15317  
 (800) 325-1398  
 (Secondary Cleanup Contractor)

Bethesda Memorial Hospital  
 2815 S. Seacrest Blvd.  
 Boynton Beach, FL 33435  
 (407) 737-7733 or 278-7733

Ryckman's Emergency Action and  
 Consulting Team  
 P.O. Box 27310  
 St. Louis, MO 63141  
 (800) 325-1398  
 (Secondary Cleanup Contractor)



**ATTACHMENT II.A.4(b)****CONTINGENCY PLAN AND EMERGENCY PROCEDURES  
FOR DAILY BUSINESS OPERATIONS****GENERAL INFORMATION****Purpose**

The contingency plan and emergency procedures are designed to ensure that Safety-Kleen is prepared to address emergency situations rapidly and in a manner to prevent or minimize hazards to human health or the environment from fire, explosion, or any unplanned sudden or nonsudden release of hazardous material constituents to the air, soil, surface water, or ground water at the facility.

The provisions of the contingency plan are to be carried out immediately if there is a fire, explosion, or release of hazardous materials occurs that could threaten human health or the environment. All contingency plan responses must conform with the procedures contained in this plan.

**General Description of Activities**

The business activities conducted at the Boynton Beach Service Center relate to the leasing and servicing of Safety-Kleen Parts Cleaning Equipment, including the provisions of a solvent leasing service for the customers. Clean solvents are distributed from and the used solvents are returned to the service center, where separate storage tanks are utilized for the storage of clean and used mineral spirits (solvent) and spent antifreeze, and warehouse space is designated for the storage of containers of both clean and used immersion cleaner, mineral spirits, tank bottoms, dumpster mud, antifreeze, paint, dry cleaning wastes (chlorinated solvent), and FRS wastes. Safety-Kleen uses a container color scheme as a part of its waste management system. An overpack container is used for the management of containers whose integrity has been compromised.

The mineral spirits are transported in covered containers between the service center and customers. Upon returning to the service center, the used mineral spirits are transferred from the containers into a wet dumpster (solvent return receptacle) in which coarse solids in the mineral spirits are retained. Used mineral spirits in the wet dumpster flow into a 15,000-gallon aboveground tank for storage. Used mineral spirits solvent is picked up periodically by a bulk tank truck from the recycle facility which at the same time delivers a load of clean mineral spirits. The sludge in the wet dumpster is periodically cleaned out, containerized, and temporarily stored in the container storage area for later shipment to the recycle facility for reclamation.

The immersion cleaner remains in a covered container at all times during transportation and storage. The solvent is not transferred to another container while being used by the customers or while in storage at the service center. Dry cleaning wastes are picked up at commercial dry cleaning establishments in containers and are stored temporarily at the service center. The containers are picked up periodically for recycling at the recycle facility.

Dry cleaning wastes consist of spent filter cartridges, powder residue from diatomaceous or other powder filter systems and still bottoms. These wastes are packaged on the customer's premises in containers.

The antifreeze waste is approximately one-third water and two-thirds antifreeze (ethylene glycol) and contaminants. The waste is collected in 150-gallon carboys at the customer's facility. The spent antifreeze is then transferred to containers or a 3,500-gallon tanker truck. The tanker truck empties the waste into a 20,000-gallon storage tank. The containerized waste is placed in the container storage area prior to shipment to a reclamation facility.

The paint wastes consist of various lacquer thinners and paints collected in containers.

The waste products exhibit essentially the same biological, physical, and chemical properties as the fresh product. Used products are basically fresh products with impurities of dirt and metals. The MSDSs provided in Appendix A represent the biological, physical, and chemical properties of both the fresh and used products.

Figures II.A.4(b)-1 and II.A.4(b)-2 shows the basic site and floor plans, particularly, the locations of waste management facilities, emergency equipment, facility storage, and evacuation routes.

### **EMERGENCY NOTIFICATION**

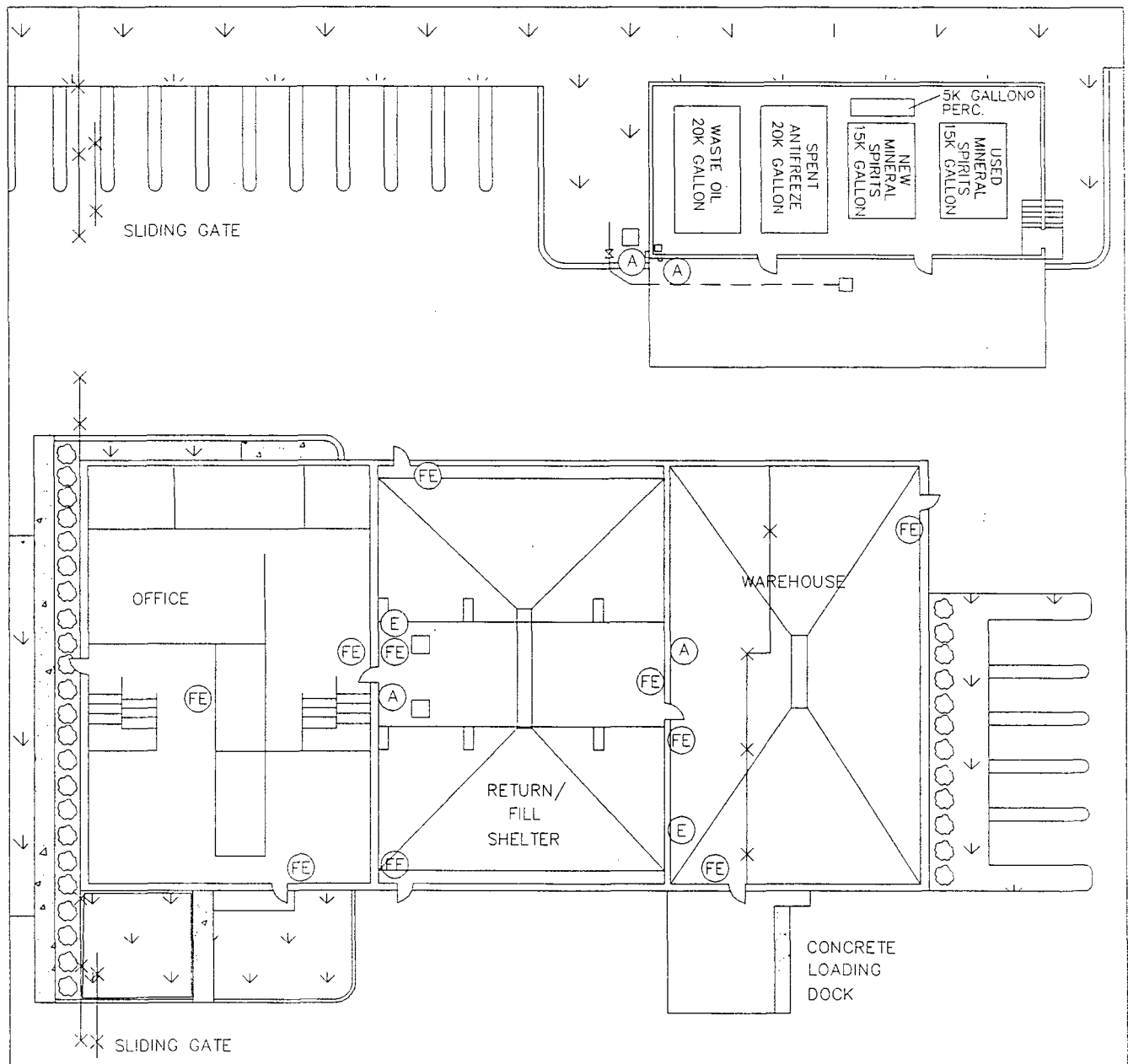
#### **Emergency Coordinator**

The Branch Manager or his designee is the emergency coordinator. Table II.A.4(b)-1 includes the names, home addresses, and both office and home phones of the primary emergency coordinator and his alternatives. At least one employee is either present on the facility premises or on call with responsibility for coordinating all emergency response measures at all times. This primary emergency coordinator and alternate emergency coordinator are thoroughly familiar with all aspects of the facility's contingency plan, all operations and activities at the facility, the location and characteristics of materials handled, the location of all records within the facility, and the facility layout. In addition, these coordinators have the authority to commit the resources needed to carry out the contingency plan.

### **EMERGENCY RESPONSE AGENCIES AND TEAM MEMBERS**

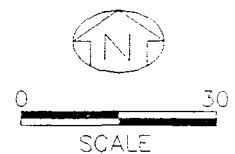
The agencies and response team members to be notified whenever an imminent or actual emergency occurs are presented in Table II.A.4(b)-1. A Telephone Notification Log is shown in Table II.A.4(b)-2.

Figure II.A.4(b)-2  
Safety Equipment  
Safety-Kleen Corp. Facility  
Boynton Beach, Florida



LEGEND

- (FE) FIRE EXTINGUISHER
- (E) EYE WASH/SHOWER
- (A) ALARM



**TABLE II.A.4(b)-1  
EMERGENCY NOTIFICATION**

**Emergency Coordinators**

<b>Primary:</b> Thomas H. Sands 9873 Lawrence Road, G205 Boynton Beach, FL 33436 Home: (407) 736-8968 Office: (407) 736-1339	<b>Alternate:</b> Jereme Breen 65 Deer Path Lake Worth, FL 33424 Home: No phone available Office: (407) 736-1339
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National Response Center  
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South Florida Water Management District, West Palm Beach, Florida (407) 686-8800

**Emergency Team to be Notified**

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 Boynton Beach, FL 33435  
 (407) 738-7430

O.H. Materials Company  
 P.O. Box 551  
 Findlay, OH 45840  
 (800) 537-9540  
 (Primary Cleanup Contractor)

Boynton Beach Police Department  
 135 N.E. 1st Avenue  
 Boynton Beach, FL 33435  
 (407) 732-8132

AMO Pollution Services, Inc.  
 P.O. Box 311B  
 Canonsburg, PA 15317  
 (800) 325-1398  
 (Secondary Cleanup Contractor)

Bethesda Memorial Hospital  
 2815 S. Seacrest Blvd.  
 Boynton Beach, FL 33435  
 (407) 737-7733 or 278-7733

Ryckman's Emergency Action and  
 Consulting Team  
 P.O. Box 27310  
 St. Louis, MO 63141  
 (800) 325-1398  
 (Secondary Cleanup Contractor)

**ACTIONS OF THE EMERGENCY COORDINATOR**

Whenever there is an imminent or actual emergency situation, the emergency coordinator (or his or her designee when the emergency coordinator is on call) must immediately:

- a. Activate internal or communication systems to notify all facility personnel. The relatively small size of this Service Center makes direct verbal communication the most expedient form of emergency notification. The emergency coordinator may also elect to proceed to the front of the building and honk a car horn to notify building occupants of an emergency. A head count will be performed by the emergency coordinator.
- b. Notify appropriate state or local agencies with designated response roles if their help is needed.
- c. Summon the primary emergency coordinator, if he is absent.

Whenever a release, fire, or explosion occurs, the emergency coordinator must immediately identify the character, exact source, amount, and area extent of any released materials. Because of the limited types of chemicals in storage, the identification processes can easily be performed visually.

Procedure for Assessing Possible Hazard to the Environment and Human Health:

- a. After identification of the character, source, amount, and extent of a release, fire, or explosion, the emergency coordinator must decide whether the situation can be contained or cleaned up by plant personnel and equipment.
- b. If a fire or explosion is determined uncontrollable by plant personnel or threatening neighboring establishments or population, assistance from a local emergency



response agency shall be summoned immediately and an evacuation order be requested.

- c. In case of a release outside of the containment area that is deemed immediately uncontainable or unrecoverable, a local emergency response agency and/or specialty cleanup contractor shall be called in.
- d. After termination of a fire or explosion, containment and preliminary cleanup of a spill, evaluate whether residues in the form of gas or liquid have become airborne, seeped into ground water, and/or flowed into surface water bodies.
- e. Expert assistance should be requested to determine whether the escaped materials are potentially harmful and whether the receiving medium ultimately will be a populated area, public water supply source, a private well, or an environmentally sensitive area.
- f. Additional steps shall then be taken to mitigate the potential impact on the environment and human health, in accordance with expert recommendations.

If the emergency coordinator determines that the facility has had a release, fire, or explosion that could threaten human health, or the environment outside the facility, the coordinator must report those findings, as follows:

- a. If the assessment indicates that evacuation of local areas may be advisable, the coordinator must immediately notify appropriate authorities. The coordinator must be available to help appropriate officials decide whether local areas should be evacuated.

- b. The coordinator must immediately notify the Southeast Florida District of the FDER, (407) 433-2650, and the National Response Center (800) 424-8802, by telephone.

The report must include:

- (1) Name and telephone number of notifier;
- (2) Name and address of facility;
- (3) Time and type of incident (e.g., release, fire);
- (4) Name and quantity of material(s) involved, to the extent known;
- (5) The extent of injuries, if any; and
- (6) The possible hazards to human health, or the environment outside the facility.

Immediate assistance in assessing and responding to an emergency is obtained by the emergency coordinator by calling the 24-hour emergency number of the Safety-Kleen Corporation Environmental, Health and Safety Department ((708) 888-4660).

During an emergency, the emergency coordinator must take all reasonable measures necessary to ensure that fires, explosions, and releases do not occur, recur, or spread to other hazardous waste at the facility. These measures must include, where applicable, stopping processes and operations, collecting and containing released waste, and removing or isolating containers.

If the facility stops operations in response to a fire, explosion, or release, the emergency coordinator must monitor for leaks, pressure buildup, gas generation, or ruptures in valves, pipes, or other equipment, wherever this is appropriate.

Immediately after an emergency, the emergency coordinator must provide for treating, storing, or disposing of recovered waste, contaminated soil or surface water, or any other material that results from a release, fire, or explosion at the facility.

The emergency coordinator must ensure that, in the affected area(s) of the facility:

- a. No waste that may be incompatible with the released material is treated or stored until cleanup procedures are completed; and
- b. All emergency equipment listed in the contingency plan is cleaned and fit for its intended use before operations are resumed.

The owner or operator must notify the appropriate state or local authorities that the facility is in compliance with the requirements of the preceding paragraph, before operations are resumed in the affected area(s) of the facility.

The owner or operator must note in the operating record the time, date, and details of any incident that requires implementing the contingency plan. Within 15 days after the incident, the owner must submit a written report on the incident to the Southeast Florida District of the FDER, 1900 South Congress Avenue, Suite A, West Palm Beach, Florida 33406 (407) 433-2650. The report must include:

- a. Name, address, and telephone number of the owner or operator;
- b. Name, address, and telephone number of the facility;
- c. Date, time, and type of incident (e.g., fire, explosion);
- d. Name and quantity of material(s) involved;

- e. The extent of injuries, if any;
- f. An assessment of actual or potential hazards to human health or the environment, where this is applicable; and
- g. Estimated quantity and disposition of recovered material that resulted from the incident.

### **POTENTIAL SPILL SOURCES**

The following is a list of activities that have the potential for a small scale (less than 30 gallons of waste) pollution incident.

- a. Moving of containers.

Every time a container is moved, a chance exists that it could tip over or be dropped. To minimize the possibility of spillage of solvent under those conditions, all containers must remain covered before being moved.

- b. Delivery truck container transfers.

- (1) Individual delivery containers contain from five to 55 gallons of waste, a quantity which can be contained by oil sorbent clay or pads, if accidentally spilled.
- (2) Each vehicle is equipped with a hoist and hand cart for ease of moving clean solvent off the truck and into the customer's shop and returning the dirty solvent to the truck.
- (3) Clamp type lids are on containers during movement to prevent a spill.



- (4) Each truck should contain a shovel and a quantity of sorbent material to contain a minor spill.
- (5) The cargo should be secured in the route vehicle before transit.

### **Spills Inside Buildings**

In the event of a spill indoors, the doors and windows should be opened to improve the ventilation in the confined area. Following the instructions of the Material Safety Data Sheet (MSDS), the worker would enter the area wearing rubber gloves, boots, and respirator and mop up the liquid and return it to dirty storage. The cleanup is completed only when the workers have cleaned themselves and the emergency equipment with soap and water. Spills originating in the container return/fill area should be contained within its collection trench. This area has three-inch sloped concrete sides leading to the trench. Spills originating in the warehouse area should be retained within its collection trench. The concrete floor in this area is sloped two inches toward the trench. The concrete floor in both these areas is coated with sealant compatible with and resistant to the chemicals stored at this facility.

### **Spills on Concrete Pads**

Concrete pads in loading and unloading areas are, in most cases, equipped with emergency containment. Under most spill conditions, product can be totally contained on the concrete surface and in the catchment system. Upon containment, arrangements must be immediately undertaken to recover the material. Any soil that may be involved must be removed and treated as a hazardous waste.

### **Tank Spills or Leakage**

Aboveground tanks are completely enclosed within a building which has a monolithically poured slab and 36-inch high sides to contain any spilled or leaked solvent. The surface of the monolithic pour (bottom and sides) are coated with a concrete sealant compatible

with and resistant to the chemicals stored in this area. The remainder of the building is concrete blocks from three feet to the roof. The containment system has been sized in accordance with the regulations, and the product will be totally contained under most spill conditions. Should a spill occur, arrangements must be immediately undertaken to recover the material. In the event of leakage, tank repair or replacement will be initiated. Any soil that may be involved must be removed and treated as hazardous waste.

### **Spill Control Procedures**

If a harmful discharge occurs:

- a. Stop the discharge, if possible, by immediately transferring the liquid to a good container.
- b. Retain, contain, or slow the flow of the material, if possible, by diking with sorbent pad or dirt. Appropriate personal protective equipment should be worn. Pump and mop up the liquid from the floor into a good container and return the container to storage and then later to the recycle center for reclamation/disposal. The area and equipment that comes in contact with the spill must be decontaminated with soap and water. All residues resulting from containment and decontamination should be collected for proper disposal at a Safety-Kleen recycle center.
- c. If the material escapes the containment efforts, immediately call the cleanup contractor with response time less than two hours (Table II.A.4(b)-1). Record the date, time, and name of person taking the message. Call the primary emergency coordinator, if he is absent.
- d. Immediately recover spilled solvent to reduce property and environmental damage using the safety equipment stored onsite for such situations (Figure II.A.4(b)-2) or

call in emergency response contractors (Table II.A.4(b)-1). Start recovery operations immediately.

After recovery of spilled solvent, wash all contaminated impervious surfaces and equipment with soap and water. The residue of spill- or fire-contaminated soils and waste waters must be removed and disposed of at a Safety-Kleen recycle center. In addition, the recovered solvent will be sent to a Safety-Kleen recycle center for reclamation.

- e. Report any incident as soon as possible to Safety-Kleen Corporate Environmental Department on the 24-hour telephone line: (708) 888-4660. If the Environmental Department does not respond within 30 minutes, call the National Response Center (telephone: (800) 424-8802) and Southeast Florida District of the FDER, 1900 South Congress Avenue, Suite A, West Palm Beach, Florida (407) 433-2650.
- f. The person reporting a spill should be prepared to give his name, position, company name, address, and telephone number. The person reporting also should give the nature of the material spilled (e.g., immersion cleaner, etc.) and, if possible, some estimate of the amount, and whether it is near a stream or could enter a stream by flowing through ditches or storm sewers.

If assistance is needed, the emergency coordinator should describe the containment status and specify any additional equipment needed. When reporting a spill, record the date and time of the call and the name of the person answering the call at the above number.

Spill prevention plans are reviewed with facility personnel every year, and records of the training are kept at the facility.

Every spill must be recorded on the attached form with the revision of the contingency plan to prevent similar spills in the future. A copy of this report is sent to the Corporate Environment Health and Safety Department.

Reports of emergency incidents will be transmitted to the Secretary of the FDER or his designee within 15 days of occurrence. This report shall include:

- a. Name, address, and telephone number of the owner of operator;
- b. Name, address, and telephone number of the facility;
- c. Date, time, and type of incident (e.g., fire, explosion);
- d. Name and quantity of materials involved;
- e. The extent of injuries, if any;
- f. An assessment of actual or potential hazards to human health or the environment, where this is applicable; and
- g. Estimated quantity and disposition of recovered material that resulted from the incident.

#### **DECONTAMINATION**

Once the spilled material has been cleaned-up, the spill area and equipment used during the spill clean-up must be decontaminated and/or disposed.

Concrete surfaces/containment areas:



- Concrete surfaces/containment areas will be cleaned with a detergent solution and then rinsed with hot water. The rinsate will be collected via wet vacuums and placed in containers. Visual inspection will be used to determine the success of the decontamination procedure.
- The intent of the surface decontamination is to prevent current or future releases of materials to the environment. It is believed that a vigorous cleaning with detergent is sufficient to prevent releases to the environment during normal operations. Potential for hazards from residual materials to future occupants of the facility are dealt with in the Closure Plans for the facility and the decontamination procedures incorporated therein.

### **Equipment**

The equipment used to clean the area includes mops, pails, scrub brushes, and a wet/dry vacuum. Equipment which is considered reusable (i.e., pails, wet/vac, hoses) will be washed with detergent and the wash water and rinsate collected. All non-reusable equipment and/or equipment which is not capable of being decontaminated will be containerized and disposed of as hazardous waste.

### **Wash Water and Rinsate**

If the rinsate or other wastes generated in the clean-up process are determined to be hazardous, they will be properly disposed of as a hazardous waste, otherwise the material will be disposed of as an industrial waste. It should be noted that wash water and rinsate will not be allowed to drain to the waterway or stormwater.

## **EMERGENCY RESPONSE EQUIPMENT AND COMMUNICATION**

Due to the small size of the facility, routine communication is accomplished by voice communication; however, an intercom is also available. Telephones are used in case of

a spill or fire emergency to summon assistance. Emergency numbers are posted by each phone in the office. Included with these phone numbers is the 24-hour spill number which connects to Corporate Environmental Department at the corporate office in Elgin, Illinois. See Figure II.A.4(b)-2 for locations of telephones, fire extinguisher, the first-aid kit, and the emergency eyewash/shower. Other emergency response equipment (Table II.A.4(b)-3) is kept in a small storage area inside the warehouse near the return/fill dock. This equipment includes mops and buckets, soap, shovels, and spill sorbent pads. Rubber gloves, boots, pumps, and a wet/dry vacuum cleaner are stored in an emergency supply area near the container storage area. The City of Boynton Beach supplies water for domestic use, decontamination, and fire fighting. Adequate aisle space is provided in the container storage area for movement in an emergency situation.

The equipment available at the service center for emergency situations is adequate for most cases. Large or serious emergency situations will be remediated by local emergency response teams or special emergency response or cleanup contractors. The facility is constructed and operated in accordance with National Fire Protection Association (NFPA) standards and applicable local ordinances. Applicable health and safety standards also are observed at the service center. A recent air quality survey conducted by an independent industrial hygienist at the Los Angeles service center has shown that air quality at a typical service center is within Threshold Limit Values (TLV) as specified by OSHA and local air pollution control criteria, and no respirator or special protection unit is deemed mandatory.

### **FIRE CONTROL PROCEDURES**

Call the Fire Department.

- a. Immersion cleaner #609 (old formula) (which is a mixture of chlorinated solvents and water) and dry cleaning wastes are initially not flammable, but produce toxic gases and hydrochloric acid at elevated temperatures (about 1200° F).

Center aisles are available in container storage areas to permit fire department personnel to pass with fire fighting equipment.

Act quickly with the fire extinguisher to put out the fire before it spreads.

Call the Police Department and local hospital (Table II.A.4(b)-1) when injury occurs and/or order of on-lookers and traffic is to be maintained.

Areas in the service building (offices, container fill/return, container storage) and storage tank building have automatic fire fighting sprinkler systems (Figure II.A.(b)-3). In addition, building walls have a four hour rating.

#### **AVAILABILITY AND REVISION OF THE CONTINGENCY PLAN**

This plan and all revisions to the plan are kept at the facility and regularly updated throughout the operating life of the facility.

Copies of this document are provided to local authorities and organizations listed under the Preparedness and Prevention Plan, which may be called upon to provide emergency services.

This plan and all revisions to the plan are made readily available to employees working at the facility.

This plan is reviewed and updated, if necessary, whenever:

- a. The facility license is modified to allow new process wastes to be stored or treated, or applicable regulations are revised;
- b. The list or location of emergency equipment changes;

- c. The facility changes in its design, construction, operation maintenance, or other circumstances in a way that:
  - (1) Materially increase the potential for fires, explosions, or releases of hazardous waste or hazardous waste constituents, or
  - (2) Changes in response necessary in an emergency.
- d. The names, addresses, or phone numbers of emergency coordinators change;
- e. The employee assigned to each emergency task changes, or
- f. The plan fails when implemented in an emergency.

#### **ARRANGEMENTS WITH LOCAL AUTHORITIES**

Arrangements have been made to familiarize the Police Department, Fire Department, and local emergency response teams with the layout of the facility, properties of hazardous materials handled (Material Safety Data Sheets) at the facility and associated hazards, places where facility personnel would normally be working, entrances to and roads inside the facility, and possible evacuation routes.

Potential primary and secondary spill control contractors as well as sorbent suppliers are identified in the Contingency Plan and Emergency Procedures.

Arrangements have been made to familiarize the local hospital with the properties of hazardous waste handled at the facility and the types of injuries or illnesses which would result from fires, explosions, or releases at the facility.

Appendix B includes copies of letters which have been transmitted to local authorities for emergency response in the event of an incident where public health or environment is threatened.

### **EVACUATION PLAN**

In an uncontrolled emergency, all persons are to be evacuated from the area by means of a verbal cry and assemble across from the entrance drive to the facility (Figure II.A.4(b)-1). Assure that all personnel are accounted for and out of the area. The emergency coordinator may elect to use a car horn as a means of emergency notification. A head count will be performed by the emergency coordinator.

The Fire Department must be notified at the time of evacuation either from a safe onsite building or neighboring facilities.

Clearly marked exits exist in warehouse and office area.

**APPENDIX B**  
**LETTERS TO LOCAL AUTHORITIES**





December 7, 1991

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Boynton Beach Police Department  
135 NE 1st Avenue  
Boynton Beach, FL 33435

RE: Safety-Kleen Corp. (3-097-01), Lot 46B, Quantum Industrial Park, Boynton Beach, Florida

Dear Sir:

Under terms of U.S.E.P.A. Regulation 40 CFR 264.37, Safety-Kleen Corp. must make arrangements to familiarize police and fire departments with the layout of the facility, places where facility personnel would be working, entrances to roads inside the facility, and possible evacuation routes.

A copy of the Contingency Plan and Emergency Procedures is enclosed for your file. A facility layout is attached to show where facility personnel would normally be working, entrances to road inside facilities and possible evacuation routes.

As required by law, Safety-Kleen will need your acknowledgment of receipt of this letter and indications that you have been familiarized with the action necessary in the event of an emergency and that you are willing to provide assistance.

If you have any questions or desire to visit the facility, please contact the branch manager, Mr. Thomas H. Sands (407) 736-1339.

Sincerely,

Victor L. San Agustin, P.E.  
Regional Environmental Engineer  
Tampa Region

pjh/mm

Enclosure(s)

13112.28B/TSK10/EXHIBITS.IE



December 7, 1991

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Boynton Beach Fire Department  
150 East Boynton Beach Boulevard  
Boynton Beach, FL 33435

RE: Safety-Kleen Corp. (3-097-01), Lot 46B, Quantum Industrial Park, Boynton Beach, Florida

Dear Sir:

Under terms of U.S.E.P.A. Regulation 40 CFR 264.37, Safety-Kleen Corp. must make arrangements to familiarize police and fire departments with the layout of the facility, places where facility personnel would be working, entrances to roads inside the facility, and possible evacuation routes.

A copy of the Contingency Plan and Emergency Procedures is enclosed for your file. A facility layout is attached to show where facility personnel would normally be working, entrances to road inside facilities and possible evacuation routes.

As required by law, Safety-Kleen will need your acknowledgment of receipt of this letter and indications that you have been familiarized with the action necessary in the event of an emergency and that you are willing to provide assistance.

If you have any questions or desire to visit the facility, please contact the branch manager, Mr. Thomas H. Sands (407) 736-1339.

Sincerely,

Victor L. San Agustin, P.E.  
Regional Environmental Engineer  
Tampa Region

pjh/mm

Enclosure(s)

13112.28B/TSK10/EXHIBITS.IE





December 7, 1991

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Bethesda Hospital  
2815 South Seacrest Boulevard  
Boynton Beach, FL 33435

RE: Safety-Kleen Corp. (3-097-01), Lot 46 B, Quantum Industrial Park, Boynton Beach, Florida

Dear Sir:

Under terms of U.S.E.P.A. Regulation 40 CFR 264.37, Safety-Kleen Corp. is required to familiarize local hospitals with the properties of the materials handled at their facilities and the types of injuries or illnesses which could result from fires, explosions, or releases at this facility.

A copy of the Contingency Plan and Emergency Procedures is enclosed for your file. A facility layout is attached to show where facility personnel would normally be working, entrances to road inside facilities and possible evacuation routes.

As required by law, Safety-Kleen will need your acknowledgment of receipt of this letter and indications that you have been familiarized with the action necessary in the event of an emergency and that you are willing to provide assistance.

If you have any questions or desire to visit the facility, please contact the branch manager, Mr. Thomas H. Sands (407) 736-1339.

Sincerely,

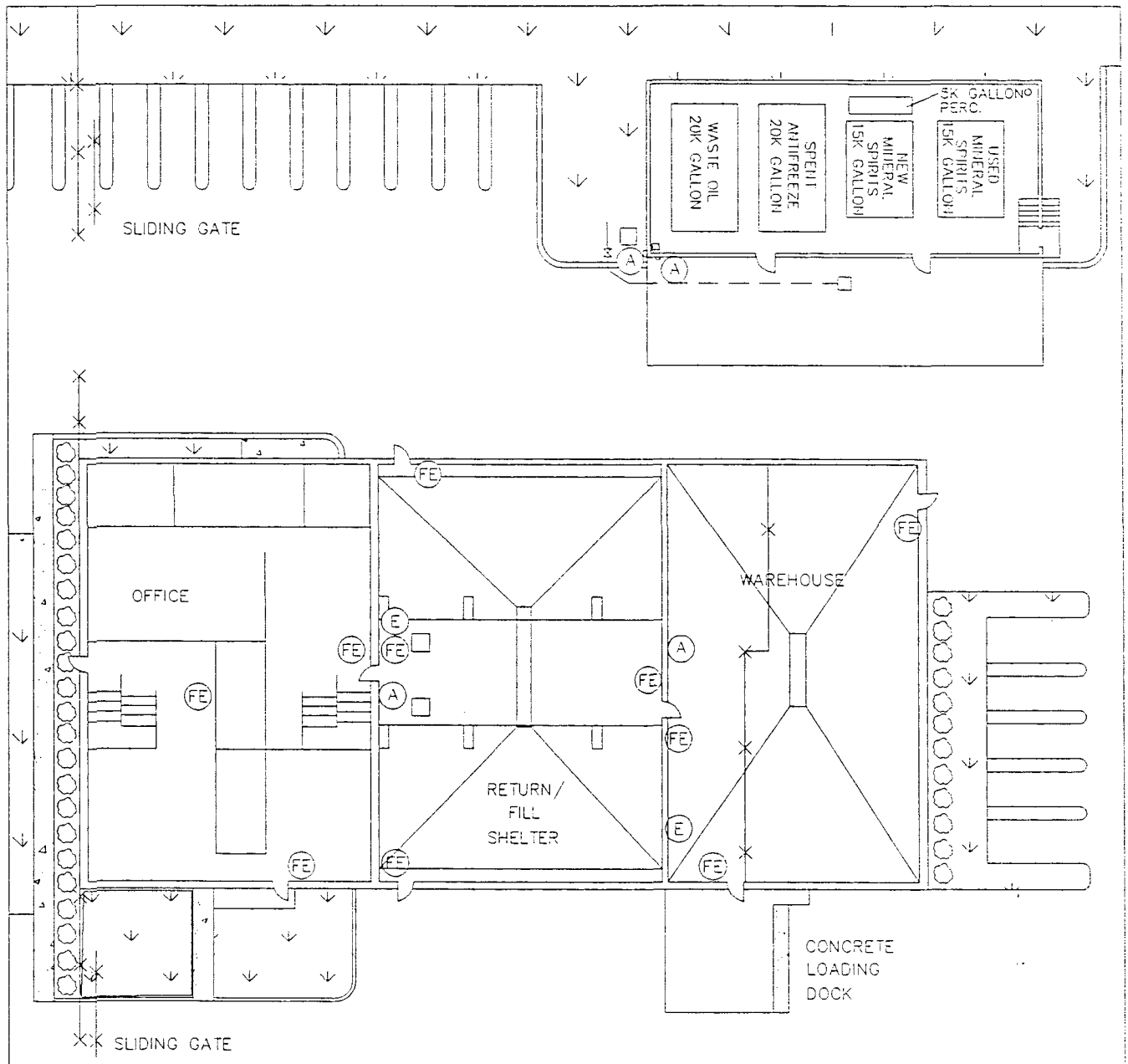
Victor L. San Agustin, P.E.  
Regional Environmental Engineer  
Tampa Region

pjh/mm

Enclosure(s)

13112.28B/TSK10/EXHIBITS.IE

Figure II.A.4(d)-1  
Safety Equipment  
Safety-Kleen Corp. Facility  
Boynton Beach, Florida



LEGEND

- (FE) FIRE EXTINGUISHER
- (E) EYE WASH/SHOWER
- (A) ALARM



**ATTACHMENT II.A.5**  
**WASTE ANALYSIS REPORT**



## ATTACHMENT II.A.5

### WASTE ANALYSIS REPORT

In accordance with U.S. EPA Hazardous Waste Regulations, seven types of hazardous waste have been identified at the service center:

1. The used mineral spirits solvent, returned from customers in separate containers transferred and stored in the aboveground tank awaiting shipment to the recycle facility is considered to be an Ignitable Waste (D001) and a characteristic waste by TCLP (D004, D005, D006, D007, D008, D009, D010, D011, D018, D019, D021, D022, D023, D024, D025, D026, D027, D028, D029, D030, D032, D033, D034, D035, D036, D037, D038, D039, D040, D041, D042, and D043);

Mineral spirits, dumpster mud, and tank bottom sludge accumulated in the solvent return receptacles (wet dumpsters) and in the sludge tank, is considered to be an Ignitable Waste (D001) a characteristic waste by TCLP (D004, D005, D006, D007, D008, D009, D010, D011, D018, D019, D021, D022, D023, D024, D025, D026, D027, D028, D029, D030, D032, D033, D034, D035, D036, D037, D038, D039, D040, D041, D042, and D043);

2. The used chlorinated solvent #609 (old formula), returned from customers in separate containers and remaining in the same container for shipment to the recycle facility is considered to be a Listed Waste from Non-Specific sources (F002 and F004); and a characteristic waste by TCLP (D004, D005, D006, D007, D008, D009, D010, D011, D018, D019, D021, D022, D023, D024, D025, D026, D027, D028, D029, D030, D032, D033, D034, D035, D036, D037, D038, D039, D040, D041, D042, and D043);

The used immersion cleaner #699 (new formula), returned from customers in separate containers and remaining in the same container for shipment to the recycle facility, is considered a characteristic waste by TCLP (D004, D005, D006, D007, D008, D009, D010, D011, D018, D019, D021, D022, D023, D024, D025, D026, D027, D028, D029, D030, D032, D033, D034, D035, D036, D037, D038, D039, D040, D041, D042, and D043);

3. Dry cleaning wastes consist of spent filter cartridges, powder residue from diatomaceous or other powder filter systems and still bottoms. While approximately 80 percent of Safety-Kleen's customers use perchloroethylene (F002) and a characteristic waste by TCLP leaching procedure (D004, D005, D006, D007, D008, D009, D010, D011, D018, D019, D021, D022, D023, D024, D025, D026, D027, D028, D029, D030, D032, D033, D034, D035, D036, D037, D038, D039, D040, D041, D042, and D043), approximately 17 percent use mineral spirits (D001) and a characteristic waste by TCLP (D004, D005, D006, D007, D008, D009, D010, D011, D018, D019, D021, D022, D023, D024, D025, D026, D027, D028, D029, D030, D032, D033, D034, D035, D036, D037, D038, D039, D040, D041, D042, and D043), and the remaining three percent use trichloro-trifluoroethane (F002) and a characteristic waste by TCLP leaching procedure (D004, D005, D006, D007, D008, D009, D010, D011, D018, D019, D021, D022, D023, D024, D025, D026, D027, D028, D029, D030, D032, D033, D034, D035, D036, D037, D038, D039, D040, D041, D042, and D043);
4. Antifreeze waste is approximately one-third water with the remaining third being antifreeze (ethylene glycol) and contaminants. As a protective measure, the container storage area for spent antifreeze is being permitted to store wastes with the following TCLP waste codes: D004, D005, D006, D007, D008, D009, D010, D011, D018, D019, D021, D022, D023, D024, D025, D026, D027, D028, D029,



D030, D032, D033, D034, D035, D036, D037, D038, D039, D040, D041, D042, and D043; and

5. The paint waste, collected in containers at the customer's place of business and stored in the container storage area, is considered to be an ignitable waste (D001); a listed waste (F003 and F005); and a characteristic waste by TCLP (D004, D005, D006, D007, D008, D009, D010, D011, D018, D019, D021, D022, D023, D024, D025, D026, D027, D028, D029, D030, D032, D033, D034, D035, D036, D037, D038, D039, D040, D041, D042, and D043).
  
6. Eight solvents are collected from FRS waste users: mineral spirits (D001, D004, D005, D006, D007, D008, D009, D010, D011, D018, D019, D021, D022, D023, D024, D025, D026, D027, D028, D029, D030, D032, D033, D034, D035, D036, D037, D038, D039, D040, D041, D042, and D043); 1,1,1-trichloroethane (F001, F002, D004, D005, D006, D007, D008, D009, D010, D011, D018, D019, D021, D022, D023, D024, D025, D026, D027, D028, D029, D030, D032, D033, D034, D035, D036, D037, D038, D039, D040, D041, D042, and D043); perchloroethylene and trichloroethylene (F001, F002, D004, D005, D006, D007, D008, D009, D010, D011, D018, D019, D021, D022, D023, D024, D025, D026, D027, D028, D029, D030, D032, D033, D034, D035, D036, D037, D038, D039, D040, D041, D042, and D043); methylene chloride (F001, F002, D004, D005, D006, D007, D008, D009, D010, D011, D018, D019, D021, D022, D023, D024, D025, D026, D027, D028, D029, D030, D032, D033, D034, D035, D036, D037, D038, D039, D040, D041, D042, and D043); 1,1,2-trichloro-1,2,2-trifluoroethane (F001, F002, D004, D005, D006, D007, D008, D009, D010, D011, D018, D019, D021, D022, D023, D024, D025, D026, D027, D028, D029, D030, D032, D033, D034, D035, D036, D037, D038, D039, D040, D041, D042, and D043), lacquer thinners (F003, F005, D004, D005, D006, D007, D008, D009, D010, D011, D018, D019, D021, D022, D023, D024, D025, D026, D027, D028, D029, D030, D032,

D033, D034, D035, D036, D037, D038, D039, D040, D041, D042, and D043); and waste oil which exhibits a characteristic (D001, D004, D005, D006, D007, D008, D009, D010, D011, D018, D019, D021, D022, D023, D024, D025, D026, D027, D028, D029, D030, D032, D033, D034, D035, D036, D037, D038, D039, D040, D041, D042, and D043). These wastes, except characteristic waste oil, are shipped in containers and are stored on pallets. It is anticipated that 39,000 gallons of spent mineral spirits, 158,000 gallons of spent halogenated solvents and 60,000 gallons of spent lacquer thinners will be shipped from the service center to a reclaimer on an annual basis.

7. Off specification perchloroethylene (U210) resulting from the management of bulk perchloroethylene. This may have some minor impurities. This is shipped from the service center to a reclaimer.

A typical composition and chemical physical analysis for waste streams listed above are shown in the attached chemical analyses reports, based on existing data on these wastes generated from similar processes within Safety-Kleen's current and/or potential customers.

#### USED MINERAL SPIRITS

The clean mineral spirits solvent is labeled under the trade name of "Safety-Kleen 105 Solvent", so-named because of the flash point of the solvent being 105°F (minimum). Chemically, the solvent primarily consists of petroleum hydrocarbon fraction (the mineral spirits) with boiling points between 310°F and 400°F. Impurities, such as light aromatic hydrocarbons (LAHC) and chlorinated hydrocarbons, usually constitute less than one percent of the total volume. The mineral spirits constitutes over 99.5 percent of the total volume of the solvent.

The used mineral spirits solvent consists primarily of mineral spirits solvent plus water, solid, oil, and grease picked up in the various degreasing operations. In most instances, no water is associated with the used solvent; however, at times, the water content may range from one percent to as much as 50 percent. The oily bottoms may range from 2 percent to 10 percent, by volume, in the used solvent.

Chemically, the composition of the solvent fraction in the used mineral spirits solvent is essentially the same as the clean solvent, as shown in analyses.

An estimated 275,000 gallons of used mineral spirits are expected to be shipped to a recycle center from this facility.

#### **USED MINERAL SPIRITS BOTTOM SLUDGE**

This is material settled from used mineral spirits in the aboveground tanks. It contains basically soils, oil and grease, and some water picked up in the degreasing operations, together with a small amount of mineral spirits. Analyses have shown that the sludge is an ignitable waste and might also be considered toxic using TCLP standards.

The sludge is removed from the aboveground tank periodically and shipped to a Safety-Kleen facility for reclamation.

#### **USED MINERAL SPIRITS DUMPSTER MUD**

This waste material is accumulated in the wet dumpsters when emptying the used mineral spirits from the containers into the aboveground storage tanks. The nature of this waste is similar to the used mineral spirits bottom sludge, except with some small metal parts and less mineral spirits. It is regarded as an ignitable waste and often is also considered a characteristic waste using TCLP standards.



The sludge in the dumpsters is cleaned out frequently. The waste is containerized and shipped to Safety-Kleen's facility for recycling. Approximately 150 containers (1,500 gallons) of dumpster mud will be removed from this center annually.

#### USED IMMERSION CLEANER

The old formula clean chlorinated solvent is labeled under the trade name of "Immersion Cleaner and Carburetor and Cold Parts Cleaner #609." It is a two-phase system consisting of an upper aqueous (water) layer and lower non-aqueous (solvent) layer. The water phase consists of water and Dresinate TX (a sodium soap of tall oil). The solvent phase is composed of methylene chloride, orthodichlorobenzene, cresylic acid, and an amines additive.

A new "Immersion Cleaner and Carburetor and Cold Parts Cleaner #699" is also being leased. It is a heavy aromatic naphtha, N-methyl-2-pyrrolidon dipropylene glycol methyl ether, monoethanolamine and oleic acid, and contains a maximum of 1 percent total chlorinated solvents.

The used immersion cleaner is basically unchanged from its clean state, except oil, grease, and other solids may be picked up during the various degreasing operations. The spent solvent is non-flammable. It is regarded as toxic because of the contents of various solvents. Less than five gallons of waste is returned in each container. It is anticipated that 7,500 gallons of used immersion cleaner will be stored at this facility annually.

#### DRY CLEANING WASTES

Solvent used in dry cleaning of clothing is commonly tetrachloroethylene (or perchloroethylene). Hence, waste generated from dry cleaning operations contains various concentrations of the solvent. Basically, wastes generated by dry cleaning facilities are in the following forms.

1. Cartridge Filter: In addition to the construction materials consisting of steel, paper, clay, and carbon, the used cartridge retains solvent, oil and grease, and undissolved elements such as lint and soil. Solvent retained in the filter cartridge generally amounts to less than 50 percent of the total cartridge weight.
2. Muck: At some dry cleaning facilities, a mixture of powdered materials is used as the filter medium for the dry cleaning solvent, in lieu of the cartridge filter. This filter medium normally consists of diatomaceous earth and carbon. In addition to lint, soil, oil, and grease retained by this medium, between 40 and 50 percent by weight of the "muck" is absorbed solvent.
3. Still Residue: After filtration, the dry cleaning solvent is distilled by the dry cleaning machine to remove the dissolved materials from the used solvent. The dissolved materials (still residues) are in liquid form and consist of primarily detergent, oil and grease, vinyl acetate (a sizing compound), and 20 to 30 percent of solvent. This facility will ship about 80,000 gallons of dry cleaner wastes for reclamation annually.
4. Off specification perchloroethylene is generated by Safety-Kleen during the management of bulk perchloroethylene.

### **FRS WASTES**

Eight solvents are collected from FRS waste users: mineral spirits; 1,1,1-trichloroethylene; per- and trichloroethylene; methylene chloride; 1,1,2-trichloro-1,2,2-trifluoroethane; lacquer thinners; and waste oil exhibiting a characteristic. Prior to accepting an FRS waste customer's waste for recycling, a sample is drawn and analyzed at Safety-Kleen's laboratory in Elgin, Illinois. The criteria used to determine whether a waste is acceptable for recycling are in Table II.A.5-1. The containers are not opened until they reach the recycle center. Samples of the waste collected at the recycle center

## TABLE II.A.5-1

ACCEPTANCE CRITERIA FOR  
FLUID RECOVERY SERVICE WASTES

1. Solvents suitable for recycling will include mineral spirits, methylene chloride, 1,1,1-trichloroethane, trichloroethylene, and perchloroethylene, or mixtures of these solvents. Freon TF (1,1,2-trichloroethane-1,2,2-trifluoroethene) and TMC (a mixture of Freon and methylene chloride) will be acceptable for recycling but must be authorized.
2. A minimum of 50% yield of usable solvent is necessary. Yield is to be calculated as a percentage of the total sample received. Chemical breakdown of distillate should also be reported since this affects whether the distillate can be suitably incorporated into the Safety-Kleen product line.
3. The distillate cannot contain more than 5% by volume of aromatic solvents (toluene + xylene).
4. The distillate cannot contain more than 1% oxygenated solvents. (This excludes the inhibitor packages which should be reported as inhibitors).
5. Freon contamination is limited to 1% by volume for chlorinated feedstocks. Materials containing methylene chloride and Freon should be noted as producing TMC.
6. The raw material cannot contain more than 50% water (free + emulsified). Solids content should not exceed 5% (by centrifuge) by volume.
7. Materials with more than 5% solid bottoms are not acceptable feedstocks for normal feed.
8. Materials which pose potential safety hazards are not acceptable, i.e. low flash point (less than 100°F), high toxicity, and those that pose explosive hazards during processing.
9. Materials which contain herbicides, pesticides, PCBs, and PBBs are not suitable feedstocks due to the potential for contamination of the processing equipment and facility.
10. Materials which contain more than 1% unknown are to be referred to Jim Breece or Clark Rose for a decision on further analysis or rejection, depending upon quantity.



**TABLE II.A.5-1 (Continued)**  
**ACCEPTANCE CRITERIA FOR**  
**FLUID RECOVERY SERVICE WASTES**

11. All sample analyses which are approved by the lab will be forwarded to Jim Breece or Clark Rose for their acceptance prior to authorizing the generator to ship material to a recycle center.
12. All sample analyses that are rejected by the lab will be forwarded to Industrial Solvents and Operations to resolve whether or not the material can be accepted under a special processing and pricing arrangement.

wastes are either returned to the customer or properly disposed of. These wastes are shipped in containers and are stored on pallets. It is anticipated that 38,600 gallons of spent mineral spirits, 157,600 gallons of spent halogenated solvents and 60,400 gallons of spent lacquer thinners will be shipped from the accumulation center to a reclaimer on an annual basis.

### ANTIFREEZE COLLECTION SERVICE

The spent antifreeze (ethylene glycol) is collected from automobile service stations. These wastes are deposited into 150-gallon translucent carboy by the customer, on the customer's premises, the carboy is pumped into containers or a 3,500-gallon tanker by the sales representative. It should be noted that the vast majority of the antifreeze sample analyses indicated this waste is not hazardous. However, due to the low concentrations at which contaminants render a waste hazardous under TCLP, the container storage area for spent antifreeze will, as a protective measure, be permitted to hold TCLP wastes.

### PAINT WASTE COLLECTION

The paint wastes are collected from facilities where one process is managed and the possibility of cross-contamination from other chemicals or wastes is minimal. The contents of the containers are verified by the sales representative when he services the customer and, comparable to the handling of immersion cleaner, the containers are not reopened until they reach the recycle center.

Paint wastes consist of various lacquer thinners (D001, F003, and F005) and paints. Both are characteristic wastes by TCLP (D004, D005, D006, D007, D008, D009, D010, D011, D018, D019, D021, D022, D023, D024, D025, D026, D027, D028, D029, D030, D032, D033, D034, D035, D036, D037, D038, D039, D040, D041, D042, and D043). The waste is collected in containers at the customer's place of business and the containers are then palletized and stored in a designated storage area. It is anticipated that this facility will ship 14,300 gallons of paint waste to a reclaimer annually.

**ATTACHMENT II.A.6**  
**WASTE ANALYSIS PLAN**



**TABLE II.A.6-1  
PARAMETERS AND RATIONALE  
FOR HAZARDOUS WASTE IDENTIFICATION**

<b>Hazardous Waste</b>	<b>Parameter<sup>a</sup></b>	<b>Rationale</b>
1. Used Immersion Cleaner (609IC)	Methylene Chloride Orthodichlorobenzene Cresylic Acid	Formula contains these ingredients: F002 & Cresylic Acid F004
2. Used Immersion Cleaner (699IC)	TCLP	May contain these compounds
3. Used Mineral Spirits	Flash Point TCLP	Ignitable characteristics D001; may contain these compounds
4. Mineral Spirits Tank Bottom Sludge and Free Water	TCLP Flash Point	The sludge and free water may contain these compounds and the sludge has a flash point of 105° F (D001)
5. Mineral Spirits Dumpster Mud	TCLP Flash Point	The sludge and free water may contain these compounds and the sludge has a flash point of 105° F (D001)
6. Dry Cleaning Wastes	Perchloroethylene Trichlorotrifluoroethane Mineral Spirits	Contain ingredient of F002 or contains a hazardous constituent. Ignitable characteristics D001
7. Spent Antifreeze	TCLP	May contain these compounds
8. Paint Waste	Toluene, xylene, methyl ethyl ketone, methyl isobutyl ketone,, acetone, isopropanol, methanol, ethanol, normal butyl acetate, isobutyl acetate, cadmium, chromium, lead TCLP	Contains these components: F003 and F005. Ignitable characteristics D001
9. Fluid Recovery Service Wastes	Volatile Organic Compounds TCLP	Contains D001, F001, F002, F003, and F005 listed components; may contain these compounds.
10. Off Specification Perchloroethylene	None	Pure compound with minor impurities

<sup>a</sup> TCLP Waste Codes: D004-D011, D018, D019, D021-D030, D032-D043.



TABLE II.A.6-2

## PARAMETERS AND TEST METHODS

Parameter	Test Method	Reference
pH	pH Meter	ASTM Standard D1293-65
Flash Point	Tag closed cup tester	ASTM Standard D56-79
TCLP	Toxicity Characteristic Leaching Procedure	40 CFR 261, Appendix II
Hydrocarbons and Volatile Organics	Gas Chromatography (GC)	Modified Methods Based on "Test Methods for Evaluation of Solid Waste, Physical/Chemical Methods," SW-846, USEPA and ASTM Standards
Boiling Range	Distillation of Petroleum	ASTM Method D86-78
API Gravity	Hydrometer Method	ASTM Standard D287-67





TABLE II.A.6-3

## METHODS USED TO SAMPLE HAZARDOUS WASTES

Hazardous Waste	Reference for Sampling	Sampler	Description of Sampling Method
1. Used Immersion Cleaner	Sampling a drum "Samplers and Sampling Procedures for Hazardous Waste Streams," EPA/600/2-80/018	Test Methods for the Evaluation of Solid Waste Physical/ Chemical Methods, SW-846, USEPA	Representative composite sample using drum sampler
2. Used Mineral Spirits	Sampling a tank "Samplers and Sampling Procedures for Hazardous Waste Streams," EPA/600/2-80/018	Same as 1	For tanks--Bomb sampler (similar to weighted bottle sampler)
3. Mineral Spirits, Tank Bottom Sludge, and Free Water	Same as 2	Same as 1	Same as 2
4. Mineral Spirits Dumpster Mud	Same as 1	Same as 1	Same as 1
5. Dry Cleaning Wastes	Same as 1	Same as 1	Same as 1
6. Spent Antifreeze	Same as 1 or 2	Same as 1	Same as 1 or 2
7. Paint Waste	Same as 1	Same as 1	Same as 1
8. Fluid Recovery Service Wastes	Same as 1	Same as 1	Same as 1
9. Off Specification Perchloroethylene	Same as 1	Same as 1	Same as 1



TABLE II.A.6-4

## FREQUENCY OF ANALYSIS

Hazardous Waste	Frequency <sup>a</sup>
1. Used Immersion Cleaner 609	Gas chromatograph annually TCLP every five years
2. Used Immersion Cleaner 699	Gas chromatograph annually TCLP every five years
3. Used Mineral Spirits	Gas chromatograph annually Flash point annually
4. Mineral Spirits, Tank Bottom Sludge, and Free Water	Gas chromatograph annually TCLP every five years
5. Mineral Spirits Dumpster Mud	Gas chromatograph annually TCLP every five years
6. Dry Cleaning Wastes	Gas chromatograph annually TCLP every five years
7. Spent Antifreeze	Gas chromatograph annually TCLP every five years
8. Paint Waste	Gas chromatograph annually TCLP every five years
9. Fluid Recovery Service Wastes	Gas chromatograph annually TCLP every five years
10. Off Specification Perchloroethylene	None

<sup>a</sup> In accordance with 40 CFR 264.13(a), Safety-Kleen will also perform physical and chemical analysis of a waste stream when it is notified or has reason to believe that the process or operation generating the waste has changed, or when the result of inspection indicates that the waste to be collected does not match the waste designated.



**PART II B**  
**CONTAINERS**



**ATTACHMENT II.B.1**  
**CONTAINMENT SYSTEM**

Revision 2 - 12/06/91



## ATTACHMENT II.B.1

### CONTAINMENT SYSTEM

#### CONTAINMENT

The indoor container storage area shown in Figure II.B.1-1, occupies a portion of the building area which has a sloped concrete floor and a collection trench to form a spill containment system. The capacity of the containment system is designed to be greater than ten percent of the total liquid storage capacity.

The containment area is free of cracks and has been coated with a concrete sealant, Sikagard® 62 and was recoated with Semstone® 245. As stated by the manufacturer, Semstone® 245 is compatible with and resistant to products handled by Safety-Kleen. The manufacturer's statement and information regarding these products are provided in Sub-Attachment II.B.1-1 and Sub-Attachment II.B.1-3.

The containment volume is composed of the sloped concrete floor and the collection trench. As illustrated in Sub-Attachment II.B.1-2, the total containment volume is 2,972 gallons. Therefore, the maximum storage capacity is 29,720 gallons. The types and number of each container may vary; however, the total volume of product and waste stored will never exceed the maximum volume of 29,720 gallons. The estimated maximum storage volume of waste is 6,912 gallons.

Spills are removed by a hand-held, portable electric pump (the COMS pump), wet/dry vacuum cleaner, or sorbent material. Product collected in the collection trench is pumped into a safe container for transport to the recycle facility for reclamation. Only in the event that the spill were to exceed the containment capacity would spilled wastes be able to extend beyond the containment area. Only six openings (doorways) exist in the container containment area. Four of these lead to other containment areas; the container fill/return and the enclosed concrete dock (Figure II.B.1-1). The other two doorways are located on the east side of the container containment area behind a locked

chain link fence. All openings are normally closed and locked. Due to the volume of containment available and the configuration of the container containment area, it is highly unlikely that any spill would extend beyond this area. The complete containment assessment is provided in Sub-Attachment II.B.1-2.

Since the characteristics of the stored wastes are known, analyses are not performed on the materials collected from the containment area. All collected materials are sent to a recycle facility for recycling/reclamation. Recovered materials that cannot be effectively reclaimed at the recycle facility will be, in turn, sent to a permitted facility for disposal.

### CONTAINER MOVEMENT

In the container storage area, containers are handled with a hand-truck that is free of sharp points and stacked by hand. Every time a container is moved, a chance exists that it will be tipped over, dropped, or punctured. To minimize the possibility of spillage, containers are tightly covered and kept in an upright position. A small portable electric pump is available to quickly transfer the liquid from any leaking container into another safe container. Each route truck is equipped with an electric hoist. This hoist is used in the loading/unloading operation to minimize chances for spillage and/or employee injury. Trucks used for shipping containers between the recycle center and service center have lift gates for container loading/unloading. With the exception of mineral spirits, all containerized wastes are loaded/unloaded in the vicinity of the garage door on the southern side of the building. The mineral spirits are loaded/unloaded at the fill/return shelter, which are described in the Tank Section, Part IIC.

All containers are transported, moved, and stored carefully in an upright position. The route trucks are equipped with an electric hoist to assist loading/unloading. In the warehouse area, the immersion cleaner, mineral spirits dumpster mud containers, dry cleaning waste, paint waste, and FRS waste containers are moved with two-wheel hand trucks and stacked by hand. All containers will be elevated on pallets to eliminate the possibility of them standing in spilled solvent.

Containers will be double-stacked. The containers will be arranged so that a two-foot aisle space exists between all rows of pallets such that all containers can be readily visible for inspection and handling. Since all materials handled by Safety-Kleen are compatible with one another, no specific areas have been designated for specific wastes. Wastes will be grouped by type and are distinguishable by the color of the container; however, since the actual volume present of any product at a given time varies greatly, it is not practical to assign specific locations to given wastes.



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**TECHNICAL BULLETIN**

April 1990

**DESCRIPTION AND USES:**

SEMSTONE 245 is a high performance specialty coating for concrete. Its unique formulation makes it suitable for constant immersion service in chlorinated solvents, such as:

- Methylene chloride
- Ethylene dichloride
- Trichloroethylene

In addition, SEMSTONE 245 offers excellent resistance to a very broad range of other hazardous and corrosive chemicals including benzene, phenol, ketones, alcohols and chromic acid, as well as such commonly encountered items as 98% sulfuric acid and 50% caustic. This makes it the preferred choice for protecting hazardous waste handling facilities and other areas that will regularly see exposure to a wide variety of difficult chemicals.

**Other features include:**

- Very rapid cure, providing quick turnaround of projects.
- Can be applied at temperatures as low as 35°F.
- Can be applied over damp concrete.

**PACKAGING/COVERAGE:**

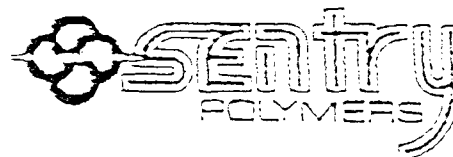
SEMSTONE 245 is available in 1 gallon, 3 gallon and 25 gallon units. Each unit consists of premeasured Part A and Part B components. A bagged Part C thixotropic agent is added for work on vertical surfaces.

Application thickness may vary from 25 mils to 125 mils, depending on expected service conditions (i.e., chemical exposure, temperature, traffic load and other mechanical abuse, immersion service vs. splash-spill, etc.). Consult Sentry Polymers for specific thickness recommendations.

In addition, coverage rates will be effected by the condition of surface being coated (degraded vs. smooth, steel vs. concrete, etc.).

To figure THEORETICAL coverage per gallon, divide desired mil thickness into 1.604. (For example, theoretical coverage for a 60 mil thickness is: 1.604 divided by 60 = 26.73 square feet per gallon.)

For practical coverage, make necessary allowances for condition of the substrate, working conditions, waste, spillage, etc.

**SEMSTONE® 245****High Performance Coating**



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## CHEMICAL RESISTANCE GUIDE

This guide is intended as an aid in determining the potential usefulness of SEMSTONE 245 as a protective barrier against chemical exposure. Each application should be evaluated according to its particular circumstances and conditions.

KEY: 1 = Suitable for constant immersion

2 = Suitable for shorter term containment and continual spillage

3 = Suitable for intermittent spills when followed promptly with water flushing

NR = Not recommended

C = Consult Sentry Polymers

\* = This chemical will attack the silica aggregate in the system. When the system is applied, be especially careful that all aggregate is totally encapsulated with SEMSTONE 245.

\*\* = For constant immersion service, coating must be postcured 12 hours at 150°F.

\*\*\* = Coating may show some staining or color change when exposed to this chemical.

RATING		RATING		RATING	
Acetic Acid, 10%	1	Cyclohexane	2	Naphthalene	1
Acetic Acid, 30%	2	Cyclohexanol	2	Nitric Acid, 5%	2***
Acetic Acid, Glacial	2	Cyclohexanone	2	Nitric Acid, 30%	3***
Acetone	1	Diesel Fuel	1	Nitric Acid, 50%	NR
Acrylic Acid, up to 25%	2	Diethyl Benzene	1	Nitrobenzene	1
Acrylonitrile	2	Dimethyl Aniline	1	n-Octyl Alcohol	1
Adipic Acid	2	Epichlorohydrin	1	Oil	1
Alum (Aluminum Potassium Sulfate)	1	Ethyl Acetate	1	Oleic Acid	2
Aluminum Chloride	1	Ethyl Acrylate	1	Oleum	2***
Aluminum Fluoride	1*	Ethyl Alcohol	1	Oxalic Acid	2
Aluminum Hydroxide	1	Ethyl Benzene	1	Perchloroethylene	1
Aluminum Nitrate	1	Ethyl Chloride	1**	Perchloric Acid	2
Aluminum Sulfate	1	Ethylene Dichloride (EDC)	1**	Phenol	2
Ammonia	2	Ethylene Glycol	1	Phosphoric Acid, 50%	1
Ammonium Biculfite	1	Fatty Acids	1	Phosphoric Acid, 85%	1
Ammonium Chloride	1	Ferric Chloride	1***	Phosphorous Acid	2
Ammonium Hydroxide	1	Ferric Nitrate	1	Potassium Carbonate	1
Ammonium Nitrate	1	Ferric Sulfate	1	Potassium Chloride	1
Ammonium Sulfate	1	Ferrous Chloride	1	Potassium Dichromate	2
n-Butyl Alcohol	1	Fluosilicic Acid	1*	Potassium Hydroxide	1
Aniline	1	Formaldehyde	1	Potassium Nitrate	1
Barium Chloride	1	Formic Acid	2	Propionic Acid	2
Barium Hydroxide	1	Fuel Oil	1	Silver Nitrate	1***
Barium Sulfate	1	Gesoline	2	Skydrol	1
Barium Sulfide	1	Glycerine	1	Sodium Acetate	1
Benzene	1	Heptane	1	Sodium Bicarbonate	1
Benzene Sulfonic Acid	1	Hexane	1	Sodium Bisulfate	1
Benzoic Acid	1	Hydrobromic Acid	2	Sodium Bisulfite	1
Black Liquor, Pulp Mill	2	Hydrochloric Acid, 15%	1	Sodium Carbonate	1
Bleach	C	Hydrochloric Acid, 37%	1***	Sodium Chloride	1
Boric Acid	1	Hydrofluoric Acid	1*	Sodium Chlorate	2
Brine	1	Hydrogen Peroxide	2	Sodium Hydroxide, 10%	1
Bromide, Liquid	NR	Hydrogen Sulfide	1	Sodium Hydroxide, 50%	1
Bromide Gas (Dry & Wet)	3	Isopropyl Alcohol	1	Sodium Hypochlorite	C
Butyl Acetate	1	Jet Fuel	1	Sodium Sulfate	1
Butyl Acrylate	1	Kerosene	1	Sodium Sulfide	1
n-Butyl Alcohol	1	Lactic Acid	2	Stannic Chloride	1
Butyl Cellulosolve Solvent	1	Lauryl Chloride	1	Stannous Chloride	1
n-Butyric Acid	2	Lead Acetate	1	Stearic Acid	1
Cadmium Chloride	1	Linseed Oil	1	Synene	1
Calcium Chloride	1	Lithium Bromide	1	Sugar/Sucrose	1
Calcium Hydroxide	1	Lithium Chloride	1	Sulfur Dioxide	1
Calcium Hypochlorite	C	Lithium Hydroxide	1	Sulfuric Acid, 10%	1
Calcium Nitrate	1	Magnesium Chloride	1	Sulfuric Acid, 50%	1
Calcium Sulfate	1	Magnesium Biculfite	1	Sulfuric Acid, 68%	1***
Calcium Sulfite	1	Magnesium Carbonate	1	Tail Oil	1
Carbon Dioxide Gas	1	Magnesium Chloride	1	Tannic Acid	1
Carbon Disulfide	2	Magnesium Hydroxide	1	Tartaric Acid	1
Carbon Tetrachloride	1**	Magnesium Sulfate	1	Tetrahydrofuran	C
Chlorine Dioxide	2	Maleic Acid	2	Toluene	1
Chlorine Gas (Dry & Wet)	3	Mercuric Chloride	1	Toluene Sulfonic Acid	1
Chlorine Water	2	Mercurous Chloride	1	Trichloroacetic Acid	1
Chlorobenzene	1	Methanol	1	Trichloroethane	1
Chloroform	1**	Methyl Chloride	2	Trichloroethylene	1**
Chromic Acid, 25%	1***	Methylene Chloride	1**	Trisodium Phosphate	1
Chromic Acid, 50%	2***	Methyl Ethyl Ketone	1	Urea	1
Copper Nitrate	1	Methyl Methacrylate	1	Water, Deionized	1
Copper Sulfate	1	Mineral Spirits	1	Water, Demineralized	1
Corn Oil	1	Monochloroacetic Acid	2	Water, Distilled	1
Crude Oil, Sour	1	Monothanolamine	1	Xylene	1
Crude Oil, Sweet	1	Muratic Acid	1	Zinc Chloride	1
		Nitrobenzene	1	Zinc Sulfate	1

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## APPLICATION GUIDELINES

### IMPORTANT NOTES

1. Work on vertical surfaces requires the addition of Part C thixotrope.
2. For manual applications, use only 1 gallon and 3 gallon units. The mixed material has a very short pot life, so plan your work accordingly.

### TEMPERATURE CONSIDERATIONS

1. Throughout the application process, the temperature of the surface to be coated should be 35°F - 95°F.
2. Below 75°F, the components will thicken noticeably, making manual applications extremely difficult.
3. When coating steel, halt application if the temperature falls within 5°F of the dew point. (This is not necessary when coating concrete.)
4. Bubbles may appear in the SEMSTONE 245 coating if it is applied over concrete in direct sunlight, or when temperatures are rising. This is due to the expansion of air and/or moisture trapped in the concrete. It is especially true of air entrained concrete.

For best results, shade the work area and apply SEMSTONE 245 when temperatures are falling.

5. Store all materials (components A, B, C and aggregate) at 80°F - 90°F for at least 24 hours before use, to facilitate handling.

### SURFACE PREPARATION - GENERAL

1. Surfaces must be free of dirt, dust, oil, grease, chemicals and other contaminants immediately prior to applying each coat of SEMSTONE 245.

For the initial coat, concrete surfaces can be damp.

However, for recoats, all surfaces must be dry.

### SURFACE PREPARATION OF CONCRETE

1. New concrete generally should be cured a minimum of 28 days.

NOTE: Check with Sentry Polymers for recommendations regarding concrete cured less than 28 days.

2. Concrete must be structurally sound and must not contain any accelerators or curing compounds.

3. Remove all oil and grease.

4. Remove all surface laitance and expose sound concrete. We recommend abrasive blasting to do this.

However, other methods, such as acid etching and neutralizing, may be used.

5. In general, any existing coating should be completely removed.

In certain instances, this may not be necessary, but consult with Sentry Polymers first.

Always remove coatings which have failed due to lack of adhesion or thermal shock.

6. Locate all expansion joints, control joints, floor drains, equipment base plates and mid-floor termination points. Handle them as per Sentry's Construction Details.

7. Honeycombs or any form voids in vertical surfaces must be filled.

Above 50°F, use SEMSTONE 140 with Part C thixotrope and aggregate added.

Below 50°F, use SEMSTONE 140-CT with Part C aggregate added.

8. If the concrete is damp:

a. Flush thoroughly with clear water. Steam or hot water is recommended, if available.

b. Remove all standing water.

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## SURFACE PREPARATION OF STEEL (NON-IMMERSION SERVICE ONLY)

1. Abrasive blast steel surfaces to a near white metal finish with 1 - 2 mil anchor profile.  
(Ref. SSPC-SP-10)
2. All outside corners must be ground smooth and rounded.
3. Round all inside corners to a minimum 1/2" radius with SEMSTONE 500 Epoxy Putty.

## MASKING

Mask surfaces that are not to be coated. This material is difficult to remove, once applied.

## APPLICATION EQUIPMENT

1. For spraying, use only a specially equipped plural component rig. Specifications are as follows:

Graco King Hydracat (or equivalent); 28:1 pump; 2.3 GPM, 4:1 mix ratio; Inlet air pressure on pump set at 75-120 psi.

Two 15 gallon heated hopper tanks. Set heater at 95°F.

In-line heater on resin outlet, set at 110° F.

High pressure solvent pump.

Insulated hoses, 3/8 in. ID, maximum length of 100 ft.

Graco Silver Gun, or equivalent, equipped with a reversible, self-cleaning tip, orifice size .035 - .041 inches.

No filters or internal screens.

2. For manual applications:

- a. Floors - preferred method is to spread with serrated squeegee, then backroll.

As a second choice, trowel or brush could be used.

- b. Walls - use roller or brush.

## MIXING AND APPLICATION

1. The components must be individually agitated immediately prior to use:

Part A - Blend each Part A component to a uniform consistency in its individual container, using a Jiffy type mixer.

Part B - Stir each Part B component to a uniform color in its individual container.

2. For work on vertical surfaces, add Part C.

Part C comes in premeasured bags.

For a one gallon unit and three gallon units, add one premeasured bag to each Part A.

For 25 gallon units, add one premeasured bag to each bucket of Part A and each bucket of Part B. (NOTE - There are 4 buckets of Part A and one bucket of Part B in a 25-gallon unit.)

Using a Jiffy type mixer, blend the Part C in until it is evenly dispersed, (about 1 - 2 minutes).

NOTE: Adding Part C darkens the color of SEMSTONE 245 somewhat.

3. Skip this step if you are spraying.

If mixing for application by hand:

Pour Part A into a clean mixing container of adequate capacity.

Add Part B.

Mix thoroughly for two minutes using a Jiffy type mixer.

The pot life of the mixed material will be about 15 minutes at 80°F. So, use immediately. For work on floors, etc., we suggest that you immediately dump the mixed material onto the surface and spread it.

NOTE: The premeasured quantities of each component have been carefully set. Any variation in these premeasured ratios will adversely affect performance. So, mix only complete units. If any of the components are soiled, discard the batch.

Clean all tools and equipment with Xylene, MEK or toluene.

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## SAFETY PRECAUTIONS

### FOR INDUSTRIAL USE ONLY.

Both the mixed product and its separate A and B components can be extremely irritating to skin, eyes and the respiratory system.

Avoid contact with eyes and skin; do not ingest or inhale.

When spraying in a confined area, wear a fresh air hood and make provision for forced ventilation.

At all other times, wear a NIOSH approved respirator suitable for organic vapors when working with this product or its components.

When working with SEMSTONE 245, always wear chemical goggles, rubber gloves, and appropriate work clothing.

Prolonged or repeated exposure to the unreacted Part A and Part B components of SEMSTONE 245 may cause skin irritation or allergic reactions.

Refer to material safety data sheets regarding individual components.

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### NOTES:

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NOTICE TO CUSTOMERS

We believe the information in this technical bulletin to be accurate as it is offered in good faith for your benefit. However, no guarantee of its accuracy is given or implied. Since the conditions of use are beyond our control, we suggest you make your own evaluation of these recommendations and suggestions. We guarantee our products in conformance to our manufacturing standards. We assume no responsibility for damage, performance or injuries resulting from use. Liability, if any, is limited to replacement of our products.

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PACIFIC, ID 83441

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**TYPICAL PROPERTIES:**

Solids, by Volume \_\_\_\_\_ 100%  
 Color \_\_\_\_\_ Buff (Selected other colors optional)  
 Weight per Mixed Gallon \_\_\_\_\_ 10 lbs.

**Cure Times (Approximate):**

<u>Temperature</u>	<u>Foot Traffic</u>	<u>Chemical Service**</u>
35°F _____	24 hrs. _____	7 days
55°F _____	8 hrs. _____	48 hrs.
80°F _____	4 hrs. _____	24 hrs.

\*\*For Immersion service in chlorinated solvents, the coating must be postcured at 150°F for 12 hours.

**RELATED AND ANCILLARY PRODUCTS:**

SEMSTONE 140 Epoxy Floor Topping  
 SEMSTONE 140-CT Epoxy Floor Coating - Cold Temperature Formulation  
 SEMSTONE 140-S Epoxy Coating and Lining  
 SEMSTONE 300 Epoxy Polymer Concrete  
 SEMSTONE 600 Epoxy Putty  
 SEM-CRETE Rapid Hardening Underlayment Mortar

Refer to separate technical bulletin on each products for its uses, application instructions, etc.

**STORAGE AND SHELF LIFE:**

Keep SEMSTONE 245 components tightly sealed in their original containers until ready for use. Store unopened at 50°F-90°F, out of direct sunlight. At least 24 hours immediately prior to use, store all components (A, B, C, and aggregate) at 80°F-90°F, to facilitate handling.

Properly stored, SEMSTONE 245 has a minimum shelf life of one year. Refer to batch number on label for date of manufacture.

**ATTACHMENT II.B.3**  
**WASTE SEGREGATION**





## ATTACHMENT II.B.3 WASTE SEGREGATION

### PROCEDURE FOR SEGREGATING WASTE TYPES

The used solvents are compatible with each other and with other materials handled at this facility with respect to reactivity and therefore do not require special segregation procedures. However, the wastes are the primary source of feed stock for regenerating the clean solvents. For ease of inventory control and product integrity, separation and grouping of both used and unused solvents is a standard practice at the facility. Safety-Kleen uses a container color scheme as a part of its waste management system. Eighty-five-gallon overpack containers are used to manage containers whose integrity have been compromised.

All materials are managed in accordance with the local fire protection code and fire department recommendations.

The immersion cleaner is always contained in partially filled covered containers before, during, and after its use. Until received at the recycle facility, the immersion cleaner is never transferred to another container. The containers containing the used immersion cleaner are returned to the facility and stored in the designated container storage areas before shipment to the recycle center.

The dry cleaning wastes are contained in containers. The liquids are in polyethylene or steel containers. Filters are in steel containers. These containers are managed similarly to the used immersion cleaner containers, and contents within the containers will not be removed or processed at the facility.

The mineral spirits are collected in containers. These containers are then emptied into the dumpsters in the return/fill shelter. Spent antifreeze is packaged in containers.



Paint wastes are stored in containers. The contents within these containers will not be transferred or processed at the service center. The paint waste is not removed from the containers until receipt by a reclaimer.

Eight solvents are collected from FRS waste users: mineral spirits; 1,1,1-trichloroethylene; per- and trichloroethylene; methylene chloride; 1,1,2-trichloro- 1,2,2-trifluoroethane; lacquer thinners, and waste oil exhibiting a characteristic. These wastes, except waste oil, are shipped in containers and are stored on pallets. It is anticipated that 38,600 gallons of spent mineral spirits, 157,600 gallons of spent halogenated solvents, and 60,400 gallons of spent lacquer thinners will be shipped from the accumulation center to a reclaimer on an annual basis.

The containers are designed and constructed to be compatible with the stored material and to minimize the possibility of breakage and leaking, in accordance with DOT shipping container specifications. Figures II.B.3-1 through II.B.3-4 show typical detailed construction specifications of the 16-gallon containers. The containers used to store cleaning wastes are shown in Figures II.B.3-5 through II.B.3-7. Paint containers are shown in Figure II.B.3-8.

Wastes are stored in polyethylene and steel containers. Since none of the waste handled by Safety-Kleen reacts with metal or polyethylene, compatibility is assured. Immersion cleaner and dry cleaning waste containers are never opened at the branch, and none of the wastes are incompatible.

### **POTENTIAL FIRE SOURCES**

The following is a list of fire prevention and minimization measures:

1. All wastes and products are kept away from ignitable sources--Personnel must confine smoking and open flames to remote areas (e.g., the office or locker room),

separate from any solvent. The mineral spirits handling area and the aboveground storage tanks are separate from the warehouse building area to minimize the potential for a fire to spread or injury to personnel to occur.

2. Ignitable wastes are handled so that they do not:

- a. become subject to extreme heat or pressure, fire or explosion, or a violent reaction--The mineral spirits waste is stored in a tank or in containers, none of which are near sources of extreme heat, fire, potential explosion sources, or subject to violent reactions. The tanks are vented and the containers kept at room temperature to minimize the potential for pressure build-up.
- b. produce uncontrolled toxic mists, fumes, dusts or gases in quantities sufficient to threaten human health--The vapor pressure of mineral spirits is low (2 mm) and it is reactive with strong oxidizers only. Toxic mists, fumes, dusts, or gases will not form in quantities sufficient to threaten human health since strong oxidizers are not handled at this facility and the solvent vaporization will be minimal under normal working conditions.
- c. produce uncontrolled fires or gases in quantities sufficient to pose a risk of fire or explosion--See "a" above and "d" below.
- d. damage the structural integrity of the Safety-Kleen facility--The solvents stored at this facility will not cause deterioration of the tank, containers, or other structural components of the facility.

3. Adequate aisle space is maintained to allow the unobstructed movement of personnel, fire protection equipment, and decontamination equipment to any area of the facility operation in an emergency.

4. "NO SMOKING" signs are posted in areas where solvents are handled or stored.
5. Fire extinguishers must be checked once per week and tested by the fire extinguisher company once per year.

### **EXTERNAL FACTORS**

The design of the installation is such that a harmful spill is highly unlikely to occur from most external factors. The storage tanks are inaccessible to non-Safety-Kleen personnel and the pump switches are located inside. Also, the container storage area is in a building which is inaccessible to unauthorized personnel.

1. Vandalism--Only extreme vandalism would result in a solvent spill or fire. Responses to spills and fires are described in the contingency plan.
2. Strikes--A strike would not result in a solvent spill or fire.
3. Power failure--A power failure would not result in a spill or fire. Should a power failure occur, all activities requiring electricity will cease.
4. Flooding--The site elevation is above the projected 100-year floodplain.
5. Storms or Cold Weather--The solvent return and fill station is roofed to eliminate the possibility of rain or snow entering the dumpsters. No opportunity is foreseen to affect the facility with snow, cold weather, or stormwater.

**ATTACHMENT II.B.4**  
**CONTAINER MANAGEMENT**



## ATTACHMENT II.B.4

### CONTAINER MANAGEMENT

The immersion cleaner is always contained in partially filled, covered containers before, during, and after its use. Until received at the recycle facility, the immersion cleaner is never transferred to another container. The containers containing the used immersion cleaner are returned to the facility and stored in the designated container storage areas before shipment to the recycle facility.

The dry cleaning wastes are contained in containers. The perchloroethylene from dry cleaning operations is collected in polyethylene containers. The dry cleaning filters are in steel containers. These containers are managed similarly to the used immersion cleaner containers, and contents within the containers will not be removed or processed at the facility.

The spent antifreeze is packaged in containers, and the containers are not opened at the facility. The mineral spirits are collected in containers which are poured into the dumpsters. Paint wastes are stored in containers. The contents within these containers will not be transferred or processed at the service center. The paint waste is not removed from the containers until receipt by an offsite reclaimer.

The containers are designed and constructed to be compatible with the stored material and to minimize the possibility of breakage and leaking, in accordance with DOT shipping container specifications. Figures II.B.3-1 through II.B.3-4 showed typical detailed construction specifications of the 16-gallon immersion cleaner containers. The containers used to store dry cleaning wastes were shown in Figures II.B.3-5 through II.B.3-7. Paint waste containers were shown in Figure II.B.3-8. Table II.B.4-1 provides a list of the containers used at the facility.

TABLE II.B.4-1

**SAFETY-KLEEN CORP.  
WASTE STREAMS AND CONTAINER SIZES  
BOYNTON BEACH, FLORIDA**

Waste Stream	Container Sizes (gallons)	Construction Material of Container
Mineral Spirits	5	Polyethylene
	16	Steel
	30	Steel
Dry Cleaner (including off specification perchloroethylene)	5	Steel
	13.5	Polyethylene
	15	Steel
	16	Polyethylene
	16	Steel
	Split 30 (also known as 20-gallon)	Steel
Immersion Cleaner	16	Steel
Paint Waste	5	Steel
	16	Steel
Ethylene Glycol	30	Steel
	55	Steel
Fluid Recovery Service (FRS) Waste	30	Steel
	55	Steel
Dumpster Mud/Tank Bottoms	16	Steel
	30	Steel
Overpack	85	Steel
	85	Polyethylene

Seven FRS wastes are collected from FRS waste users: mineral spirits; 1,1,1-trichloroethylene; per- and trichloroethylene; methylene chloride; 1,1,2-trichloro- 1,2,2-trifluoroethane; lacquer thinners, and waste oil exhibiting a characteristic. These wastes, except waste oil, are shipped in containers and are stored on pallets.

Wastes are stored in polyethylene and steel containers. Since none of the wastes handled by Safety-Kleen react with metal or polyethylene, compatibility is assured. Immersion cleaner and dry cleaning waste containers are never opened at the branch, and none of the wastes are incompatible.

Containers will be double-stacked. The containers will be arranged so that a two-foot aisle space exists between all rows of pallets such that all containers can be readily visible for inspection and handling. Since all materials handled by Safety-Kleen are compatible with one another, no specific areas have been designated for specific wastes. Wastes will be grouped by type and are distinguishable by the color of the container; however, since the actual volume present of any product at a given time varies greatly, it is not practical to assign specific locations to given wastes.



**ATTACHMENT II.B.6**  
**CONTAINER CLOSURE PLAN**

Revision 2 - 12/06/91

## **ATTACHMENT II.B.6**

### **CONTAINER CLOSURE PLAN**

The Safety-Kleen Corp. has constructed each service center with the intent that each will be a long-term facility for the distribution of Safety-Kleen products. Onsite disposal does not occur at any plant and hence there is no disposal capacity to be exhausted that will necessitate closure of a facility. Based on current business and facility conditions, this facility is expected to remain in operation beyond the year 2000.

In the event that some presently unforeseen circumstance(s) would result in the discontinuance of operations and permanent closure or sale of the facility, the following closure plan is designed to identify the steps necessary to completely close the facility at any point during its intended life, and should be used for tanks, container storage area, and equipment.

It is intended that all closures will be complete and final with removal of waste and decontamination of the facility and associated equipment, in order to eliminate need for maintenance after closure and chance of escape of hazardous waste constituents into the environment.

Procedures described in this closure plan are also applicable to cleaning up of spills and repairing/decontamination of facility or equipment.

An anticipated closure schedule can be seen in Figure II.B.6-1. An anticipated maximum waste inventory for the container storage portion of the facility is presented in the following section.

## **FACILITY DATA**

### **Container Storage Area:**

The container storage area has a 48' x 78' area with a sloped floor and collection sump. The maximum total volume of product and waste stored is 29,720 gallons with 6,912 gallons anticipated to be containers of waste mineral spirits dumpster mud, dry cleaner wastes, antifreeze, paint waste, immersion cleaner, and/or FRS wastes.

## **MAXIMUM INVENTORY OF WASTE**

Containerized Waste: Anticipated maximum of 6,912 gallons of waste.

This amount includes any combination of 5-, 15-, 16-, split 30- (also known as 20-gallon), 30-, 55-, and 85-gallon containers.

## **CLOSURE PROCEDURE**

### **Container Storage Areas**

The container storage area houses containers of used immersion cleaner, mineral spirits dumpster mud, dry cleaning wastes, antifreeze, paint waste, and FRS wastes.

- At closure all containers will be removed and transported to the recycle center with proper packaging, labeling, and manifesting where the contents in the containers will be reclaimed and the containers will be cleaned for reuse.
- The concrete floor and spill containment areas will be cleaned with detergent solution and the rinsate will be analyzed for mineral spirits, volatile organic compounds, lead, and cadmium using SW-846 methods to determine the effectiveness of decontamination. The area will continue to be washed and rinsed until levels are below maximum contaminant levels (MCLs), or if MCLs are not available, practical quantitation limits (PQLs) as specified in Appendix IX of 40 CFR 264.

- If the wash water or other wastes generated in the closure process are determined to be hazardous, they will be properly disposed of as a hazardous waste; otherwise the material will be disposed of as an industrial waste. It should be noted that wash water and rinsate will not be allowed to drain to the waterway. It is anticipated that approximately 350 gallons of rinsate will require RCRA disposal.
- The equipment used to clean this area includes mops, pails, scrub brushes, a wet/dry vacuum, and containers. The mops, pails, and scrub brushes will be containerized and disposed of as hazardous waste. The wet/dry vacuum hose will be washed with a detergent solution to decontaminate it. The containers will be used to store the wastewater.

#### **FACILITY CLOSURE SCHEDULE AND CERTIFICATION**

- Safety-Kleen may amend the closure plan at any time during the active life of the facility. (The active life of the facility is that period during which wastes are periodically received.) Safety-Kleen shall amend the plan any time changes in operating plans or facility design affect the closure plan or whenever there is a change in the expected year of closure of the facility. The plan must be amended within 60 days of the changes.
- Safety-Kleen shall notify the state authority at least 180 days prior to the date closure is expected to begin, except in cases where the facility's permit is terminated or if the facility is otherwise ordered by judicial decree or compliance order to cease receiving wastes or to close. The date when Safety-Kleen "expects to begin closure" should be within 90 days after the date on which Safety-Kleen expects to receive the final volume of wastes.
- Within 90 days of receiving the final volume of hazardous wastes, or 90 days after approval of the closure plan, if that is later, Safety-Kleen shall remove from the site

all hazardous wastes in accordance with the approved closure plan. The Regional Administrator may approve a longer period if Safety-Kleen demonstrates that:

The activities required to comply with this paragraph will, of necessity, take longer than 90 days to complete; or

The following requirements are met:

- ▶ The facility has the capacity to receive additional wastes;
  - ▶ There is a reasonable likelihood that a person other than Safety-Kleen will recommence operation of the site;
  - ▶ Closure of the facility would be incompatible with continued operation of the site; and Safety-Kleen has taken and will continue to take all steps to prevent threats to human health and the environment.
- Safety-Kleen shall complete closure activities in accordance with the approved closure plan and within 180 days after receiving the final volume of wastes or 180 days after approval of the closure plan, whichever is later.
  - When closure is completed, all facility equipment and structures will be properly disposed of, or decontaminated by removing all hazardous waste and residues.
  - When closure is completed, Safety-Kleen shall submit to the Regional Administrator a certification by an independent registered professional engineer that the facility has been closed in accordance with the specifications in the approved closure plan.



**PART II C**  
**TANK SYSTEMS**



**ATTACHMENT II.C.1**  
**ENGINEERING ASSESSMENT OF TANK SYSTEM**



DESIGN AND INSTALLATION ASSESSMENTS  
USED ANTIFREEZE STORAGE TANK SYSTEM  
BOYNTON BEACH, FLORIDA

For

SAFETY-KLEEN CORP.  
Elgin, Illinois



**TERA, inc.**





## TERA, Inc.

6440 Hillcroft, Suite 200  
P.O. Box 740038, Houston, Texas 77274, Tel. 713/772-0876, Fax: 713/981-7713

91-208-1

### TANK SYSTEM CERTIFICATION

I have supervised the design and installation assessments dated November 21, 1991, of the used antifreeze storage tank systems at the Safety-Kleen Corp. facility in Boynton Beach, Florida. The EPA ID Number for this facility is: FLD984167791.

With regard to this duty, I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all related attachments and that, based on my observations and my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Wendell R. Vines

Registered Professional Engineer

Florida No. 37464

TERA, Inc.

P. O. Box 740038

Houston, Texas 77274

Signed: \_\_\_\_\_

Date: \_\_\_\_\_





## TERA, Inc.

6440 Hillcroft, Suite 200  
P.O. Box 740038, Houston, Texas 77274, Tel. 713/772-0876, Fax: 713/981-7713

November 21, 1991  
91-208-1

SAFETY-KLEEN CORP.  
777 Big Timber Road  
Elgin, Illinois 60123

Attention: Ms. Melissa Hlebasko

Subject: Design and Installation Assessments  
Used Antifreeze Storage Tank System  
Boynton Beach, Florida

Dear Melissa:

Submitted here is our design and installation assessments report for the used antifreeze storage tank system at your Boynton Beach facility. The main report body summarizes assessment results in a format corresponding to the rules being addressed. Appendices are used for presenting detailed information.

We have enjoyed working with you on this interesting project, and look forward to another opportunity to be of service to Safety-Kleen. Please contact us at 713/772-0876 if you have any questions.

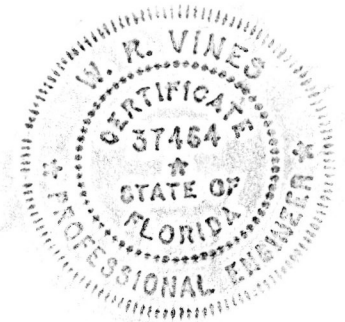
Very truly yours,

TERA, Inc.

Wendell R. Vines, P.E.  
President

WRV/lf

Enclosures: Eleven (11) Copies



91-208-1

DESIGN AND INSTALLATION ASSESSMENTS  
USED ANTIFREEZE STORAGE TANK SYSTEM  
BOYNTON BEACH, FLORIDA

\* \* \*

For

SAFETY-KLEEN CORP.  
Elgin, Illinois

\* \* \*

By

TERA, Inc.  
Houston, Texas

November 1991

TABLE OF CONTENTS

<u>Title</u>	<u>Page No.</u>
SYSTEM DESCRIPTION . . . . .	1
CONSIDERATIONS OF DESIGN ASSESSMENT . . . . .	2
1. Design Standards . . . . .	2
2. Hazardous Characteristics of the Waste . . . . .	3
3. Corrosion Protection . . . . .	4
4. Effects of Vehicular Traffic . . . . .	5
5. Foundation Design . . . . .	6
6. Tank Installation Assessment . . . . .	6
SECONDARY CONTAINMENT ASSESSMENT . . . . .	7
1. Required Data . . . . .	7
2. Materials Compatibility . . . . .	7
3. Strength . . . . .	8
4. Foundation . . . . .	8
5. Leak Detection . . . . .	8
6. Liquid Removal . . . . .	9
7. Device Requirements for Vault . . . . .	9
8. Ancillary Equipment . . . . .	10
CONCLUSIONS OF ASSESSMENTS . . . . .	10
ILLUSTRATIONS	
APPENDIX A - Design Documentation	
APPENDIX B - Design Review Documentation	
APPENDIX C - Description of Waste	
APPENDIX D - Inspection Records	

This report documents the design and installation assessments for the used antifreeze storage tank system at the Safety-Kleen facility in Boynton Beach, Florida. The assessments described here are written to address the requirements of 40 CFR 264.192 and 40 CFR 264.193, and Florida DER Regulation 17-30.180.

#### SYSTEM DESCRIPTION

Used antifreeze liquids will be received from offsite generators in tank trucks. The hose from the truck is connected to a tanker hookup located in the secondary containment of the tank farm building. The truck pump transfers the used antifreeze via aboveground piping into an aboveground steel storage tank of 20,000-gallon capacity. Accumulated used antifreeze will be evacuated periodically from this tank via a tank truck pump through the aboveground piping to the tank truck for transport to an offsite recycling center. Sludge and solids that accumulate in the tank will be removed periodically through a manway for offsite disposal. All of the ancillary equipment for this system is located in the tank containment area.

For the purpose of this assessment, the used antifreeze storage system has been defined to include the storage tank, the aboveground piping, the ancillary equipment, and the secondary containment system for these components. The system was originally constructed as a used oil system and has been converted to a used antifreeze system before putting the system into service.

The 20,000-gallon storage tank for the used antifreeze is a horizontal tank with integral saddle supports. The tank is located inside a steel-reinforced concrete containment area which is coated for impermeability. The used antifreeze storage tank is vented to the

SYSTEM DESCRIPTION (Continued)

atmosphere. Exhaust fans (32" x 32") are mounted at each end of the building for air circulation. Tank liquid level is to be monitored daily by reading a level indicator. The tank is also equipped with a high level alarm to provide a warning to service center personnel when the tank is approximately 95% full. Emergency venting is to be provided by a 24-inch loose-bolt manway on top of the tank.

Documents further describing the used antifreeze storage system are attached at Appendix A.

A local area map for Boynton Beach, Florida, and a site plan for the facility are shown on Plates 1 and 2. A Flood Map is shown on Plate 3. A schematic drawing of the used antifreeze storage tank system is shown on Plate 4.

CONSIDERATIONS OF DESIGN ASSESSMENT

1. Design Standards (40 CFR 264.192(a) and 40 CFR 264.193))

Design standards and materials of construction were determined from construction drawings for the system. Information made available for this purpose is listed in Appendix A.

This tank system design has been reviewed for compliance with the following applicable codes:

- Underwriters' Laboratory, UL 142, Standard for Steel Aboveground Tanks for Flammable and Combustible Liquids, 6th Ed. (tank)
- American Concrete Institute, ACI 318-89, Building Code Requirements for Reinforced Concrete (containment)

CONSIDERATIONS OF DESIGN ASSESSMENT (Continued)1. Design Standards (40 CFR 264.192(a) and 40 CFR 264.193)) (Continued)

- American Society of Civil Engineers, ASCE 7-88, Minimum Design Loads for Buildings and Other Structures, (Formerly ANSI A58.1) (tank environmental response analyses).

Calculations, discussions and checklists which evaluate compliance with these codes for primary considerations are given in Appendix B. The design review shows that:

- The design substantially conforms to the standards referenced above;
- The design standards are appropriate for this application.

Descriptions of the concrete coating and caulking materials and application procedures used by Safety-Kleen for the tank secondary containment are referenced in Appendix A. This information indicates that the materials should be satisfactory for the intended service, provided recommended procedures were followed by the applicator.

The conclusion upon review of the documents is that the design of the used antifreeze storage tank system is appropriate for the intended service. The structural system, support, and seams appear to be adequately designed.

2. Hazardous Characteristics of the Waste (40 CFR 264.192(a)(2) and 40 CFR 264.193)

The waste material to be collected and stored by this system will be antifreeze liquids which consist primarily of ethylene

CONSIDERATIONS OF DESIGN ASSESSMENT (Continued)

2. Hazardous Characteristics of the Waste (40 CFR 264.192(a)(2) and 40 CFR 264.193) (Continued)

glycol and water picked up in various automotive service centers and commercial users. The material is a single-phase liquid at ambient temperatures. Documentation describing the waste material is included in Appendix C.

The primary hazardous characteristic of the waste is toxicity by characteristic leaching procedure standards (D004-D011, D018, D019, D021-D030, D032-D043), EPA Hazard Code E.

3. Corrosion Protection (40 CFR 264.192(a)(3))

The steel tank, protected with a paint coating on its exterior, is inside a building. All associated piping is also painted and inside the building.

System components are not provided with internal corrosion protection.

A literature search by TERA for test data which confirms compatibility of the waste antifreeze and water mixture with the carbon steel elements of this tank storage system has not been fruitful. However, due to the usual presence of rust inhibitors in manufactured antifreeze and the world-wide use of antifreeze mixed with water as a coolant for internal combustion engines, there is ample reason to believe that the used antifreeze stored in this tank system is not corrosive to steel alloys.



CONSIDERATIONS OF DESIGN ASSESSMENT (Continued)3. Corrosion Protection (40 CFR 264.192(a)(3)) (Continued)

Safety-Kleen states that they have been intensively investigating all aspects of the marketing, handling, and storage of used antifreeze for the past three years. The company reportedly has conducted extensive chemical analyses of the various compositions of used antifreeze expected to be stored in this system and has evaluated the compatibility of used antifreeze with the usual materials of construction normally employed for a hazardous waste storage system at their service centers. Safety-Kleen has determined that used antifreeze is compatible with those materials without the need for special liners or other protection against internal corrosion. A letter from Safety-Kleen is included in Appendix C.

External metal components of this tank system are not in long-term contact with soil or water. Therefore, the tank system will not require cathodic protection.

It is therefore concluded that the used antifreeze waste materials are sufficiently compatible with the system materials of construction to not require additional corrosion protection.

4. Effects of Vehicular Traffic (40 CFR 264.192(a)(4))

No underground components are used in this system, and no adverse effects from vehicular traffic under normal conditions have been identified.

CONSIDERATIONS OF DESIGN ASSESSMENT (Continued)5. Foundation Design (40 CFR 264.192(a)(5))

The foundation support for the used antifreeze storage tank is provided by a reinforced concrete slab. As shown in the calculations included in Appendix B, the foundation design for the new tank components appears to be sufficient to maintain a full liquid load. The branch site is in a zone of low seismic activity (Zone 0 from ASCE 7-88) and the tank will not require special anchorage for earthquakes. See Appendix B for seismic calculations. Wind forces on the tank are not expected since the system is inside a building.

6. Tank Installation Assessment (40 CFR 264.192)A. Installation Inspection

After installation and prior to being placed in service, the new tank system was inspected by TERA for defects and compliance with the design documentation. No discrepancies were identified between design documentation and observed features of the tank system. No indications were found of any weld breaks, punctures, scrapes of protective coatings, cracks, corrosion, structural damage or inadequate construction or installation. The tank and piping wall thicknesses were also verified by ultrasonic thickness measurements. Documentation of the inspections performed is included in Appendix D of this report.

B. Tightness Testing

The new tank system components were tested for tightness prior to being placed in service. Tightness testing consisted of pneumatic leak testing of the tank and system piping.

CONSIDERATIONS OF DESIGN ASSESSMENT (Continued)

6. Tank Installation Assessment (40 CFR 264.192) (Continued)

B. Tightness Testing (Continued)

Documentation of the testing performed is included in Appendix D. There was reportedly no evidence of leakage from any of the system components during final tightness testing.

SECONDARY CONTAINMENT ASSESSMENT

The following paragraphs give a detailed comparison of containment system features to current requirements. This evaluation considers only the used antifreeze tank system containment area. For brevity, "secondary containment" as used here means features that meet the requirements of 40 CFR 264.193.

1. Required Date (40 CFR 264.193(a)(3))

Since this system is new, secondary containment is required prior to placing the tank system in service. As discussed in subsequent paragraphs, secondary containment has been provided.

2. Materials Compatibility (40 CFR 264.193(c)(1))

The waste material collected and stored by the system is to be a used antifreeze liquid which consists primarily of ethylene glycol and water received from various automotive service operations and commercial users. The primary hazardous characteristic of the waste is toxicity. As noted earlier, this material is compatible with and not corrosive to the system materials of construction (primarily concrete, polyurethane caulking, epoxy coating and carbon steel).

SECONDARY CONTAINMENT ASSESSMENT (Continued)

3. Strength (40 CFR 264.193(c)(1))

The most critical strength requirement for the floor slab of the tank containment structure is to be its service as foundation support for the used antifreeze tank when full (used antifreeze has a higher specific gravity than either clean or used solvent). Loading from the tank is higher than any expected hydrostatic pressure. As shown in the calculations in Appendix B, the strength of the floor slab appears to be adequate.

The most critical strength requirement for the concrete containment walls is from hydrostatic pressure with the containment full of ethylene glycol. As shown in Appendix B, the strength of the containment walls appears to be adequate.

The pressure containment capacity of the piping and other ancillary equipment items was reviewed and found to be adequate for the intended service.

4. Foundation (40 CFR 264.193(c)(2))

The foundation for the secondary containment vault, tanks and their contents is the soil subgrade and aggregate subbase described in Appendix A. A check of the subgrade bearing pressure shows maximum loads on the subgrade to be less than specified bearing capacity (see Appendix B).

5. Leak Detection (40 CFR 264.193(c)(3))

All components of this system are aboveground and are directly accessible for visual inspection.

SECONDARY CONTAINMENT ASSESSMENT (Continued)6. Liquid Removal (40 CFR 264.193(c)(4))

The tank containment system is sloped to drain to sumps at each end of the containment structure. Liquid removal is accomplished by hand pumps or vacuum trucks.

7. Device Requirements for Vault (40 CFR 264.193(e)(2))

As shown by the calculations in Appendix B, containment for the tanks will have a design volume sufficient to hold 100 percent of the used antifreeze tank capacity. Since the system is inside a building, additional containment for rainfall is not required. Therefore, containment capacity for the storage tank system is considered sufficient.

Chemically-resistant external waterstops were formed where necessary at joints in the concrete walls by the application of Sika Flex-1a joint sealant, described by concrete construction details and manufacturer's literature in Appendix A.

The tank concrete containment structure for the tanks has been coated with Sikagard 62 epoxy coating. As shown in the manufacturer's literature in Appendix A, this material is expected to be impermeable to and compatible with the waste antifreeze being stored. A few spots where the Sikagard 62 has flaked will require touch-up.

SECONDARY CONTAINMENT ASSESSMENT (Continued)

8. Ancillary Equipment (40 CFR 264.193(f)(1))

The piping for the used antifreeze system is aboveground. All ancillary equipment including piping are located within the containment structure. The pressure containment capacity, support, and protection of ancillary equipment appears to be designed satisfactorily.

CONCLUSIONS OF ASSESSMENTS

Based on the information included in this report, the used antifreeze storage system at the Safety-Kleen facility in Boynton Beach, Florida, appears to have been adequately designed to have sufficient structural strength and to be sufficiently compatible with the wastes being stored to not leak, collapse, rupture, or fail in their intended service. No evidence of damage, defects or improper installation was found, and tightness test records show no indications of leakage. A secondary containment system is provided that appears to meet the requirements of 40 CFR 264.193, except that secondary containment coating touch-up should be accomplished before the system is put into service.

91-208-1

ILLUSTRATIONS

ILLUSTRATIONSTABLE OF CONTENTS

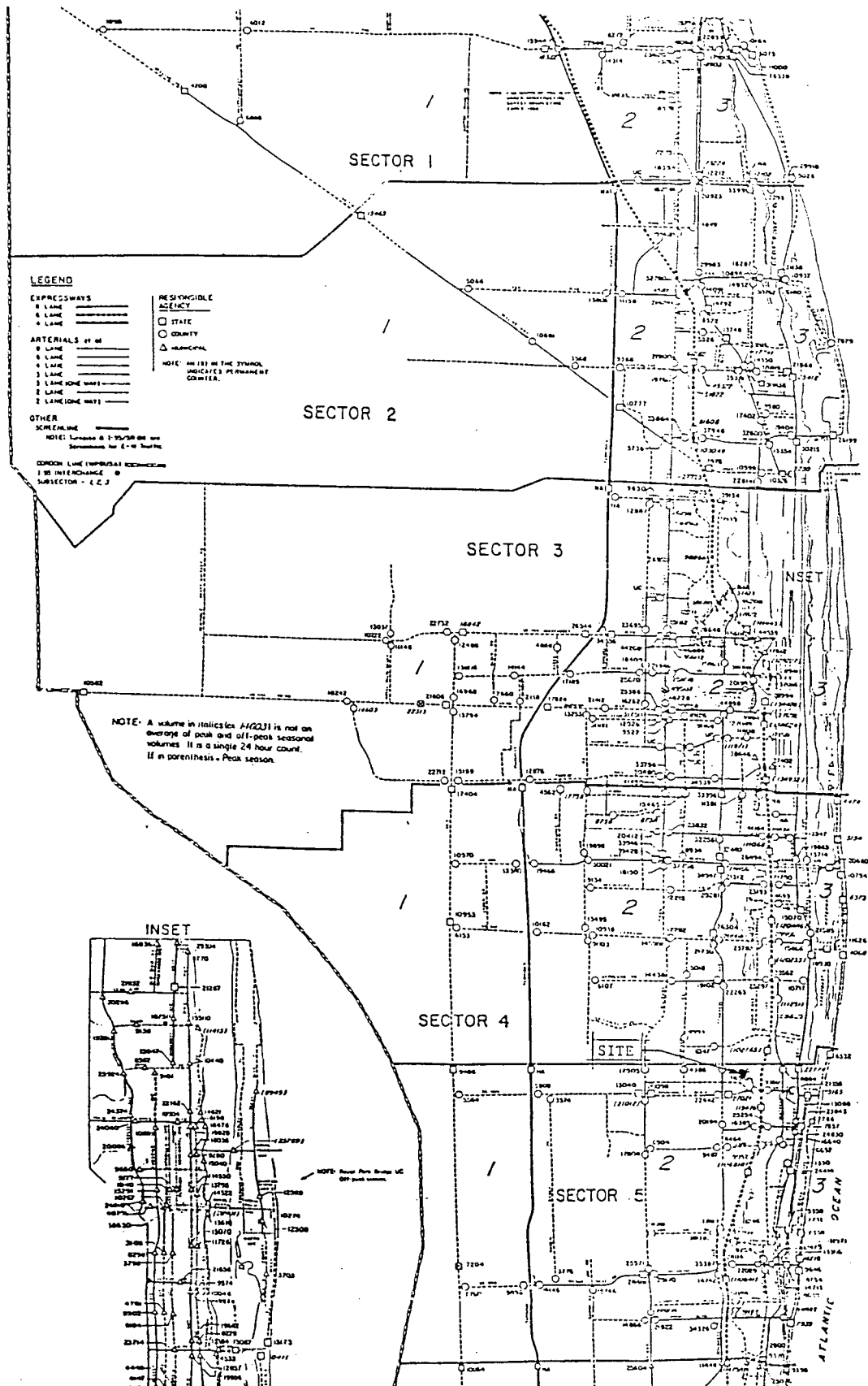
<u>Title</u>	<u>Plate No.</u>
Local Area Map . . . . .	1
Site Plan . . . . .	2
Flood Insurance Rate Map . . . . .	3
System Schematic, Used Antifreeze Tank . . . . .	4



SUBJECT: LOCAL AREA MAP  
Boynton Beach, FL.  
BY: TET DATE: 11/1/91

**TERA, inc.**

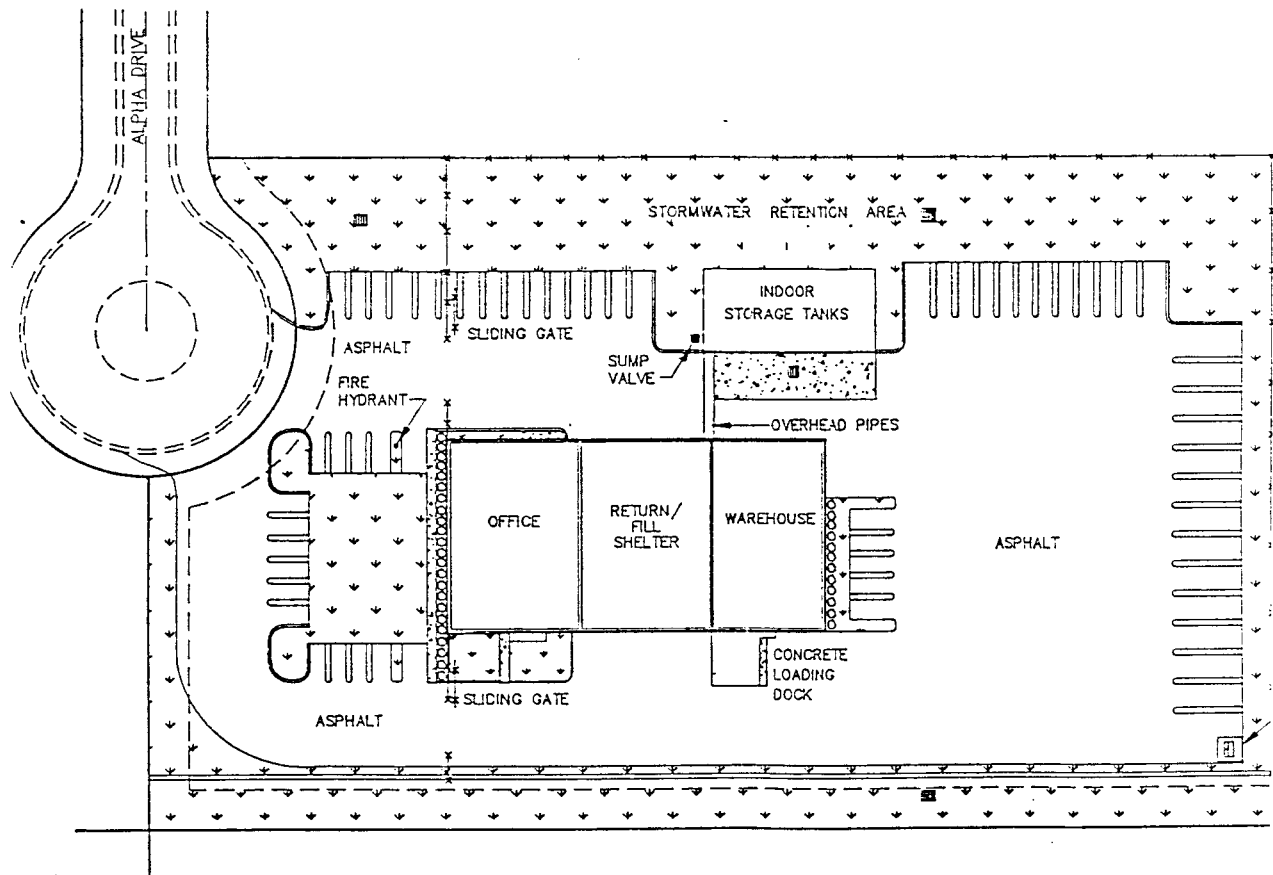
JOB NO.: 91-208-1  
FILE: Facility Information  
SHEET: 1 OF: 3



SUBJECT: Site Plan  
Boynton Beach, Fl.  
BY: TFT DATE: 11/1/91



JOB NO.: 91-208-1  
FILE: Facility Information  
SHEET: 2 OF: 3

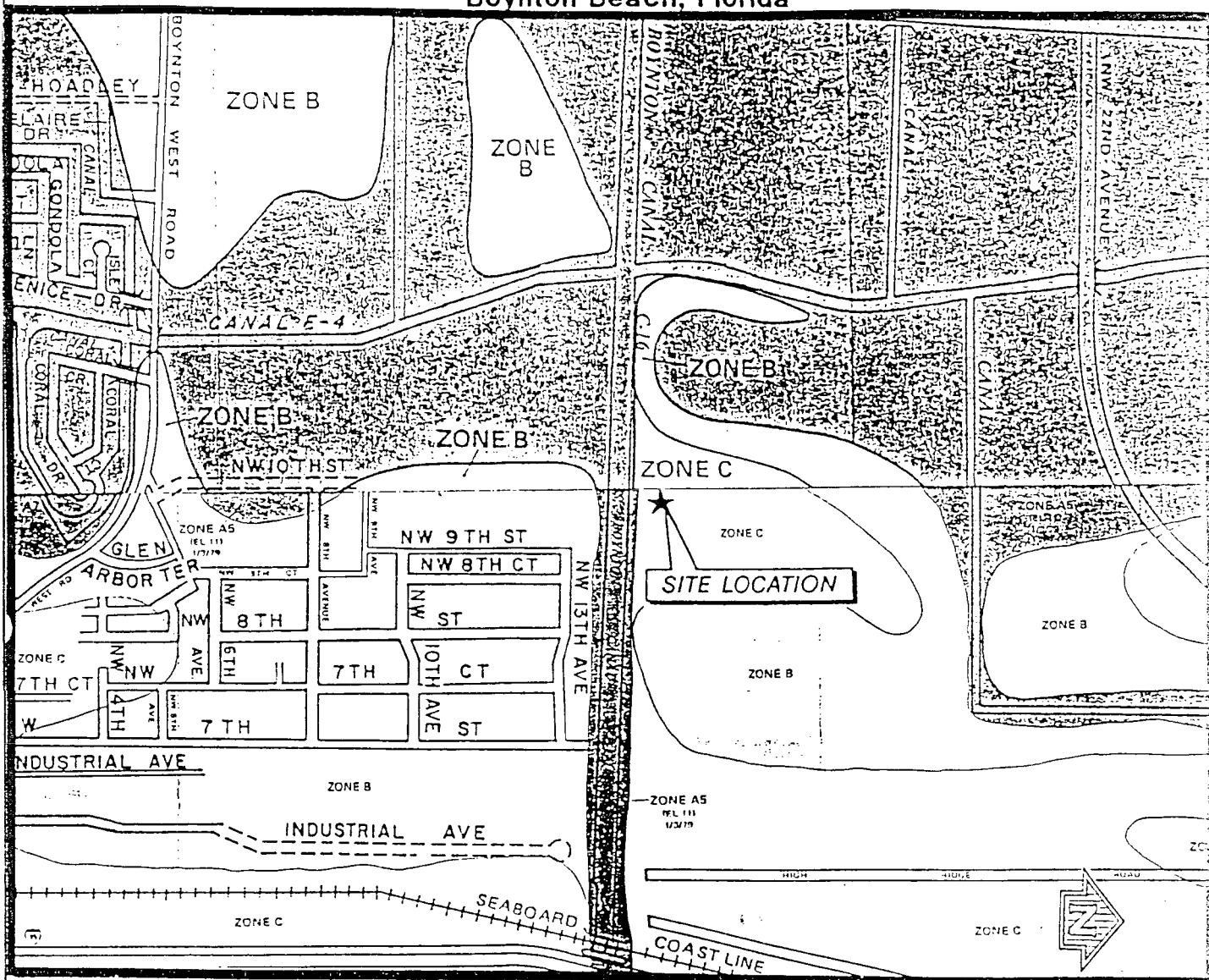


SUBJECT: Flood Map  
Boynton Beach, Fl.  
 BY: TFT DATE: 11/1/91

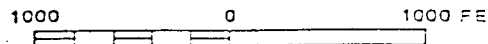
**TERA, inc.**

JOB NO.: 91-208-1  
 FILE: Facility Information  
 SHEET: 3 OF: 3

# Flood Map Safety-Kleen Corp. Facility Boynton Beach, Florida



APPROXIMATE SCALE



500-Year Flood Boundary

100-Year Flood Boundary

Zone Designations\* With  
 Date of Identification  
 e.g., 12/2/74

100-Year Flood Boundary

500-Year Flood Boundary

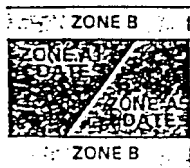
Base Flood Elevation Line  
 With Elevation In Feet\*\*

Base Flood Elevation in Feet  
 Where Uniform Within Zone\*\*

Elevation Reference Mark

Zone D Boundary

River Mile



513

(EL 987)

RM7x

\*M1.5

## \*EXPLANATION OF ZONE DESIGNATIONS

### ZONE

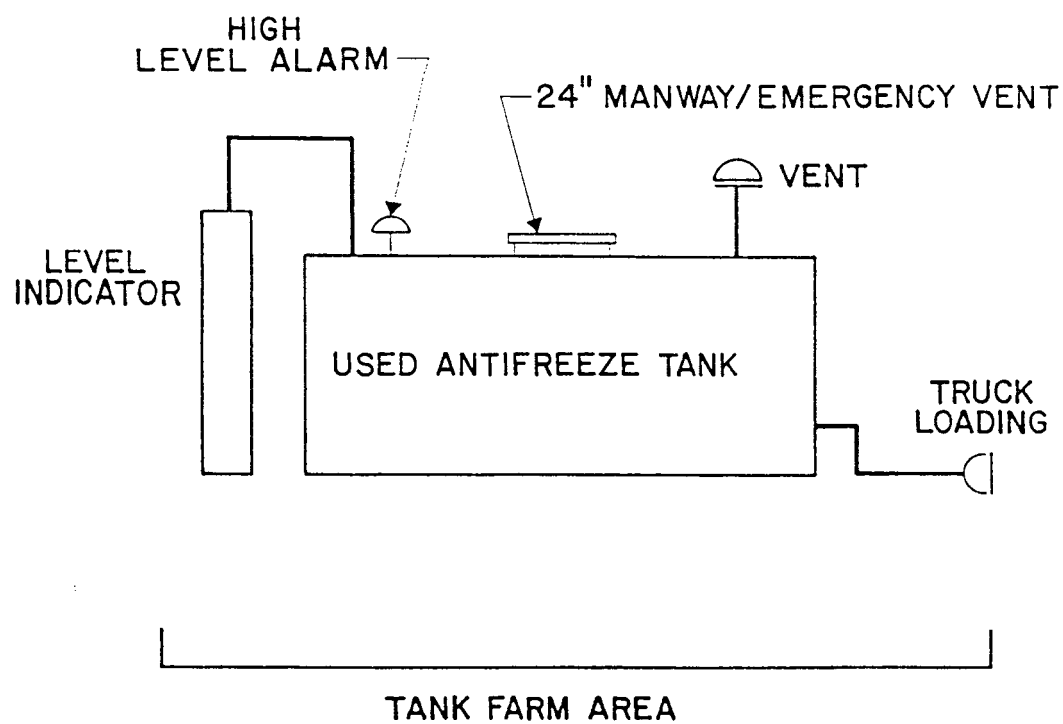
### EXPLANATION

- A Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
- A0 Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
- AH Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
- A1-A30 Areas of 100-year flood; base flood elevations and flood hazard factors determined.
- A99 Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
- B Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)

- C Areas of minimal flooding. (No shading)
- D Areas of undetermined, but possible, flood hazards.
- V Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
- V1-V30 Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

PLATE 3

\*\*Referenced to the National Geodetic Vertical Datum of 1929



## SYSTEM SCHEMATIC

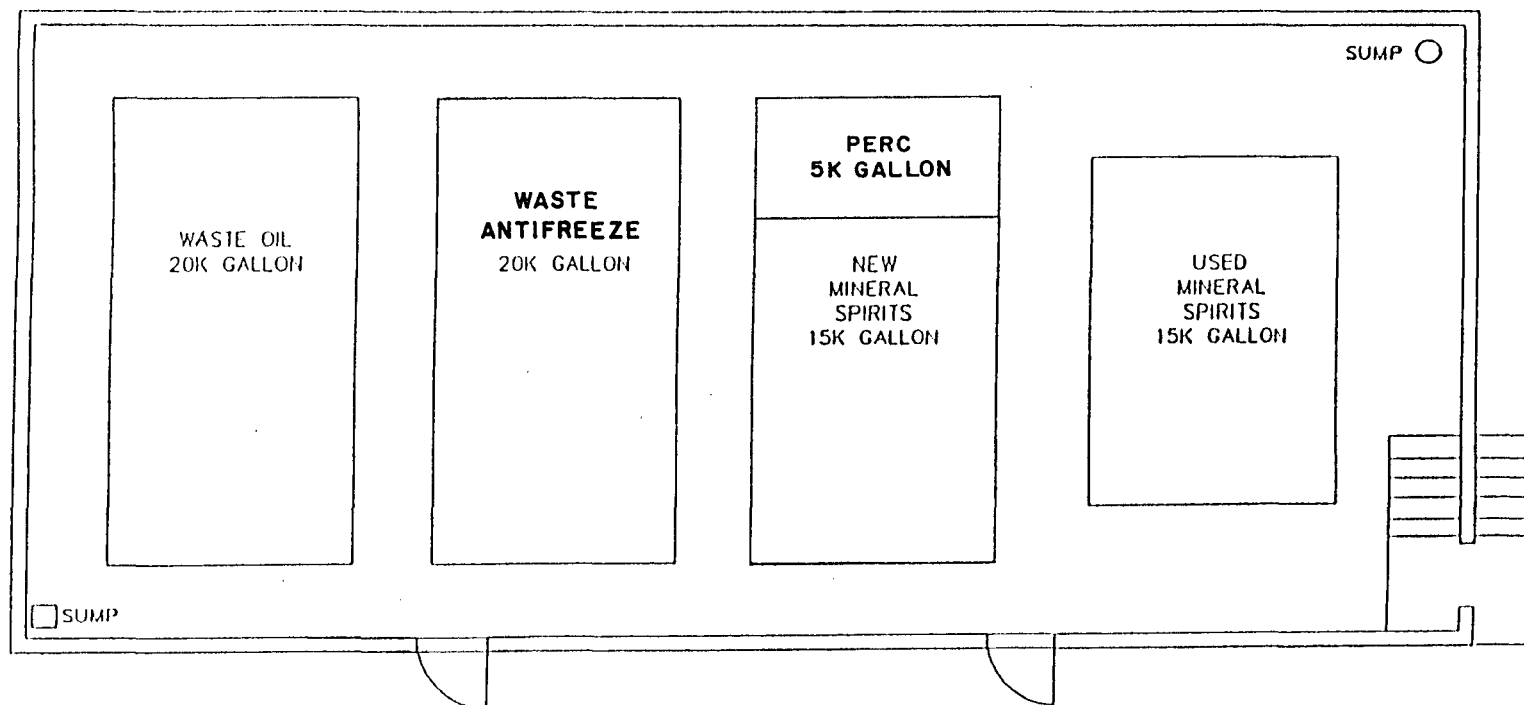
APPENDIX A  
Design Documentation

APPENDIX A  
Design Documentation

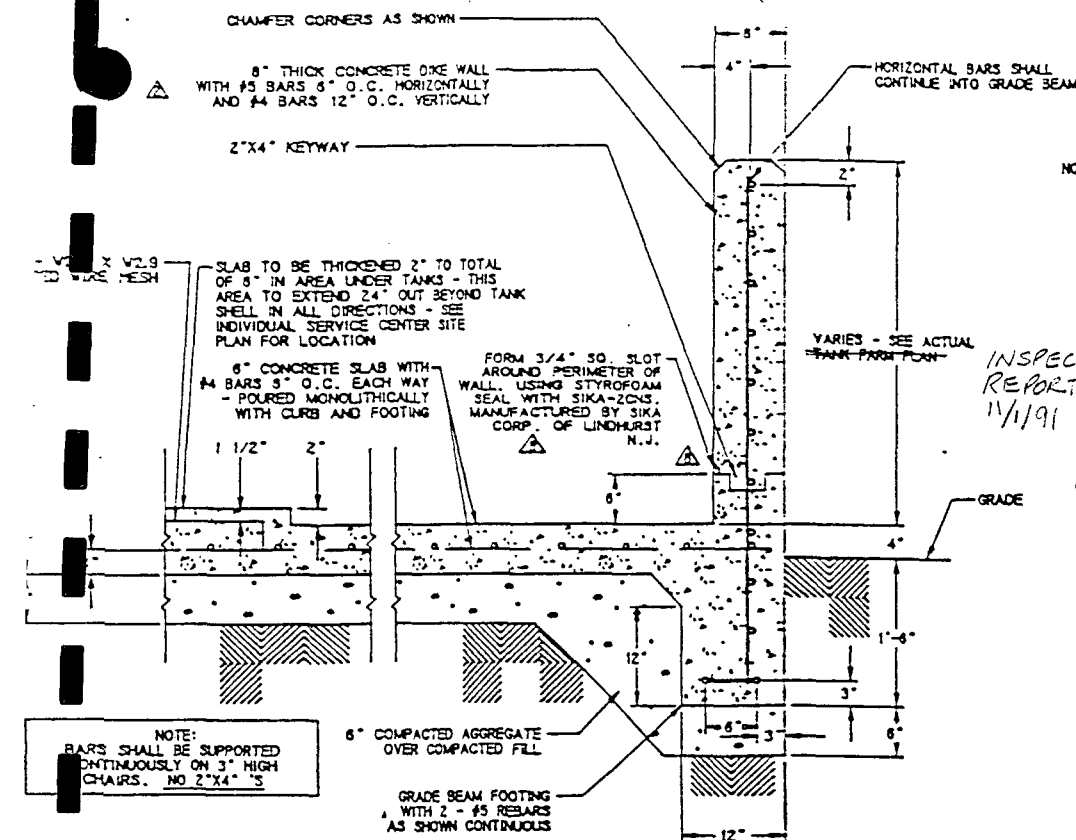
The information in this Appendix was provided by Safety-Kleen to TERA for purposes of this design assessment as being representative of in-place details. The inspection was limited to externally visible features and showed general conformance to these drawings. Where non-accessible details were needed in the assessment, such as reinforcement of concrete, they were assumed to be as shown here.

TABLE OF CONTENTS

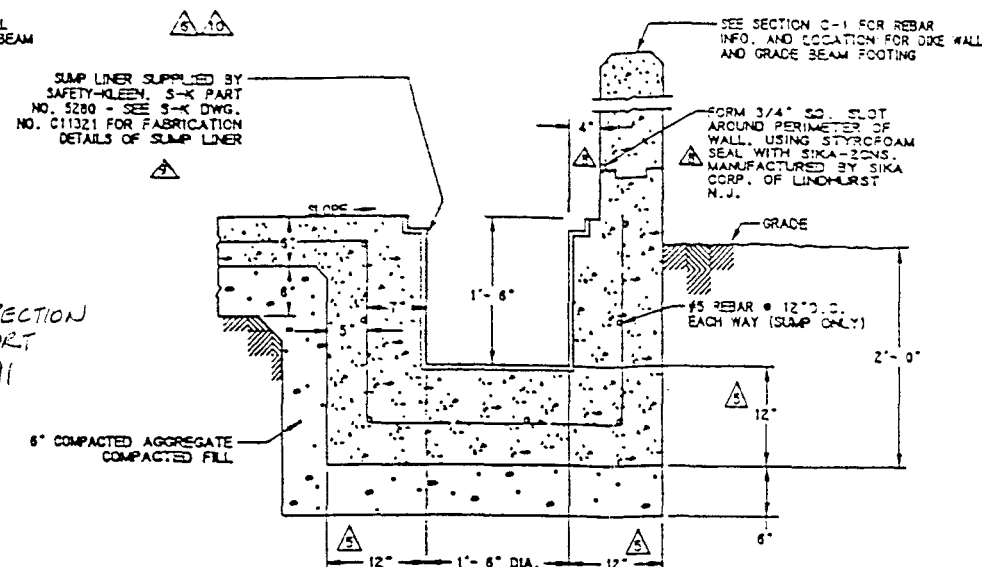
<u>Title</u>	<u>Page No.</u>
Tank Farm Plan . . . . .	A-1
Typical Concrete Construction Details D11322 . . . . .	A-2
20,000 Gallon Horizontal Steel Aboveground Storage Tank Drwg. No. D12966 . . . . .	A-3
Emergency & Gate Valve Installation Details . . . . .	A-4
High Level Alarm System - D13102 . . . . .	A-5
Moormann Bros. Tank Gauge Installation A10243 . . . . .	A-6
Caulking/Coating Data . . . . .	A-7



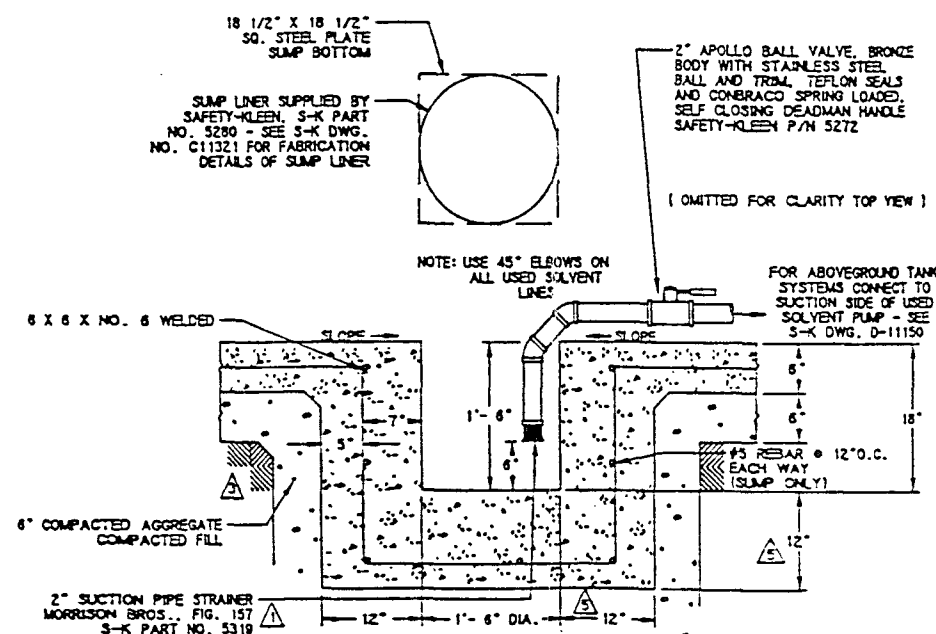
TANK FARM  
SAFETY-KLEEN BRANCH  
BOYNTON BEACH, FLORIDA



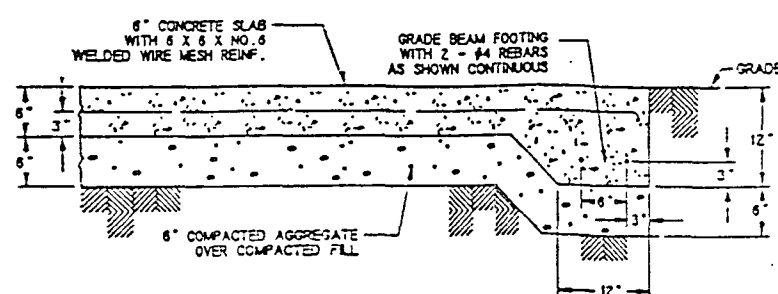
C1 SECTION C-1: TANK SLAB & DIKE WALL  
SCALE: 1"=1'-0" CONSTRUCTION DETAIL



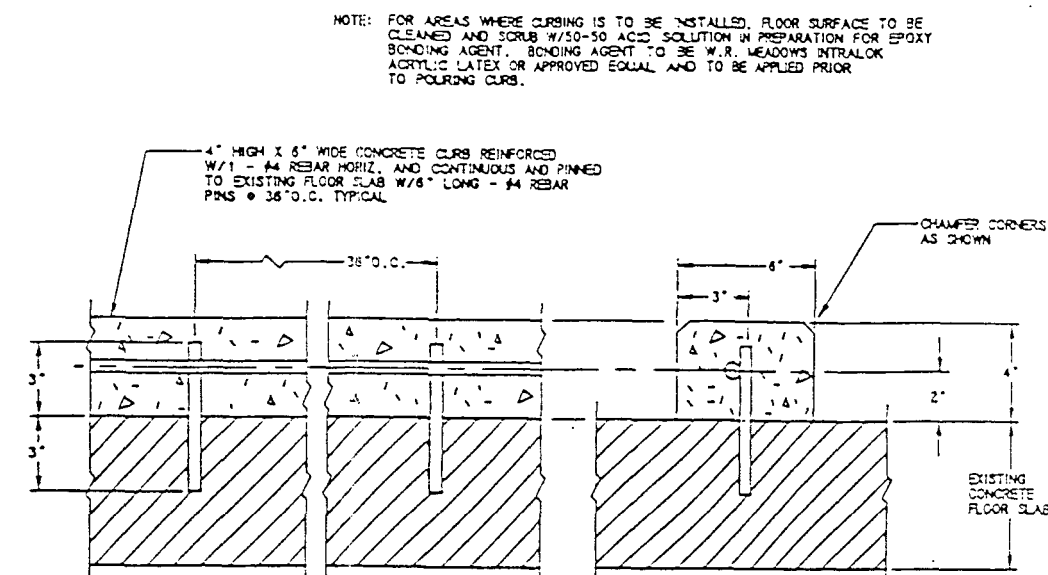
C3 SECTION C-3: TANK FARM SUMP  
SCALE: 1"=1'-0" CONSTRUCTION DETAIL



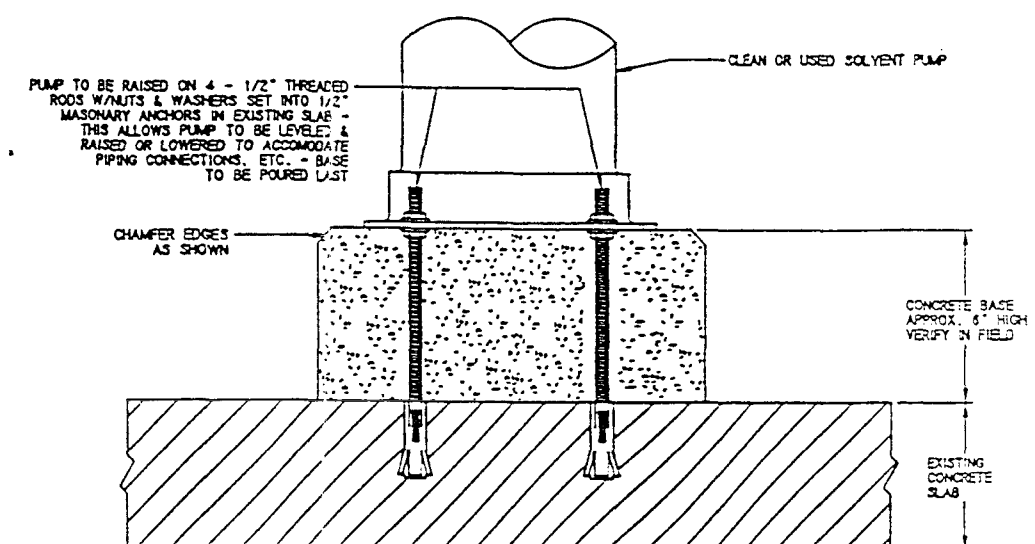
C4 SECTION C-4: RETURN & FILL AREA SUMP  
SCALE: 1"=1'-0" CONSTRUCTION DETAIL



C2 SECTION C-2: SLAB CONSTRUCTION DETAIL  
SCALE: 1"=1'-0"



D1 DETAIL D-1: CURB CONSTRUCTION  
SCALE: 3"=1'-0"



D2 DETAIL D-2: PUMP BASE CONSTRUCTION  
SCALE: 3"=1'-0"

# GENERAL NOTES

- THIS DRAWING CONTAINS INFORMATION PROPRIETARY TO SAFETY-KLEEN CORP. ANY REPRODUCTION OR USE OF THIS DRAWING IS EXPRESSLY PROHIBITED EXCEPT BY SAFETY-KLEEN OR AS SAFETY-KLEEN MAY AGREE IN WRITING.
- THIS DRAWING SUPERCEDES SAFETY-KLEEN DRAWINGS C10240, C10962, D10507, AND D10955.
- SEE INDIVIDUAL SERVICE CENTER PLANS FOR LOCATIONS OF THESE DETAILS.
- CONCRETE TO OBTAIN 3,000 PSI STRENGTH IN 28 DAYS.
- ALL ITEMS WITH SAFETY-KLEEN PART NO. REFERENCES WILL BE SUPPLIED TO CONTRACTOR.
- ALL CONCRETE WORK SHALL CONFORM TO THE REQUIREMENTS OF ACI-301-84 "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS". ALL CONCRETE SHALL HAVE  $f_c=3,000$  PSI. ALL CONCRETE EXPOSED TO WEATHER SHALL HAVE 5-7% AIR ENTRAINMENT. COARSE AGGREGATE SHALL CONFORM TO NO. 57 IN ACCORDANCE WITH ASTM C-33.
- ALL CONCRETE AREAS TO BE COVERED WITH SURLAP AND KEPT CONTINUOUSLY MOIST FOR A MINIMUM PERIOD OF THREE DAYS IMMEDIATELY AFTER PLACEMENT & FINISHING.
- SLOPE ALL CONCRETE SLABS TO SUMP AS SHOWN ON PLAN (RAISED SLAB UNDER TANKS TO BE LEVEL).
- ALL FOOTINGS SHALL BEAR ON UNDISTURBED SOIL OR COMPACTED FILL. MINIMUM SOIL BEARING PRESSURE TO BE 2,500 PSF.
- TOP OF ALL EXPOSED CONCRETE WALL POURS TO BE SCREENED AND FINISHED PERFECTLY LEVEL FOR PROPER ARCHITECTURAL APPEARANCE.
- SUMPS TO BE TESTED BY CONTRACTOR WITH WATER AT FULL HEIGHT FOR A PERIOD OF 24 HOURS, WITH NO LEAKAGE ALLOWED.
- ALL FLOORS AND SUMPS SHALL BE COATED WITH TWO COATS OF SIKAGARD 82, MANUFACTURED BY SIKAKORP, LINDHURST, N.J. OR CONCRETE BY ADHESIVE ENGINEERING CO., SAN CARLOS, CA. COATING SHALL HAVE A SLIP-RESISTANT FINISH PER MANUFACTURER'S SPECIFICATIONS. MANUFACTURER'S RECOMMENDATIONS FOR SURFACE PREPARATION AND APPLICATION SHALL BE STRICTLY FOLLOWED. ALLOW CONCRETE SUBSTRATE TO CURE AT LEAST 30 DAYS PRIOR TO APPLICATION OF COATING.

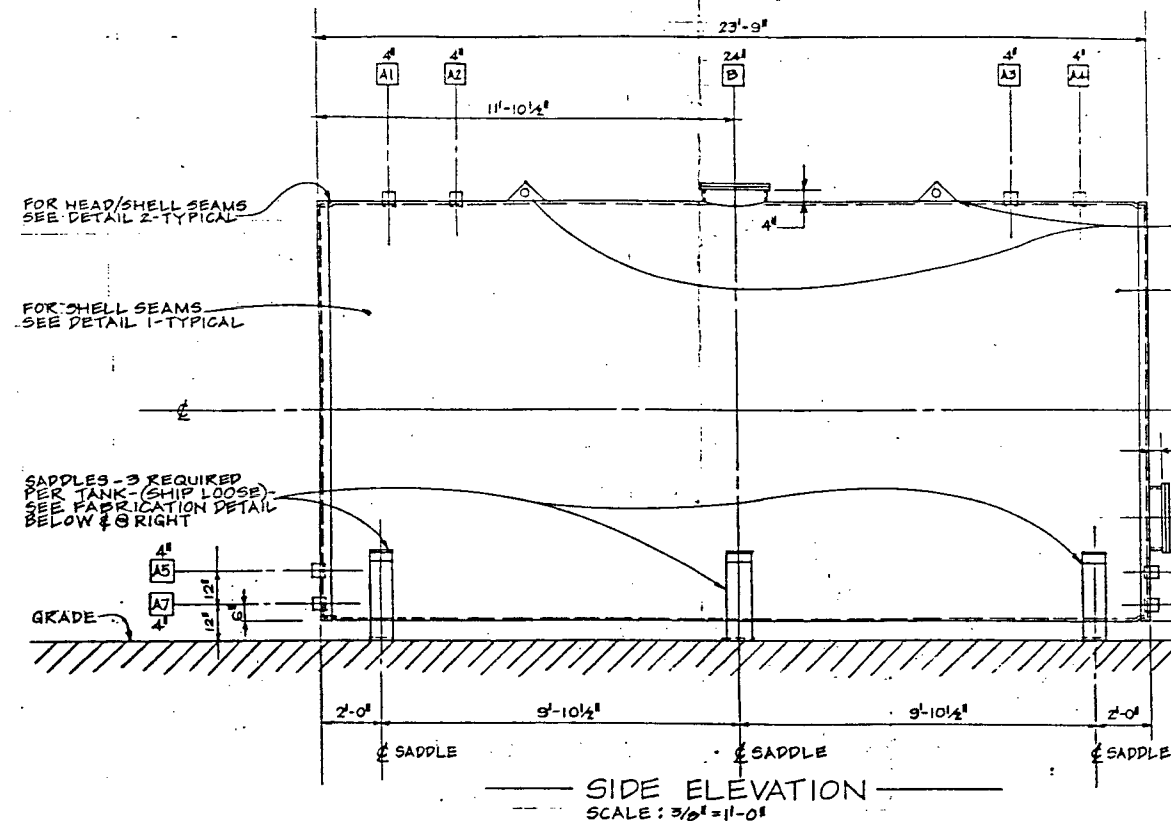
NO.	DESCRIPTION	BY	CHKD	DATE
1	REV. D. MESH FROM SECT. C3	RD		3/7/89
2	ADDED 3/4" SLOT & LABEL C-1 & C-3	RD		3/7/89
3	REVISED SECTION C-1	RD		3/7/89
4	ADDED COUPLING NOTE	RD		3/7/89
5	THREADED ROD, IN SLAB SECT. C-3 & C-4	RD		3/7/89
6	REV. 2" DRAIN LINE & BALL VALVE'S	RD		3/7/89
7	REV. 2" DRAIN LINE FROM SUMP DET. D-2	RD		3/7/89
8	VERT. BAR SPACING WAS 48"	WLU		3/7/89
9	ADDED NOTE 5 & PIPE STRAINER	WLU		3/7/89

BH1  
3/7/89 JS

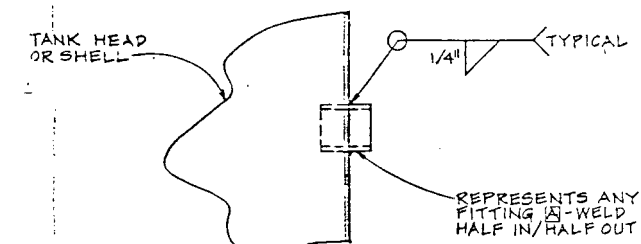
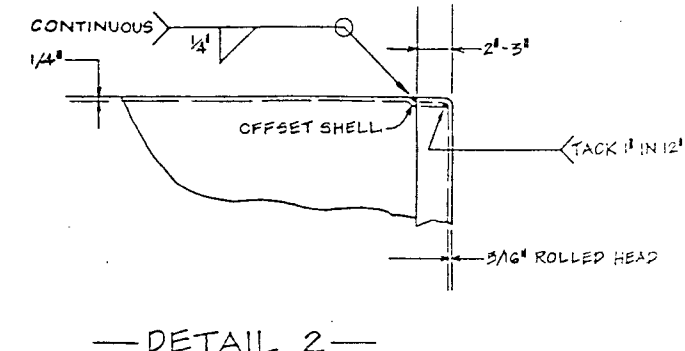
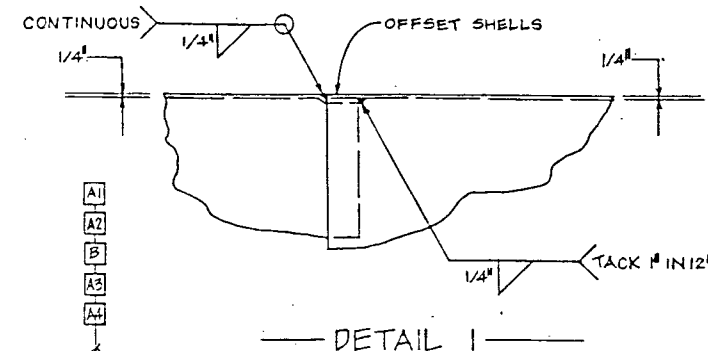
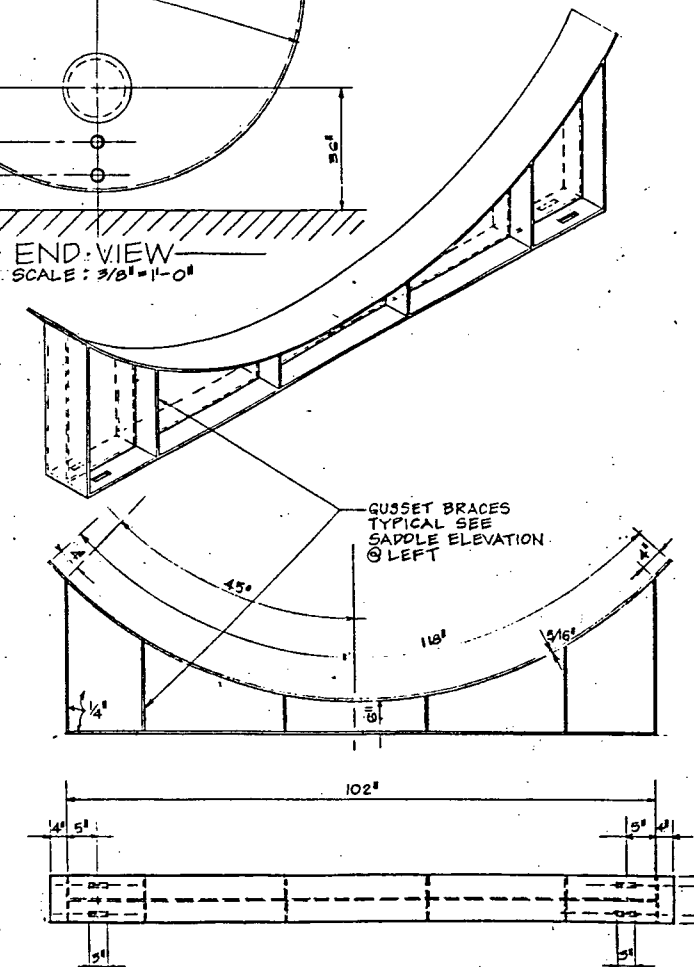
## TYPICAL CONCRETE CONSTRUCTION DETAILS

SAFETY-KLEEN CORP.	
777 IN TOWER ROAD, ELLEN, ILLINOIS 60120	PHONE 312/497-6000
FOR SERVICE CENTER BRANCH	D11322



LIFTING LUGS - LOCATE  
AS REQUIRED - (2)SHELL 1/4" H.R.C.S.  
THROUGH OUT

4" TYPICAL

— END VIEW —  
SCALE: 3/8" = 1'-0"

— FITTING &amp; FIXTURE SCHEDULE —

MARK	QUANTITY	SIZE RATING	DESCRIPTION	REMARKS
A	8	4" X H	SCREWED FULL COUPLING	
B	1	24" STD	24" MANWAY	CEMENT GASKET TO COVER ONLY INSTALL (4) 4" LG. SHOULDER BOLTS & NUTS ONLY 90° APART. THIS IS TO PERMIT EMERG. RELIEF VENTING
C	1	24" STD	24" MANWAY (COMPLETE)	INSTALL GASKET & STANDARD BOLTS - TIGHTEN ALL FULLY

— NOTES —

- DESIGN, FABRICATION & TESTING SHALL MEET OR EXCEED THE MINIMUM REQUIREMENTS OF UNDERWRITERS LABORATORIES STANDARD UL 142 FOR CONSTRUCTION OF STEEL ABOVEGROUND ATMOSPHERIC STORAGE TANKS FOR FLAMMABLE & COMBUSTIBLE LIQUIDS - & BE SO LABELED.
- EXTERIOR SURFACE FINISH ONLY TO BE PREPARED IN ACCORDANCE WITH STEEL STRUCTURE PAINTING COUNCIL CODE #SSPC-SP3 (SURFACE PREPARATION SPECIFICATION NO. 3).  
A) REMOVE LOOSE RUST & MILL SCALE BY POWER TOOL WIRE BRUSHING & ABRADING 1/2" OR SANDBLASTING.
- FOLLOWING SURFACE PREPARATION APPLY (1) COAT OF RED OXIDE PRIMER & (2) COATS ALKYL BASE GLOSS WHITE STRUCTURAL ENAMEL MOBIL 12-W-4 OR EQUIVALENT - ALLOW 16-24 HOURS BETWEEN COATS TO INSURE PROPER SEALING -
- SADDLES WILL BE FIELD WELDED TO TANKS BY CONTRACTOR PER WELDING SPECS IN SADDLE ELEVATION AT LEFT - CONTRACTOR TO REPAIR TANK/SADDLE FINISH @ WELD AREAS PER NOTES 2 & 3 ABOVE -

**Safety-Kleen corp.**  
777 BIG TIMBER ROAD & BLK. 111005 8023 PHONE 312/987-9400

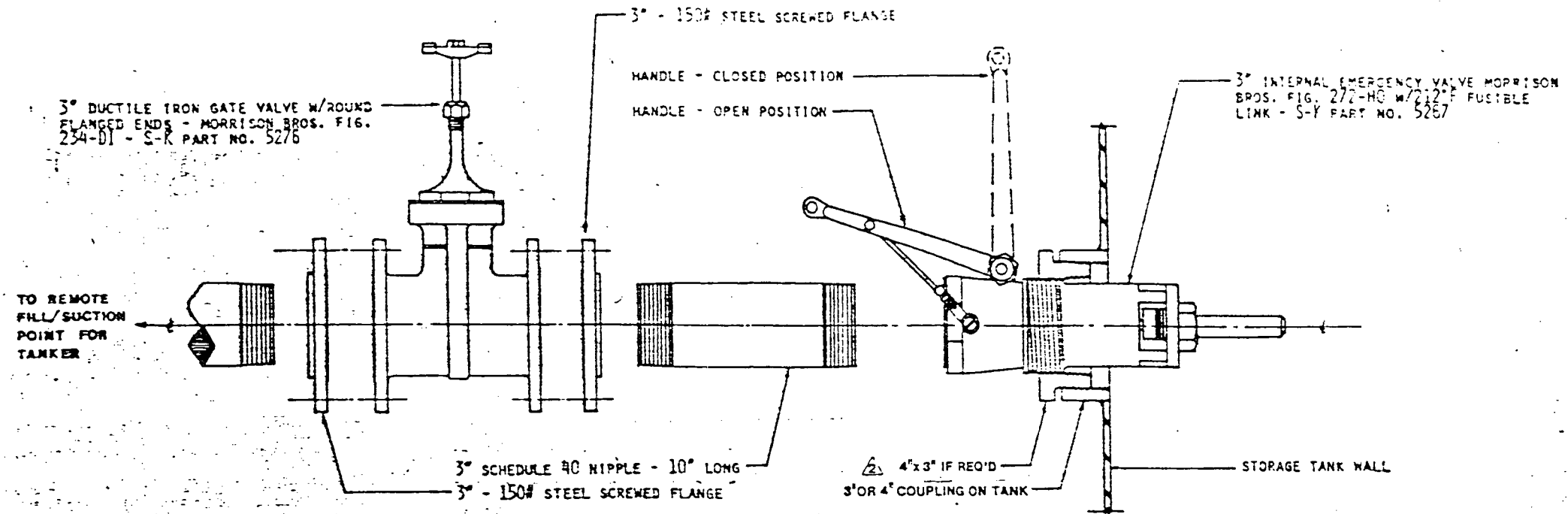
20,000 GALLON HORIZONTAL STEEL  
ABOVEGROUND STORAGE TANK

DATE SHOWN  
2-4-88

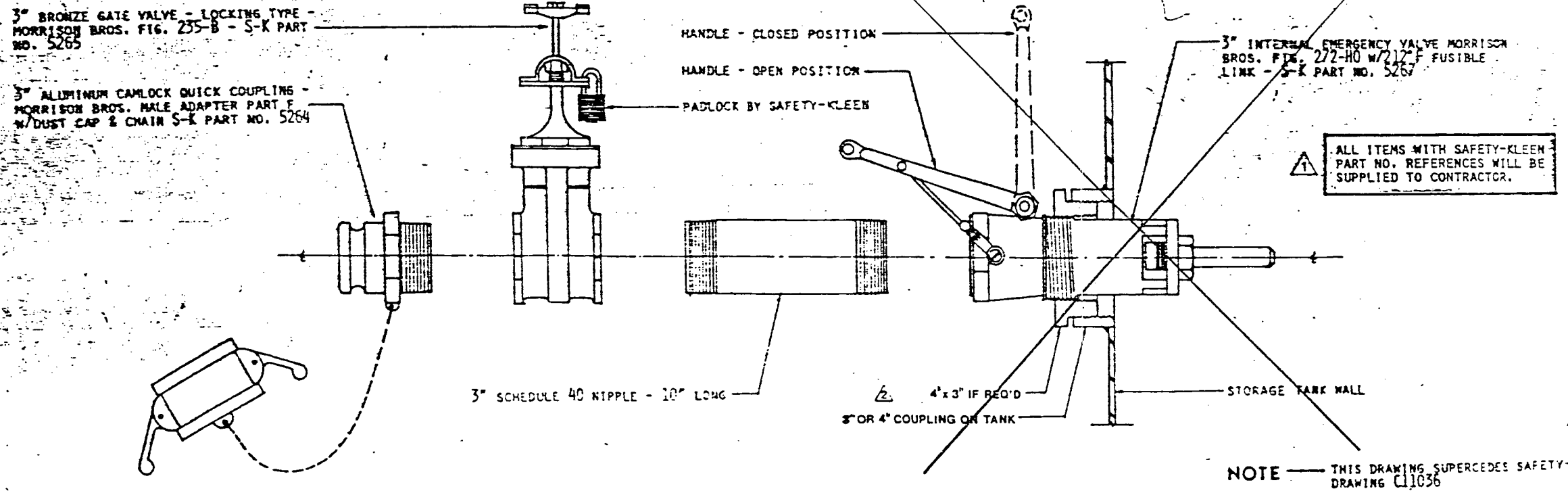
DATE  
JWA

for: STANDARDIZED  
FABRICATION

D12966



— STANDARD INSTALLATION FOR PIPING OF ALL STORAGE TANKS —



— ADDITIONAL INSTALLATION FOR PIPING OF NEW TANKS FOR STORAGE OF USED SOLVENT —  
(FOR LOCATIONS PRONE TO FREEZING ONLY - SEE SAFETY-KLEEN DRAWING D11124 —)

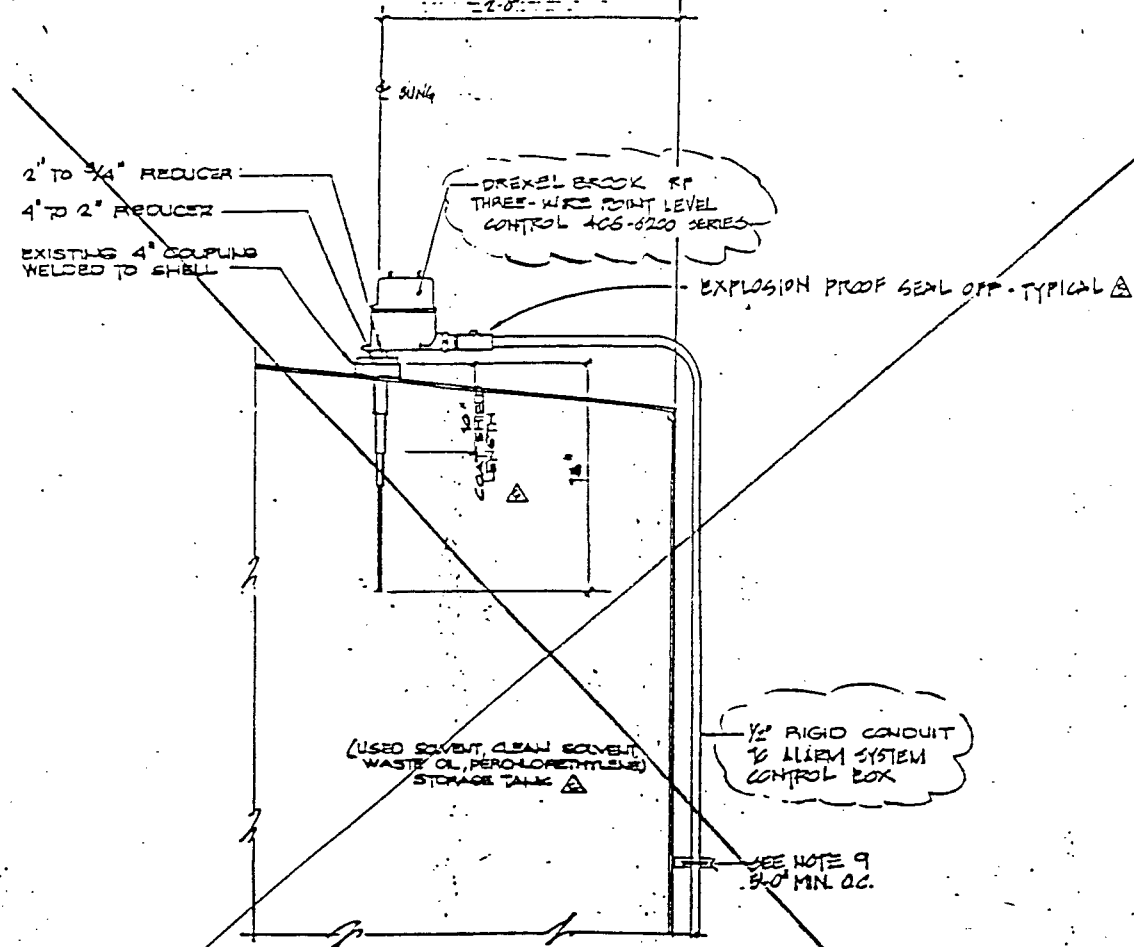
NOTE — THIS DRAWING SUPERCEDES SAFETY-KLEEN DRAWING C11036

<b>Safety-Kleen Corp.</b>		PHONE 212-671-1100	
EMERGENCY & GATE VALVE INSTALLATION DETAILS		NO SCALE	
FOR SERVICE CENTER BRANCH		WLS	
CONSTRUCTION & OR IMPROVEMENTS		C11302	

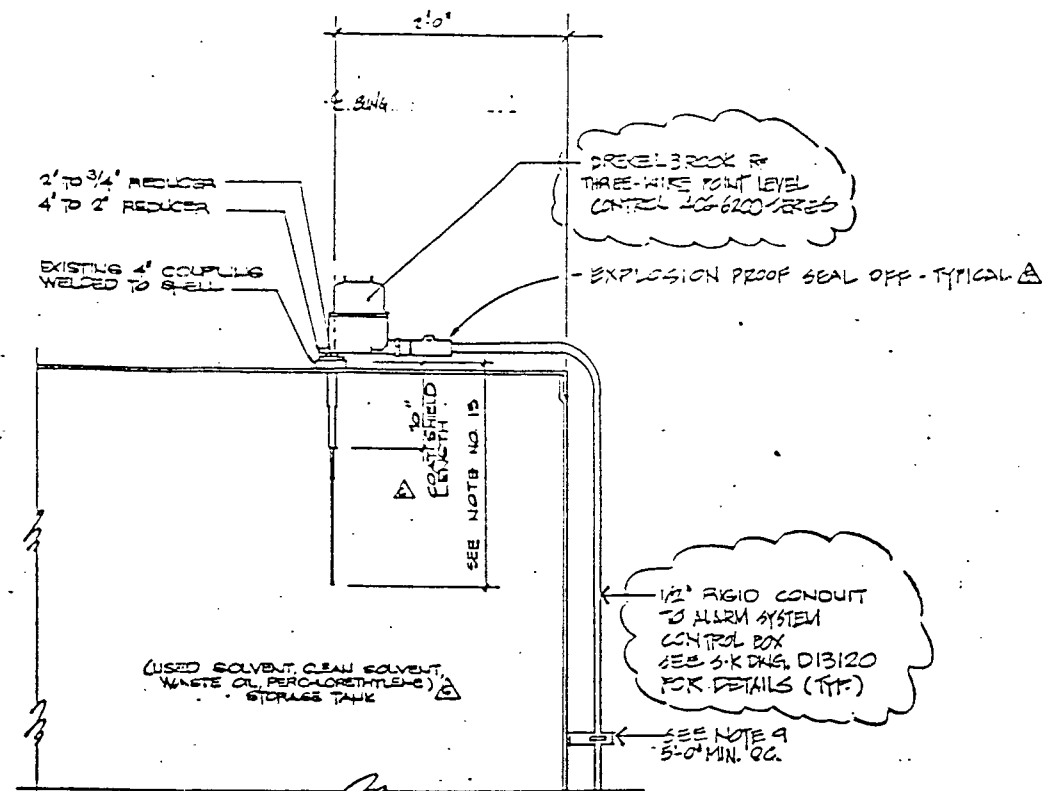
2	ADDED CLARIFICATION	RD	2/24/86
1	ADDED NOTE	WJ	10/23/84
REV	DESCRIPTION	BY	

# GENERAL NOTES

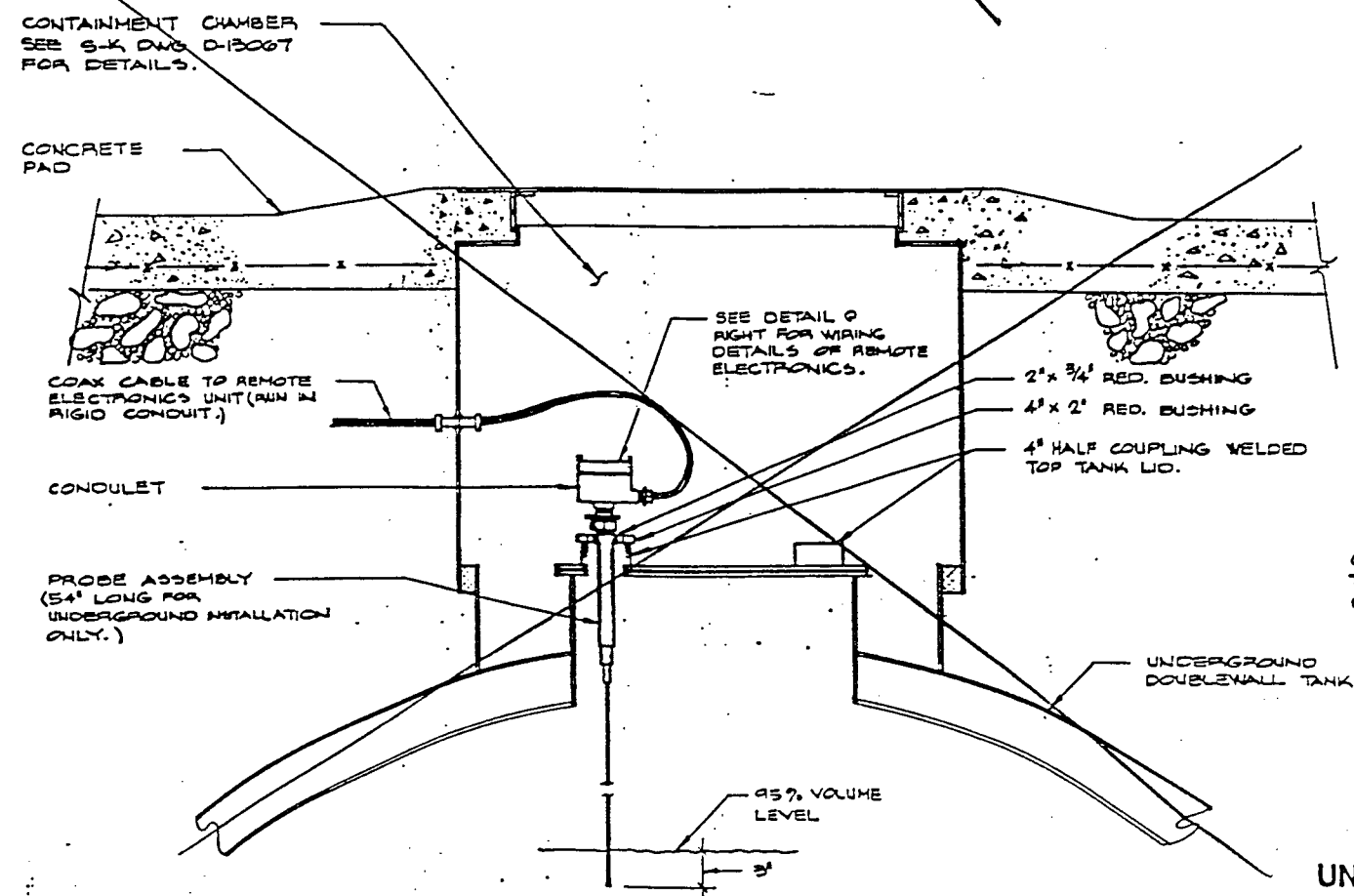
1. POWER REQUIREMENT IS TO 24 VDC
2. OUTPUT 1 - 10 A (ALARM STATE)  
13 - 15 A (NORMAL STATE)
3. OPERATING TEMP. -40°F TO +140°F
4. SHIELD-TO-GROUND LOADING:  
25 OHM MAX. RESISTANCE
5. LIFE EXPECT. LESS THAN 2 YR. SHIFTS  
IN OPERATING POINT FOR UNIT IN  
EXPLOSION-PROOF HOUSING FROM 3 W.  
FIELD 1 27, 150, OR 450 MH. AT A  
DISTANCE OF 5 FT. FROM EXPOSED  
CABLE OR SIGNAL WIRE.
6. FAIL-SAFE: SWITCHABLE ON EITHER  
LOW-LEVEL FAIL-SAFE (LFLS) OR  
HIGH-LEVEL FAIL-SAFE (HLFS).
7. HOUSING: SEALED-WATERPROOF  
EXPLOSION-PROOF FOR CLASS I GROUPS  
A, B, C, D, AND CLASS II GROUPS E, F, G,  
DIV. 1 OR 2.
8. SEE INDIVIDUAL SERVICE CENTER SITE PLANS  
FOR RELATIVE LOCATIONS OF THESE DETAILS.
9. CONTRACTOR TO SUPPLY & INSTALL CONDUIT  
SUPPORTS & BRACKETS AS REQUIRED.
10. THIS DRAWING CONTAINS INFORMATION  
PROPRIETARY TO SAFETY-KLEEN CORP. ANY  
REPRODUCTION, DISCLOSURE OR USE OF THIS  
DRAWING IS EXPRESSLY PROHIBITED BY  
SAFETY-KLEEN.
11. ALL ITEMS SHOWN WITH A SAFETY-KLEEN PART  
NUMBER WILL BE SUPPLIED BY SAFETY-KLEEN  
CORP. (E.g., SK-11111)
12. IF INDIVIDUAL SERVICE CENTER CONDITIONS  
ARE NOT COVERED BY DETAILS SHOWN HERE,  
PLEASE CONTACT TECHNICAL SERVICES AT THE  
CORPORATE OFFICE FOR ASSISTANCE.
13. CALCULATIONS FOR LENGTH OF PROBE INSIDE  
OF TANK ARE SET TO ACTIVATE THE ALARM  
AT THE 95% VOLUME LEVEL.
14. ALL CALIBRATION OF UNIT SHALL BE DONE  
IN ACCORDANCE WITH DREXELBROOK'S  
RECOMMENDATIONS. CALIBRATION SHALL  
BE DONE AFTER ALL COMPONENTS OF  
SYSTEM ARE IN PLACE.
15. ALL TANKS SHALL BE GROUNDED PRIOR  
TO INSTALLATION OF ALARM SYSTEM.



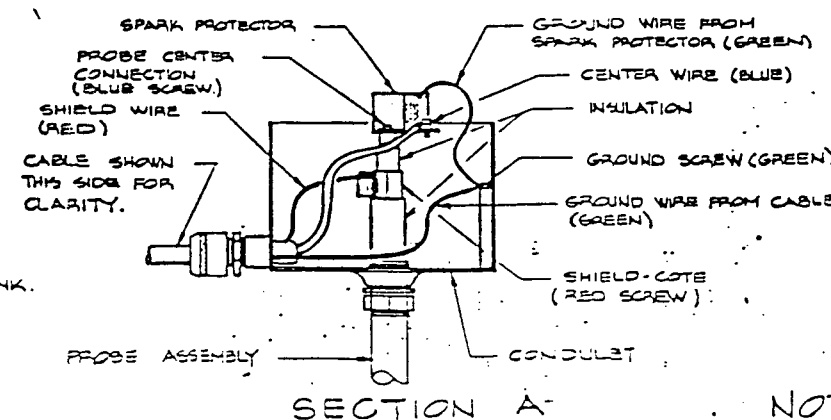
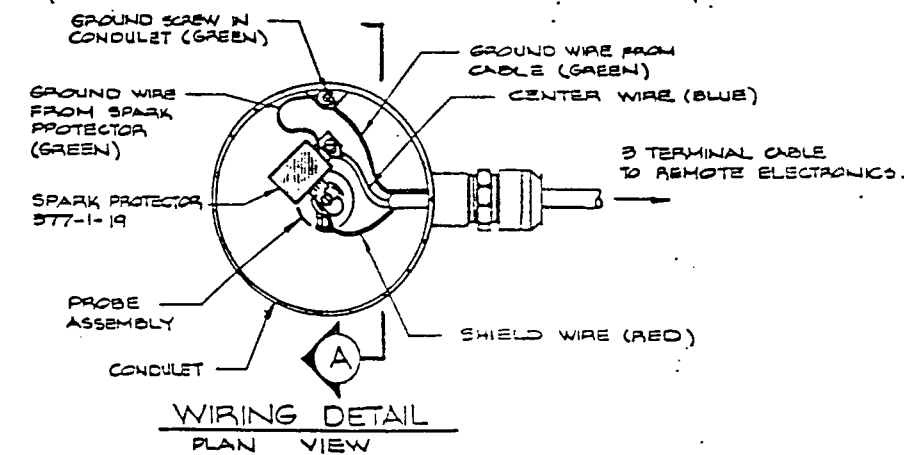
ABOVEGROUND VERTICAL TANK INSTALLATION



ABOVEGROUND HORIZONTAL TANK INSTALLATION



UNDERGROUND TANK INSTALLATION



## NOTE:

WORK THIS DWG. WITH SK DWGS  
D-13929 AND D-14218.

REVIEW UNDERGROUND INSTALLATION ADD MORE DETAILS & CHANGE TO CONDUIT 2\"/>	25	11-15-81
ADD MORE DETAILS & CHANGE TO CONDUIT 2\"/>	MA	7-22-81
ON VERT. & HOR. TANK INSTALLATION.	25	11-15-81
ADD EXPLOSION PROOF SEAL OFF NOTE	25	11-15-81
CHANGE: PROBE DETAIL, NOTE 13	25	11-15-81

<b>Safety-Kleen Corp.</b> <small>177 BIG THUNDER ROAD • ELGIN, ILLINOIS 60120 PHONE 708/417-6100</small>			
HIGH LEVEL ALARM SYSTEM TRANSMITTER TO TANK INSTALLATION DETAILS			
NONE			
6-22-83	1/2\"/>	25	11-15-81
201	1/2\"/>	25	11-15-81
101	1/2\"/>	25	11-15-81
FOR SERVICE CENTER BRANCH			
D13102			



# Sikagard® 62

High-Build Protective Coating

## Technical Data



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**Description:** Sikagard 62 is a 2-component, solvent-free, high-solids, moisture-insensitive epoxy resin. It produces a high-build, protective, dampproofing, and waterproofing vapor-barrier system. Sikagard 62 conforms to ASTM C-881, Type I and IV, Grade 2, epoxy resin.

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**Where To Use:** Use as a high-build, corrosion-resistant, protective coating, or as a seamless flooring system on dry and can't-dry substrates.

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**Advantages:**

- Protects dry and can't-dry substrates.
- Exceptional tensile strength.
- Good chemical resistance for long-term protection.
- Convenient B:A = 1:1 mixing ratio.
- Easy, paint-like viscosity.
- Durable, smooth finish permits wipe-off graffiti-removal.
- Available in 3 standard colors; gray, red, and tan. Special color matches available upon request.
- Excellent bonding to all common structural substrates.
- Super abrasion resistance for long-term wear.
- Sikagard 62, Gray, after cure, is approved for contact with potable water.
- All colors are USDA-approved for use in food plants.

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**Coverage:** 225-400 sq ft/gal (4-7 mils)

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**Packaging:** 4-gal units; 1-qt units, 12/case.

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**Typical Data for Sikagard 62:**

(Material and curing conditions @ 73F and 50% R.H.)

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**Shelf Life:** 2 years in original, unopened containers.
 

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**Storage Conditions:** Store dry at 40-95F. Condition material to 65-85F before using.
 

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**Color:** Gray, red, tan.
 

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**Mixing Ratio:** Component 'A' : Component 'B' = 1:1 by volume.
 

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**Viscosity:** Approx 2,700 cps.
 

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**Pot Life:** Approx 35 min.
 

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**Application Life:** 20-25 minutes.
 

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**Tack-Free Time:** Approx 4 hr.
 

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**Open Time:** Light foot traffic - 5-7 hr.  
Rubber-wheel traffic - 8-10 hr.
 

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**Immersion and  
chemical exposure:** 3 days
 

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**Tensile Properties (ASTM D-638):**


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<b>14 day</b>	Tensile Strength	6,400 psi
	Elongation at Break	2.7 %

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**Abrasion (Taber Abrader):**


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<b>7 day</b>	Weight loss, 1,000 cycles (H-22 wheel, 1,000-gm weight)	0.61 gm
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**Abrasion Resistance (ASTM D-968):**


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<b>14 day</b>	Abrasion Coefficient	51 liters/mil
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**Adhesion (ASTM D-3359):**


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<b>1 day</b>	Adhesion Classification	4A
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**Water Absorption (ASTM D-570):**


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<b>7 day</b>	Total Water Absorption (2-hour boil)	0.9%
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**Limitations:**

- Minimum substrate temperature for application 50F.
- Do not apply over wet, glistening surface.
- Material is a vapor barrier after cure.
- Do not apply to surfaces where vapor can condense and freeze.
- Do not encapsulate saturated concrete in areas of freezing and thawing.
- Do not apply to porous surfaces exhibiting moisture-vapor transmission during application. Consult Technical Service.
- Minimum age of concrete prior to application is 21-28 days, depending on curing and drying conditions.
- Do not apply to exterior substrate on-grade. . .epoxy resin coatings will weather and chalk upon exposure to sunlight.
- For spray applications only, thin with Sika Epoxy Thinner at 5% by volume. Thin only when required.

**Caution:**

**Component 'A' - Irritant** - Contains epoxy resins. Prolonged contact with skin may cause irritation. Avoid eye contact.

**Component 'B' - Corrosive** - Contains amines. Contact with skin may cause severe burns. Avoid eye contact.

Product is a strong sensitizer. Use of safety goggles and chemical-resistant gloves recommended. Remove contaminated clothing. Avoid breathing vapors. Use adequate ventilation. Use of a NIOSH/MSA organic vapor respirator recommended.

**First Aid:**

In case of skin contact, wash thoroughly with soap and water. For eye contact, flush immediately with plenty of water for at least 15 minutes; contact physician immediately. For respiratory problems, remove person to fresh air. Wash clothing before re-use.

**Clean Up:**

Ventilate area. Confine spill. Collect with absorbent material, flush area with water. Dispose of in accordance with current, applicable local, state, and federal regulations. Uncured material can be removed with approved solvent. Cured material can only be removed mechanically.

**KEEP CONTAINER TIGHTLY CLOSED  
NOT FOR INTERNAL CONSUMPTION**

**KEEP OUT OF REACH OF CHILDREN  
FOR INDUSTRIAL USE ONLY**

**CONSULT MATERIAL SAFETY DATA SHEET FOR MORE INFORMATION**

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**Export Division**

NJ, Lyndhurst ..... 201-933-8800

Telefax ..... 201-804-1020

June, 1990



**Chemical Resistance:**

Specimen: Two coats- 10 mils

Cured 10 days

Substrate: asbestos cement

CHEMICAL	TEST TEMP.	STORAGE TIME AND EVALUATION				
		1 Day	1 Month	2 Months	6 Months	12 Months
Water	75F	A	A	A	A	A
	100F	A	A	A	A	A
	140F	A	A	A	A,D	A,D
Sodium Chloride Solution (Saturated)	75F	A	A	A	A	A
Sodium Hydroxide 30%	100F	A	A	A	A	A
Cement Water (Saturated)	75F	A	A	A	A	A
Detergent Solution (5% Ajax)	75F	A	A	A	A	A
	140F	A	A	A	A,D	A,D
Hydrochloric Acid 10%	75F	A	A	A	A	A
Sulfuric Acid 10%	75F	A	A	A	B	B
Oxalic Acid 10%	75F	A	A,D	A,D	A,D	A,D
Citric Acid 10%	75F	A	A,D	A,D	A,D	A,D
Fuel Oil (Home Heating)	75F	A	A	A	A	A,D
Gasoline (Unleaded)	75F	A	A	A	A	A,D
Iso-Octane	75F	A	A	A	A	A,D
Toluol	75F	A	A	A	A	A,D
Silage	75F	A	A	A,D	A,D	B,D
Synthetic Silage	75F	A	A	B,D	B,D	B,D
Liquid Manure	75F	A	A	A	A	A,D
Ethyl Alcohol	75F	A	C	—	—	—

A: Resistant in permanent contact  
B: Temporary resistance

C: Destroyed  
D: Discolored

## How To Use

**Surface Preparation:** Surface must be clean and sound. It may be dry or damp, but free of standing water. Remove dust, laitance, grease, curing compounds, impregnations, waxes, foreign particles, and disintegrated materials.

**Preparation Work: Concrete** - Sandblast or use other approved mechanical means.

**Steel** - Sandblast to white-metal finish.

**Mixing:** Pre-mix each component. Proportion equal parts by volume of Component 'A' and Component 'B' into a clean mixing container. Mix with a low-speed (400- 600-rpm) drill and Sika paddle for 3 minutes, until uniform in color.

Mix only that quantity that can be used within its application life.

**Application:** Apply coating using high-quality rollers or brushes, or spray. Two coats are recommended. Apply second coat as soon as the first coat is tack-free and the traffic of application will not damage the first coat. The second coat, however, **must** be applied within 48 hours since a longer delay will require additional surface preparation.

For slip-resistance, add approximately 1/2 lb/gal of Sikagard 62 Granules to the mixed material and apply as first coat. Saturate roller or brush with material and apply first to a disposable cardboard or other surface to distribute the granules evenly on the equipment.

**Do not** spray with Sikagard 62 Granules in the coating. When spraying, use the following or similar equipment: Binks Model #18 Air Atomized Spray Gun (#68 fluid nozzle, #68 PB air nozzle, #68 fluid needle, #83-5661, 2-gal pressure fluid tank).

For Sikagard 62 Flooring System information consult your Technical Data Sheet or call Technical Service.



# Sikaflex®-1a

Elastomeric sealant/adhesive

## Technical Data



<b>Description:</b>	Sikaflex-1a is a premium-grade, high-performance, moisture-cured, 1-component, polyurethane-base, non-sag elastomeric sealant.
<b>Where to Use:</b>	<ul style="list-style-type: none"><li>• Designed for all types of joints where maximum depth of sealant will not exceed ½ in.</li><li>• Excellent for small joints and fillets...windows, door frames, reglets, flashing, and many construction adhesive applications.</li><li>• Suitable for vertical and horizontal joints; readily placeable at 40F.</li><li>• Has many applications as an elastic adhesive between materials with dissimilar coefficients of expansion.</li></ul>
<b>Advantages:</b>	<ul style="list-style-type: none"><li>• Easy, low-cost, ready to use.</li><li>• Eliminates time, effort, and equipment for mixing, filling cartridges, pre-heating or thawing, and cleaning of equipment.</li><li>• High elasticity - cures to a tough, durable, flexible consistency with exceptional cut- and tear-resistance.</li><li>• Excellent adhesion - bonds to most construction materials...without primer in most cases.</li><li>• Long life.</li><li>• Excellent resistance to aging, weathering.</li><li>• Proven in tough climates around the world.</li><li>• USDA-approved: chemically acceptable to the U.S. Department of Agriculture for use in meat and poultry processing area.</li><li>• Odorless, non-staining..</li><li>• Paintable with water-, oil-, and rubber-base paints.</li><li>• Jet fuel resistant.</li><li>• Meets Federal Specification TT-S-00230C, Type II, Class A.</li><li>• Meets ASTM C-920, Type S, Grade NS, Class 25.</li><li>• Meets Canadian Standard 19-GP-16A, Type II.</li><li>• EPA-approved for potable-water contact.</li><li>• Urethane-based, suggested by EPA for radon reduction.</li></ul>
<b>Coverage:</b>	10.3-fl-oz cartridge seals 12.4 lineal ft of ½- x ¼-in. joint. 20-fl-oz uni-pac sausage seals 24 lineal ft of ½- x ¼-in. joint.
<b>Packaging:</b>	Disposable 10.3-fl-oz, moisture-proof composite cartridges, 24/case, and uni-pac sausages, 20-fl-oz, 20/carton; Available on special order 1.8- and 4.5-gal pails, 50-gal drums, and 10.3-fl-oz uni-pac sausages.

**Typical Technical Data Sikaflex-1a:**

(Material and curing conditions 73F and 50% R.H.)

**Colors:** White, colonial white, aluminum gray, limestone, black, dark bronze, capitol tan. Special architectural colors on request.

<b>Shelf Life:</b>	10.3-fl-oz cartridges	12 months
	10.3- and 20-fl-oz uni-pac sausages	12 months
	1.8-gal pails	4 months
	4.5-gal pails	4 months
	50-gal drums	4 months

**Storage Conditions:** Store at 40-95F. Condition material to 65-85F before using.

**Application**

**Temperature:** 40 to 100F. Sealant should be installed when joint is at mid-range of its anticipated movement.

**Service Range:** -40 to 167F

<b>Curing Rate:</b>	Tack-free Time	6 to 8 hours (TT-S-00230C)
	Tack-free to touch	3 hours
	Final cure	5 to 8 days

**Recovery** >90%

**Shore A Hardness (ASTM D-2240):**

21 day 40± 5

**Tensile Properties (ASTM D-412):**

<b>21 day</b>	Tensile Stress	140 psi
	Elongation at Break	700%
	Modulus of Elasticity 25%	40 psi
	50%	60 psi
	100%	80 psi

**Lap-Shear Strength (ASTM D-1002), modified, glass substrate**

<b>21 day</b>	50F	120 psi
	73F	125 psi
	122F	125 psi

**Adhesion in Peel (TT-S-00230C):**

Substrate	Peel Strength	Adhesion Loss
Aluminum	25 lb	10%
Glass	20 lb	5%
Concrete	20 lb	0%

**Weathering**

**Resistance:** Excellent

**Ozone Resistance:** Exceptional

**Chemical Resistance:** Good resistance to water, diluted acids, and diluted alkalines. Consult Technical Service for specific data.

**Radon Reduction:** Approximately 97% reduction in radon. Independent laboratory evaluation. Actual results available upon request, consult Technical Service.

**Caution:**

**FHSLA Toxicity Test  
(16 CFR 1500)**

Primary skin irritant  
Eye irritant  
Acute oral toxicity  
Acute inhalation  
Acute dermal toxicity

**FHSLA Toxicity  
Category**

Skin irritant  
Eye irritant  
Non-toxic orally  
Not toxic by inhalation  
Not toxic dermally

**Combustible:** Keep away from open flames and high heat. Contains xylene; avoid breathing vapors. Use with adequate ventilation.

**Irritant:** Avoid skin and eye contact. Use of NIOSH/MSA approved organic vapor respirator, safety goggles, and chemical-resistant gloves recommended. Remove contaminated clothing and shoes.

**First Aid:** In case of skin contact, wash thoroughly with soap and water. For eye contact, flush immediately with plenty of water for at least 15 minutes; contact physician. Wash clothing before re-use. Discard contaminated shoes.

**Clean Up:** Uncured material can be removed with approved solvent. Cured material can only be removed mechanically. For spillage, collect, absorb, and dispose of in accordance with applicable local, state, and federal regulations.

**KEEP CONTAINER TIGHTLY CLOSED  
NOT FOR INTERNAL CONSUMPTION**

**KEEP OUT OF REACH OF CHILDREN  
FOR INDUSTRIAL USE ONLY**

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**Export Division**

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March, 1990

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## How To Use

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**Surface Preparation:** Clean all surfaces. Joint walls must be sound, clean, dry, frost-free, and free of oil and grease. Curing compound residues and any other foreign matter must be thoroughly removed. Install bond breaker tape or backer rod to prevent bond at base of joint.

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**Priming:** Priming is not usually necessary. Most substrates only require priming if testing indicates a need or where sealant will be subjected to water submersion after cure. Consult Sikaflex Primer Technical Data Sheet or Technical Service for additional information on priming.

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**Application:** Recommended application temperatures: 40-100F. For cold weather application, store units at approximately 70F; remove just prior to using. For best performance, Sikaflex-1a should be gunned into joint when joint slot is at mid-point of its designed expansion and contraction. Place nozzle of gun into bottom of the joint and fill entire joint. Keep the nozzle in the sealant, continue on with a steady flow of sealant preceding the nozzle to avoid air entrapment. Avoid overlapping of sealant to eliminate entrapment of air. Tool as required. For use in horizontal joints in traffic areas, the absolute minimum depth of the sealant is ½ in. and closed cell backer rod is recommended over open cell to offer greater support.

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**Limitations:**

- Allow 1-week cure at standard conditions when using Sikaflex-1a in total water-immersion situations.
- Avoid exposure to high levels of chlorine.
- Maximum depth of sealant must not exceed ½ in.; minimum depth is ¼ in.
- Maximum expansion and contraction should not exceed 25% of average joint width.
- Do not cure in the presence of curing silicone sealants.
- Avoid contact with alcohol, and other solvent cleaners, during cure.
- Do not apply when moisture-vapor-transmission condition exists, from the substrate, as this can cause bubbling within the sealant.
- Use opened cartridges and uni-pac sausages the same day.
- When applying sealant, avoid air-entrapment.
- Since system is moisture-cured, permit sufficient exposure to air.
- White color tends to yellow slightly when exposed to ultra-violet rays.
- The ultimate performance of Sikaflex-1a depends on good joint design and proper application with joint surfaces properly prepared.
- Minimum depth of sealant in horizontal joints subject to traffic is ½ in.

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APPENDIX B  
Design Review Documentation

APPENDIX B  
Design Review Documentation

TABLE OF CONTENTS

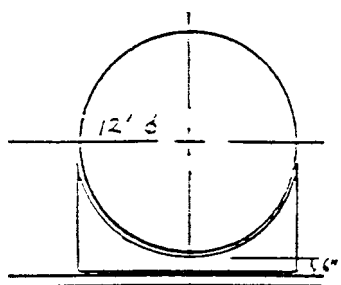
<u>Title</u>	<u>Page No.</u>
Tank Seismic Response Calculation - 20K Tank . . . . .	B- 1
Gravity Load Calculation - 20K Tank . . . . .	B- 2
Containment Wall Strength . . . . .	B- 6
Containment Volume Calculation . . . . .	B- 7
Venting Calculation - 20K Tank . . . . .	B- 8
Piping System Review (Used Antifreeze) . . . . .	B- 9
NFPA 30 - Piping, Valves and Fittings Compliance Checklist . .	B-10

Seismic Analysis, 20k Tank  
 S-K, Boynton Beach, FL  
 By: BMW Date: 11/7/91

TERA, Inc.

Job No.: 91-203-1  
 File: Calculation  
 Sheet: 1 of 1

- Ref.: 1. ASCE 7-88, Sec. 9, Zone 0  
 2. Gravity Loads



Base Shear:

$$Z := 0.125 \quad (\text{ref. 1})$$

$$I := 1.0 \quad (\text{ref. 1})$$

$$K := 2.0 \quad (\text{ref. 1})$$

$$CS := 0.14 \quad (\text{ref. 1})$$

$$Wtc = 192451.018 \quad (\text{ref. 2})$$

$$V := Z \cdot I \cdot K \cdot CS \cdot Wtc \quad (\text{ref. 1})$$

$$V = 6735.786 \quad \text{lb}$$

$$h2 := 12.5 \text{ ft}, \quad D = 12 \text{ ft}$$

Overturning Moment:

$$Mo := V \cdot \left[ \frac{h2}{2} \right] \quad \text{--->} \quad Mo = 42098.66 \quad \text{ft-lb}$$

Righting Moment of Tank:

$$Mr := Wtc \cdot \left[ \frac{D}{2} \right] \quad \quad \quad Mr = 1.155 \cdot 10^6 \quad \text{ft-lb}$$

$$Mr > Mo \quad \text{----->} \quad \text{Ok}$$

Lateral Displacement:

Coefficient Of Friction Necessary For Displacement To Occur,

$$f := \frac{V}{Wtc} \quad \text{----->} \quad f = 0.035 \quad f < 0.29 \quad \text{Ok}$$

NO ANCHORAGE REQUIRED FOR SEISMIC LOAD CONDITIONS

Gravity Loads, 20k Tank  
S-K, Boynton Beach, FL  
By: BMW Date: 11/6/91

TERA, Inc.

Job No.: 91-208-1  
File: Foundation  
Sheet: 1 of 4

- Ref.: 1. S-K Dwg. No. D10570, Rev. 7, 9/12/83  
2. Tank Farm, Fig. II.C.2-1A, Branch Permit Documentation  
3. UL 142, Sections 5-8

Tank Self-Weight:  $D := 12 \text{ ft}$ ,  $t1 := 0.250 \text{ in}$ ,  $h1 := 4.0 \text{ ft}$   
 $w := 490 \text{ pcf}$ ,  $L := 24 \text{ ft}$

Head Weight,  $Wh := \frac{\pi}{4} \cdot D^2 \cdot \frac{t1}{12} \cdot w \cdot 2 \rightarrow Wh = 2309.071 \text{ lb}$   
(ref. 3)

Shell Weight,  $Ws := \pi \cdot D \cdot L \cdot \frac{t1}{12} \cdot w \rightarrow Ws = 9236.282 \text{ lb}$   
(ref. 3)

Weight of Saddles, (3 ea.):

Base Plates,  $Bp := \frac{8}{12} \cdot 12 \cdot \frac{0.5}{12} \cdot 3 \cdot w \rightarrow Bp = 490 \text{ lb}$

Saddle Plates,  $Sp := 1.15.8 \cdot \frac{t1}{12} \cdot 3 \cdot w \rightarrow Sp = 483.875 \text{ lb}$

Side Plates,  $sp := \frac{8}{12} \cdot h1 \cdot \frac{t1}{12} \cdot 6 \cdot w \rightarrow sp = 163.333 \text{ lb}$

$W := Wh + Ws + Bp + Sp + sp \rightarrow W = 12682.561 \text{ lb}$

Misc. Fittings & Apprtnces @ 10%,  $Ms := 0.1 \cdot W \rightarrow Ms = 1268.256 \text{ lb}$

Tot. Tank Weight,  $Wt := W + Ms \rightarrow Wt = 13950.817 \text{ lb}$

Weight Of Contents:  $SG := 1.07$   $\Gamma := 62.4 \text{ pcf}$   
 $V := 20000 \text{ gal.}$ ,  $v := 7.481 \text{ gal/cu.ft.}$

$Wc := \frac{V}{v} \cdot \Gamma \cdot SG \rightarrow Wc = 178500.201 \text{ lb}$

Total Weight, Tank And Contents,  $Wtc := Wt + Wc$

$Wtc = 192451.018 \text{ lb}$



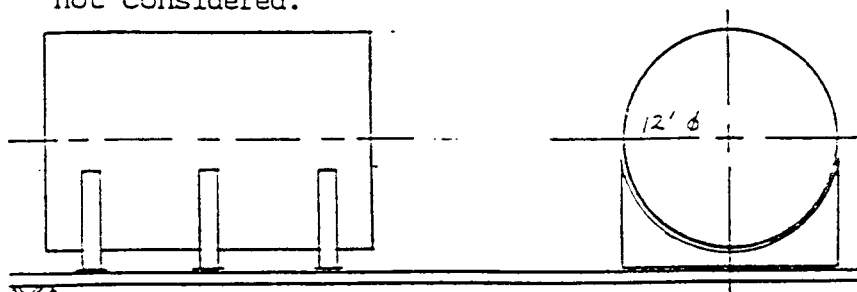
Support Strength, 20k Tank  
 S-K, Boynton Beach, FL  
 By: EMW Date: 11/7/91

TERA, Inc.

Job No.: 91-208-1  
 File: Foundation  
 Sheet: 2 of 4

- Ref.: 4. S-K Dwg. No. D11322, Rev. K, 7/27/89  
 5. ACI 318-89  
 6. Portland Cement Association Bulletin No. ISO29.02P

NOTE: Tank is in an enclosed containment area, therefore wind loads are not considered.



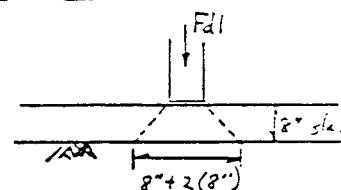
Check Strength Of Slab To Distribute Load:

$$Wt = 13950.817 \text{ lb}$$

$$Wc = 178500.201 \text{ lb}$$

Factored Dead Load,  $Fd1 := 1.4 \cdot (Wt + Wc)$

$$Fd1 = 269431.425 \text{ lb/ft}$$



Bearing On Concrete: (3 base plates 8" wide by 12' long)

$$\text{Bearing Area, } Ab := 3 \cdot \frac{8}{12} \cdot 12 \text{ ---> } Ab = 24 \text{ sq.ft.}$$

$$\text{Bearing Stress, } fb := \frac{Fd1}{Ab \cdot 144} \text{ ---> } fb = 77.96 \text{ psi}$$

For  $fc := 3000 \text{ psi}$ , and  $\phi := 0.7$

$$fba := \phi \cdot 0.85 \cdot fc \text{ ---> } fba = 1785 \text{ psi (ref. 5)}$$

$$fba > fb \text{ ----> ok}$$

Support Strength, 20k Tank  
S-K, Boynton Beach, FL  
By: BMW Date: 11/7/91

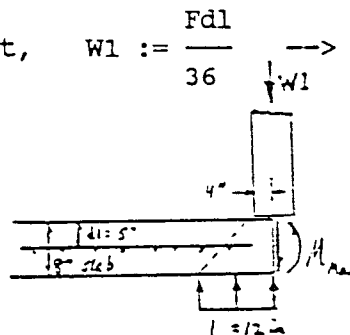
TERA, Inc.

Job No.: 91-208-1  
File: Foundation  
Sheet: 3 of 4

Check Bending:  $L := 12$  in., (assume load for one support is distributed equally over its length (12 ft.))

For A One Foot Length Of One Support,  $W1 := \frac{Fdl}{36}$  --> Weight Used For  
Maximum Moment Calc. Then Becomes:

$$W_{mm} := \frac{W1}{2}$$



Maximum Moment,  $M_m := W_{mm} \cdot \frac{L}{2}$  ---->  $M_m = 22452.619$  in-lb/ft

Calculate Ultimate Moment,  $M_u$ :

$\phi := 0.9$  (ref. 3)  $A_s := 0.30$  sq. in./ft (ref. 4)  
 $f_y := 60000$  psi  $b := 12$  in.  $d_1 := 5$  in.

$\rho := \left[ \frac{A_s}{b \cdot d_1} \right]$   $\rho = 0.005$   $f_c := 3000$  psi

$A_c := 8 \cdot 12$  sq.in. -->  $\rho_1 := \frac{A_s}{A_c}$  ---->  $\rho_1 = 0.003$  ok

$M_u := \phi \cdot A_s \cdot f_y \cdot d_1 \cdot \left[ 1 - \frac{0.59 \cdot \rho \cdot f_y}{f_c} \right]$  ---->  $M_u = 76221$  in-lb/ft

Check Soil Pressure In Above Model:

$\frac{W_{mm}}{2 \cdot L} \cdot 12 = 1871.052$  psf < 2500 psf, ok

$M_u > M_m$  -----> OK, Slab Will Distribute Load

Support Strength, 20k Tank  
 S-K, Boynton Beach, FL  
 By: BMW Date: 11/8/91

TERA, Inc.

Job No.: 91-208-1  
 File: Foundation  
 Sheet: 4 of 4

Check Subgrade Bearing:

Calculate Total Weight Resting On Soil:

Wtanks := 438314 lb (weight of other tanks & contents)

Wvault := 211738 lb (weight of containment vault)

Wt = 13950.817 lb (weight of waste E.G. tank)

Wc = 178500.201 lb (weight of waste E.G.)

Wb := 240425 lb (estimated weight of the building)

Ag := 72.333 · 31.417 (gross outside area of vault)

Ag = 2272.486 sq.ft.

Studies Conducted (See Ref. 6) Indicate That The Loads Listed Above Will Be Spread Over The Full Area Of The Containment Vault With Only Minor, Localized Bending In The Containment Slab. Based On This, Approximate Subgrade Bearing Is Taken To Be:

$$\text{Fac} := \frac{\text{Wtanks} + \text{Wvault} + \text{Wt} + \text{Wc} + \text{Wb}}{\text{Ag}} \quad \text{---->} \quad \text{Fac} = 476.539 \text{ psf}$$

According To Ref. 4, The Allowable Subgrade Bearing Pressure,

Fal := 2500 psf

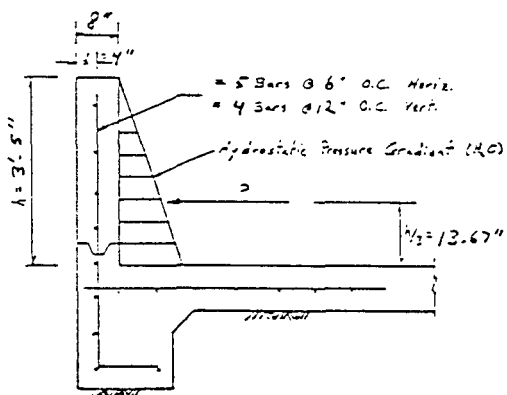
Fal > Fac -----> ok

Containment Wall Strength  
S-K, Boynton Beach, FL  
By: BMW Date: 11/8/91

TERA, Inc.

Job No.: 91-208-1  
File: Calculation  
Sheet: 1 of 1

Ref.: 1. Containment Inspection Record, This Report  
2. ACI 318-89



$$SG := 1.07 \quad \Gamma := 62.4 \text{ pcf}$$

$$h := 3.417 \text{ ft (ref. 1)}$$

$$P := \left[ 0.5 \cdot SG \cdot h^2 \right] \cdot \Gamma$$

$$P = 389.788 \text{ lb/ft, unfactored}$$

$$Pf := 1.4 \cdot P \text{ (ref. 2)}$$

$$Pf = 545.703 \text{ lb/ft, factored}$$

$$\phi := 0.9 \text{ (ref. 2)}$$

$$As := 0.2 \text{ sq.in.}$$

$$Ac := 8 \cdot 12 \text{ sq.in.}$$

$$fy := 60000 \text{ psi}$$

$$b := 12 \text{ in.}$$

$$\rho_1 := \frac{As}{Ac}$$

$$d2 := 4 \text{ in.}$$

$$fc := 3000 \text{ psi}$$

$$\rho := \frac{As}{b \cdot d2}$$

---->

$$\rho = 0.004$$

$$\rho_1 = 0.002 \text{ ok}$$

$$Mu := \phi \cdot As \cdot fy \cdot d2 \cdot \left[ 1 - \frac{0.59 \cdot \phi \cdot fy}{fc} \right] \text{ ----> } Mu = 41076 \text{ in-lb/ft}$$

$$Mh := Pf \cdot \frac{12 \cdot h}{3} \text{ ----> } Mh = 7458.669 \text{ in-lb/ft}$$

$$Mu > Mh \text{ -----> } \text{Ok}$$

$$\text{Safety Factor, } SF := \frac{Mu}{Mh} \text{ ----> } SF = 5.507$$

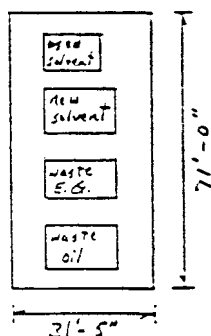
These Calculations Are Made Even More Conservative By The Assumption That The Containment Area Is Full Of Ethylene Glycol, Not Water.

Containment Volume, 20k Tank  
S-K, Boynton Beach, FL  
By: BMW Date: 11/8/91

TERA, Inc.

Job No.: 91-208-1  
File: Calculation  
Sheet: 1 of 1

Ref.: 1. Containment Inspection Record, This Report



$$L := 72.333 \text{ ft}, \quad W := 31.417 \text{ ft}$$

$$\text{Total Area, } A := L \cdot W$$

$$A = 2272.486 \text{ sq.ft.}$$

$$\text{Average Wall Height, } H := 3.167 \text{ ft}$$

$$\text{Gross Volume, } V := A \cdot H$$

$$V = 7196.963 \text{ cu.ft.}$$

$$\text{Tank Volume To Be Subtracted, } Tv := \frac{20000}{7.481}$$

$$Tv = 2673.439 \text{ cu.ft.}$$

Volume Of Misc. Equipment, @ 1% Of Gross Volume, To Be Subtracted,

$$Mv := 0.01 \cdot V \text{ ----> } Mv = 71.97 \text{ cu.ft.}$$

Displacement Of Three Horizontal Tanks, Dia. = 12 ft; Two Of 24 ft, One Of 18 ft In Length, To Be Subtracted,

$$R := 72 \text{ in} \quad i := 32 \text{ in} \quad d := R - i \text{ ----> } d = 40 \text{ in}$$

$$2 \cdot R \cdot \arccos \left[ \frac{d}{R} \right] - \left[ d \cdot \sqrt{R^2 - d^2} \right]$$

$$Vdis := \frac{\quad}{144}$$

$$Vdis1 := Vdis \cdot 2 \cdot 24$$

$$Vdis2 := Vdis \cdot 18$$

$$Vdis1 = 898.27 \text{ cu.ft.}$$

$$Vdis2 = 336.851 \text{ cu.ft.}$$

$$D1 := Vdis1 + Vdis2$$

$$\text{Displacement Of 2" Raised Pad, } Vp := 65.0 \cdot 25.417 \cdot 0.1667$$

$$Vp = 275.406 \text{ cu.ft.}$$

$$\text{Net Volume Remaining, } Vn := V - Tv - Mv - D1 - Vp$$

$$Vn = 2941.026 \text{ cu.ft. (conservative estimate)}$$

CONTAINMENT VOLUME IS SUFFICIENT

SUBJECT: Tank Venting  
20K HORIZONTAL TANK-S-K  
 BY: T.F.T. DATE: 11/6/91

 **TERA, Inc.**

JOB NO.: 91-208-1  
 FILE: Calculation  
 SHEET: 1 OF: 1

- Ref: 1. Safety-Kleen TANK DRAWING No. D12966  
 2. MORRISON BROS. Co., 1989 Ed. Venting Guide For Aboveground Storage Tanks  
 3. UL 142 - 6<sup>th</sup> Ed., Sept. 14, 1987, Standard For Steel Aboveground Tanks For Flammable And Combustible Liquids.

TANK CAPACITY: 20,000 GALLONS

TANK SIZE: 12'  $\phi$  x 24' L

Wetted AREA = 848 ft<sup>2</sup> - Table B-1 Ref-2

Venting Capacity = 476,880 ft<sup>3</sup>/hr Table 10-1 Ref-2

Normal Vent min 2.5" Table 10-2 Ref-3

Vent Combination - Ref-2 (OR Approved Equivalent)

3" Fig 548 - 80ZP - 38,800

8" Fig 244 - 160ZP - 465,000

---

503,800 ft<sup>3</sup>/hr

Loose Bolt Manway used AS the emergency vent must be 16"  $\phi$  Min. And the cover must be able to be lifted 1.5" Min. - Sec 10.6, Page 12 Ref-3

The combination of the 3" Normal Vent And Loose Bolt 24" Manway meets the above Requirements

Since the used Antifreeze liquid is not flammable OR combustible, the listed emergency vent Requirements do not apply

USED ANTIFREEZE  
PIPING SYSTEM REVIEW

Safety-Kleen used antifreeze may be a hazardous waste (under characteristic leaching procedure standards) but it is not a flammable or combustible liquid as defined by NFPA 30 "Flammable and Combustible Liquids Code". Although not by definition required, NFPA 30 is an appropriate guideline or standard for the design of piping systems which handle hazardous liquids.

NFPA 30 generally requires that pipe, valves, fittings, and other pressure-containing components meet the material, pressure, and temperature limitations of ANSI B31.3 "Chemical Plant and Petroleum Refinery Piping" or ANSI B31.4 "Liquid Petroleum Transportation Piping Systems". This system operates outdoors under ambient temperature conditions. This falls within the ANSI materials specification range of -20 to 200°F. The normal operating pressure for the system piping will be the pressure required to overcome friction and lift the liquid to the top of the tanks. The system piping components will therefore normally operate at less than 30 psi. If the system pump was turned on in a blocked condition (i.e., with all discharge valves closed) the system components between the pump and the discharge valves would experience a pressure limited by the pump discharge relief valve. Pumps used for loading or unloading these tanks must have a relief valve set for no more than 200 psi.

Components rated for ANSI 125 or 150 lb (or better) class service should be suitable for use in this service. The normal system operating pressure is well within the allowable pressure-temperature ratings for both those classes. The 200 psi to which some components might occasionally be exposed is also within the allowable ambient temperature pressure range for ANSI 150 lb. class and is less than the allowable hydrostatic test pressure for ANSI 125 lb. class components.

In summary, compliance with the items on the "TERA Piping, Valve, and Fitting NFPA 30 Checklist" indicates compliance with the requirements of the NFPA 30 system piping.

PIPING, VALVES, AND FITTINGS

NFPA 30-1990 Compliance Checklist

for Safety-Kleen Corp. Aboveground Tank Systems

Branch Location: Boynton Beach, Florida Review By: TFT Date: 10/31/91

- N/A 1. Pumps to be ITT Marlow 20EVP-A, 30 EV-A, or 1-1/2 HR49EC series pumps.
- YES 2. Steel piping meets ASTM A53, A106, A120, or A135 specifications.
- YES 3. Wall thickness of threaded pipe meets ANSI B16.10 specifications for Schedule 80 for sizes 1-1/2" and smaller and Schedule 40 for sizes 2" and larger. Wall thickness of welded pipe of all sizes meets Schedule 40 requirements as a minimum.
- N/A 4. Dumpster hose assembly to be S-K Part No. 5237 (per Safety-Kleen drawing D10452).
- YES 5. Valves Morrison Brothers (S-K standard items) or meet ANSI 125 or 150 lb. class requirements.
- YES 6. Flanges and fittings meet ANSI B16 125 lb. (for cast iron and non-ferrous materials) or 150 lb. class (for steel and malleable iron) requirements.
- YES 7. Valves and piping components of low melting point or non-ductile materials (i.e., brass, bronze, aluminum, plastic, rubber, and cast iron) located within containment areas meeting 40 CFR 264.193 requirements.
- YES 8. Tank connections below the liquid level through which liquid can normally flow provided with an internal emergency shut-off valve (with fusible link) and a manual valve close to the tank.
- YES 9. Tank connections below the liquid level through which liquid does not normally flow provided with a liquid-tight plug or blind.
- N/A 10. Used solvent tank fill line drop-tube provided with vacuum breaker in line external to tank and/or hole in top of drop-tube inside of tank to prevent siphoning of liquid from tank.



PIPING, VALVES, AND FITTINGS

NFPA 30-1990 Compliance Checklist

for Safety-Kleen Corp. Aboveground Tank Systems

(Continued)

Branch Location: Boynton Beach, Florida Review By: TFT Date: 10/31/91

Tank fill and emptying connections (i.e., tank truck connections) are:

SEE  
NOTE

- 1 11. outside of buildings in a location free of ignition sources;
- YES 12. not less than five feet from any building opening;
- YES 13. furnished with provisions for liquid-tight closure when not in use (i.e., valve and hose connection cap);
- YES 14. properly identified (i.e., marked clean and used);
- YES 15. provided with check valves. (Not required for Antifreeze)
- YES 16. Prior to being placed in service all piping will be hydrostatically tested at 115 psig or pneumatically tested at 85 psig for a minimum of 20 minutes. Pneumatic tests shall include a preliminary check at not more than 25 psig. All piping joints and components shall be examined for leakage during the test.
- YES 17. Exceptions to the above items corrected to comply with NFPA 30 and/or ANSI B31.3 specifications.

Safety-Kleen piping, valves and fittings in compliance with this checklist will meet the requirements of NFPA 30 - 1990, as well as Article 79 of the Uniform Fire Code, 1991 Edition. These components should be checked with other local fire code requirements, which may be more stringent. It should be noted that the used antifreeze liquid in this system is not flammable or combustible.

NOTE 1: Entire system is in a building which is separated from other facility operations and meets all location requirements.

91-208-1

APPENDIX C  
Description of Waste

APPENDIX C  
Description of Waste

TABLE OF CONTENTS

<u>Title</u>	<u>Page No.</u>
Characteristics of Waste . . . . .	C-1
Composition of Waste . . . . .	C-2
Compatibility Letter from Safety-Kleen . . . . .	C-3

CHARACTERISTICS OF WASTE

The used antifreeze is collected from customers in 3,500-gallon tanker trucks and transferred from the tanker truck to the used antifreeze tank in the tank farm of the center. Periodically, trucks are dispatched from recycling centers to evacuate the tank.

Used antifreeze is considered to be toxic according to characteristic leaching procedure standards (D004-D011, D018, D019, D021-D030 and D032-D043). A typical composition, and chemical physical analysis is attached.

A letter from Safety-Kleen addressing compatibility of used antifreeze with system components is attached.

## Antifreeze Wastes

### Physical Properties and TCLP Metals Analysis, ppm

Parameter		pH	SG	FP	As	Ba	Cd	Cr	Pb	Hg	So	Ag
Reg. Limit		<2 or >10	na	< 100	5	100	1	5	5	0.2	1	5
<b>LAD SITE</b>												
W	DU	7.5	1.04	> 200	< 0.05	< 0.3	< 0.05	< 0.05	0.3	< 0.01	< 0.05	< 0.05
W	EL	8	1.13	> 200	< 0.05	0.3	< 0.05	< 0.05	< 0.1	< 0.01	< 0.05	< 0.05
W	WL	8.5	1.05	> 200	< 0.05	< 0.3	< 0.05	< 0.05	0.2	< 0.01	< 0.05	< 0.05

### TCLP Semi Volatiles Analysis, ppm

Parameter		cresol	2,4-DNT	Cl6-benz	Cl6-13-but	Cl6-oth	nitrobenz	Cl5-phenol	pyridine	2,4,5-TCP	2,4,6-TCP
Reg. Limit		200	0.13	0.13	0.5	3	2	100	5	400	2
<b>LAD SITE</b>											
W	DU	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.2	< 0.2	< 0.04	< 0.04
W	EL	0.2	< 0.07	< 0.07	< 0.07	< 0.07	< 0.07	< 0.35	< 0.35	< 0.07	< 0.07
W	WL	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.25	< 0.25	< 0.05	< 0.05

### TCLP Volatiles Analysis, ppm

Parameter		benzene	CCl4	Clbenz	CHCl3	1,4-DCIB	1,2-DCA	1,1-DCE	MEK	PCE	TCE	VChlorido
Reg. Limit		0.5	0.5	100	6	7.5	0.5	0.7	200	0.7	0.5	0.2
<b>LAD SITE</b>												
W	DU	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 2.0	0.13	0.97	< 0.20
W	EL	0.32	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 2.0	0.12	< 0.10	< 0.20
W	WL	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 2.0	0.51	< 0.10	< 0.10

SAFETY-KLEEN CORPORATION

FAX TRANSMITTAL SHEET

DATE: April 4, 1991

FROM: PAUL DITTMAR  
SAFETY-KLEEN CORP.  
TECHNICAL CENTER  
P.O. BOX 92050  
ELK GROVE VILLAGE, IL 60009-2050  
PHONE: (312)694-2700  
FAX: (312)694-2733

TO: BOB SPEAK

LOCATION: TERA CORP.

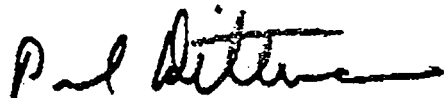
FAX NO.: (713)981-7713

NUMBER OF PAGES, INCLUDING TRANSMITTAL SHEET: 1

SUBJECT: MATERIAL OF CONSTRUCTION FOR WASTE OIL AND SPENT ANTIFREEZE

According to Breslube's Vice President of Engineering, Glenn Casbourne, carbon steel is used now for waste oil tanks. For the record, he confirms that carbon steel is the material of choice for both waste oil and spent antifreeze.

Regards,



Paul Dittmar,  
Manager of Process and Product Development

cc: Glenn Casbourne

file: MC91047

APPENDIX D  
Inspection Records

APPENDIX D  
Inspection Records

TABLE OF CONTENTS

<u>Title</u>	<u>Page No.</u>
Ultrasonic Thickness Measurements . . . . .	D-1
New Tank Inspection Record . . . . .	D-2
New Containment Inspection Record . . . . .	D-3
Tank & Pipe Leak Test Report - Ques Tec Corp. . . . .	D-4
Photographs . . . . .	D-7



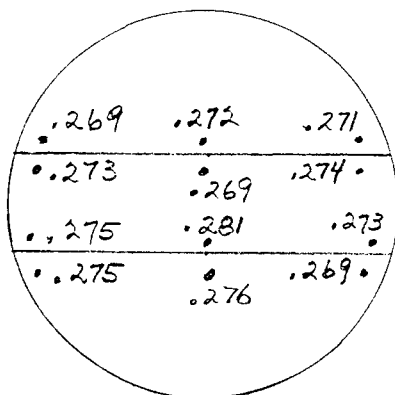
SUBJECT: Safety - Kleen  
Boynton Beach, FL.  
 BY: TFT DATE: 11/5/91

**TERA, inc.**

JOB NO.: 91-203-1  
 FILE: Inspection Record  
 SHEET: 1 OF: 1

# Tank Thickness Measurements 20,000 Gallon Horizontal

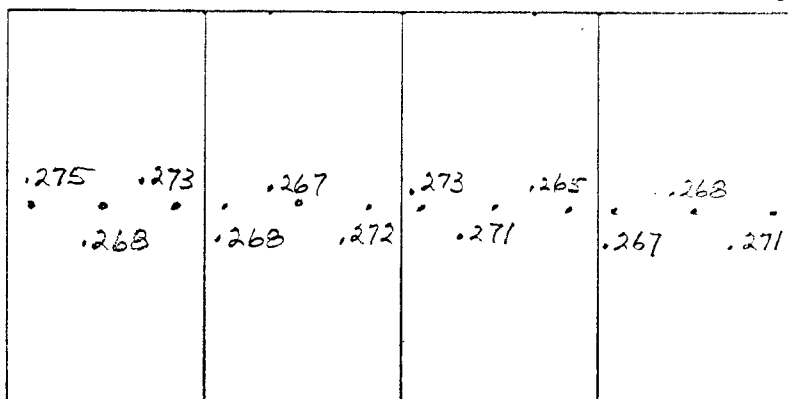
South End



N.E.

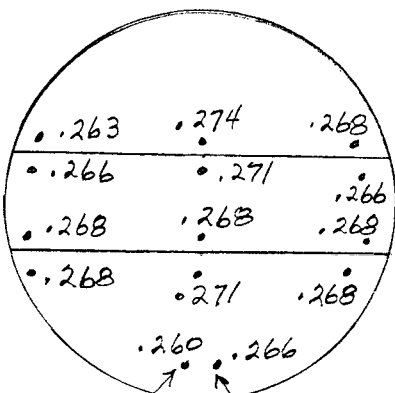
West Side

S.E.



Measurements Made Through Paint

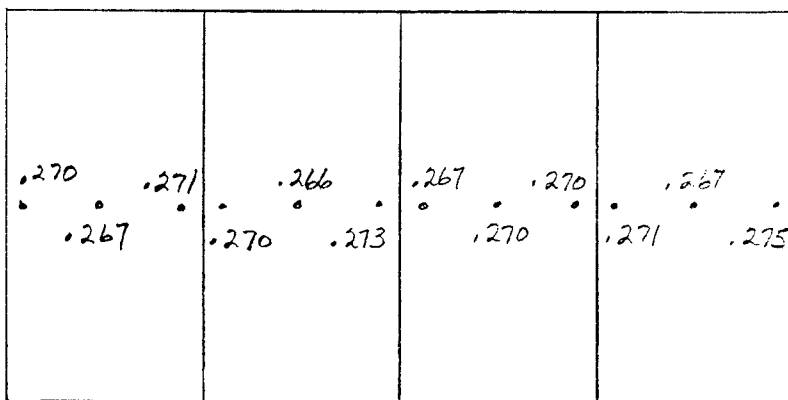
North End



N.E.

East Side

S.E.



Bare Metal Through Paint

UL 142 Requirement - .240 Min.

Paint Allowance .006

3" Load/Unload Pipe  
 .003 Paint Allowance

.218 .225 .223 .223

ANSI B31.3 Min. Wall Thickness .189

NEW TANK INSPECTION RECORD

Sheet: 1 of 1  
CLIENT: Safety-Kleen Corp. Job No.: 91-208-1  
PLANT LOCATION: Boynton Beach, Florida Date: 10/31/91  
TYPE INSPECTION: Interior/Exterior By: TFT  
ITEM NO.: CODE: UL 142 YEAR BUILT: 1990  
SERVICE: Used Antifreeze Storage  
CAPACITY: 20,000 gal TANK/DRUM TYPE: Horizontal integral saddles  
DIAMETER: 12 feet LENGTH: 24 feet

	<u>END HEAD</u>	<u>SHELL</u>	<u>FLOOR</u>	<u>JACKET</u>
MATERIALS:	Mild Steel	Mild Steel	N/A	N/A
SHELL CONDITION:		Satisfactory		
END HEAD CONDITION:		Satisfactory		
FLOOR CONDITION:		N/A		
JACKET CONDITION:		N/A		
SUPPORT TYPE:		Three (3) integral saddles		
FOUNDATION TYPE/CONDITION:		Reinforced concrete/satisfactory		
INTERNAL STRUCTURE CONDITION:		Satisfactory		
WELDED/FLANGED JOINT CONDITION:		Satisfactory		
NOZZLE CONDITION:		3" normal vent - satisfactory		
LINING/COATING CONDITION:		Exterior paint - satisfactory		
INSULATION CONDITION:		N/A		
SIGNS OF CRACKS:		None		
SIGNS OF PUNCTURES:		None		
SIGNS OF COATING DAMAGE:		None		
SIGNS OF CRACKS OR MATERIAL DAMAGE:		None		
SIGNS OF CORROSION:		None		
SIGNS OF OTHER STRUCTURAL DAMAGE OR PROBLEMS:		None		

TIGHTNESS TEST? No TYPE: RESULTS:  
OPERATING CONDITIONS: MAX TEMP: Amb. MAX PRESS: Amb VAC: N/A  
REFERENCE INSPECTION RECORDS: Documentation on tank and associated pipe testing from Donegan's Plumbing included in this Appendix.

COMMENTS: This tank system was originally installed as a used oil system. The use was changed to used antifreeze before the system was put into service. The system is still not in service until certification is received. The tank is new and has been installed with no internal or external damage visible by inspection.

NEW CONTAINMENT INSPECTION RECORD

Sheet: 1 of 1

CLIENT: Safety-Kleen Corp.

Job No.: 91-208-1

PLANT LOCATION: Boynton Beach, Florida

Date: 11/1/91

TYPE: Vault

By: TFT

LEAK DETECTION TYPE: Visual

YEAR BUILT: 1990

SERVICE: Used Antifreeze Storage

CAPACITY: 50,000 gal. LARGEST TANK CAPACITY: 20,000 gallon

ROOF/TOP HD.WALL/SHELLFLOOR

CONSTRUCTION MATLS: Masonry Building RC RC

INTERIOR COATING/LINING OF CONTAINMENT: Sikagard-62

EXTERIOR COATING/LINING OF PRIMARY CONTAINMENT: Paint

JOINT TREATMENTS: Sikaflex-1A

ROOF/TOP HEAD CONDITION: Satisfactory

WALL/SHELL CONDITION: Satisfactory

FLOOR CONDITION: Satisfactory

SUPPORT TYPE: Slab on grade

FOUNDATION CONDITION: Satisfactory

INTERNAL STRUCTURE CONDITION: Satisfactory

JOINT CONDITION: Satisfactory

LINING/COATING CONDITION: Small areas of flaking coating

LIQUID REMOVAL METHOD: Sump - hand pump or truck pump

SIGNS OF CRACKS: None

SIGNS OF PUNCTURES: None

SIGNS OF COATING DAMAGE: Small areas of flaking coating

SIGNS OF CRACKS OR MATERIAL DAMAGE: None

SIGNS OF CORROSION: None

SIGNS OF OTHER STRUCTURAL DAMAGE OR PROBLEMS: None

OPERATING CONDITIONS: MAX TEMP: Amb. MAX PRESS: Atm. VAC: No

REFERENCE INSPECTION RECORDS: None

COMMENTS: This is a new facility with the tank farm being the foundation of its own masonry building. Only minor coating touch-up is required on a few areas of the base where coating has lifted.

D-4

# Donegan's Plumbing Service, Inc.

1845 S.W. FOURTH AVENUE, A-12 • DELRAY BEACH, FLORIDA 33444 • (407) 276-1942

TO: TOM TROLLER  
TERA COMPANY

FROM: DAN DONEGAN

DATE: NOVEMBER 14, 1991

RE: SAFETY KLEEN SERVICE CENTER TANKAGE  
QUANTUM PARK - 5610 ALPHA DRIVE; BOYNTON BEACH, FL

PER OUR PHONE CONVERSATION OF NOVEMBER 13, 1991:

DONEGAN'S PLUMBING PRESSURE TESTED TANK NUMBER TWO (USED OIL) WITH THREE TO FIVE POUNDS AIR PRESSURE ON SEPTEMBER 10, 1990. THIS WAS INSPECTED AND APPROVED BY THE CITY OF BOYNTON BEACH ON SEPTEMBER 11, 1990.

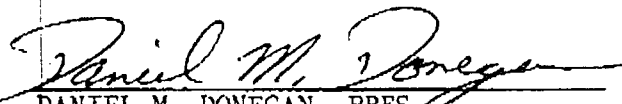
NOW  
USED  
ANTIFREEZE

SHORTLY THEREAFTER, PIPING FOR TANK FARM WAS AIR TESTED AND APPROVED.

I AM SENDING A COPY OF BOYNTON BEACH PERMIT WITH OUR NOTATIONS OF INSPECTIONS CALLED AND COMPUTER READ-OUT OF BOYNTON BEACH INSPECTIONS AND APPROVALS.

THIS INFORMATION WILL BE FAXED AND HARD COPIES WILL FOLLOW IN MAIL.

PLEASE DO NOT HESITATE TO CONTACT ME IF I CAN BE OF FURTHER SERVICE.

  
DANIEL M. DONEGAN, PRES.

02 CITY OF BOYNTON BEACH 11/14/91  
BP405101 PERMIT ACTIVITY INQUIRY 3:47:54

PERMIT CONTROL #: 90 00000733 000 000  
PROPERTY ADDRESS: 05610 ALPHA DR  
APPLICATION TYPE: PL PLUMBING

PERMIT	ISSUED	INSP	TYPE	D A T E	INSP	DESCRIPTION	RESULT
--------	--------	------	------	---------	------	-------------	--------

FL	00	03/06/90	FIRE	0000	02/26/91	WC	FIRE MARSHALL INSPEC	AP
			FL00	0000	09/11/90	COP	SEE COMMENTS BELOW	AP
			FL00	0001	10/30/90	COP	SEE COMMENTS BELOW	AP
			FL00	0002	01/30/91	BP	SEE COMMENTS BELOW	NR
			FL03	0000	09/07/90	COP	FIRST ROUGH PLUMBING	AP
			FL07	0000	09/18/90	BLB	200 PSI PRESSURE TES	AP
			FL07	0001	09/18/90	BLB	200 PSI PRESSURE TES	AP
			FL07	0002	09/12/90	BLB	200 PSI PRESSURE TES	AP
			FL07	0003	02/26/91	BP	200 PSI PRESSURE TES	AC
			FL07	1001	09/14/90	COP	200 PSI PRESSURE TES	AP
			FL99	0000	03/01/91	COP	FINAL	AP
			FL99	0001	03/04/91	WC	FINAL	AP

EXTRA PRESSURE 5/5 KC  
OK TANK #2

CMD 7 - END OF JOB CMD 3 - PREVIOUS SCREEN ROLL UP - SCAN FORWARD  
ROLL DOWN - SCAN BACKWARD



# "FAILURE TO COMPLY WITH THE MECHANICS' LIEN LAW CAN RESULT IN THE PROPERTY OWNER PAYING TWICE FOR BUILDING IMPROVEMENTS"

## CITY OF BOYNTON BEACH BUILDING DEPARTMENT

### NOTICE

IN ADDITION TO THE REQUIREMENTS OF THIS PERMIT, THERE MAY BE ADDITIONAL RESTRICTIONS APPLICABLE TO THIS PROPERTY THAT MAY BE FOUND IN THE PUBLIC RECORDS OF THIS COUNTY.

Permit Type:

Date Applied: 02/06/90

Prepared by: LYNNHLE

Date Issued: 03/06/90

Permit No: 9000000733

### PLUMBING PERMIT

City	Range	Twnshp.	Section	Sub Dvsn.	Block	Lot	Plat/Book/Page
08	43	45	17	08	000	0462	
Property Address							Zoning
ALPHA DR 5610							PID LAH
Subdivision Name							Legal Address
							QUANTUM PARK AT B.B. PLAT 4
Owner's Name/Address/Telephone				Contractor's Name/Address/License/Telephone			
DEUTSCH/IRELAND PROPERTIES 110 TOWER-21ST FL-110 SE 6 STR FORT LAUDERDALE FL 33301-3415 7 734-3555				DONEGAN'S PLUMBING SERVICE INC 1845 SW 4TH AVENUE A-12 DELRAY BEACH FL 33444 276-1942			
Additional Description				General/Architect/Engineer			
TENANT: SAFETY KLEEN APPROVED ON # 89-4573							
Construction				FFL FLZ			
Occupancy				Valuation			
				18,800.00			
				IMPROVEMENTS			
				PLUMBING			

#### Schedule of Fees

\* THIS PERMIT FEE IS NOT REFUNDABLE \*

PERMIT FEE PAID 350.00 DATE- 3/06/90

area drawn up  
10/27/90 1200  
1/29/91-11.45  
partial on  
task form piping

9/6/90 - Pressure test on used oil tank

9/10/90 - Air pressure test on 2 tanks

2:45 - for two (afternoon insp. request)

9/11/90 - for Wd - Tank 3, Tank 4

9/13/90 - for Friday

CALL 738-7483 FOR INSPECTIONS BEFORE 4:30 P.M.

AUTHORIZED SIGNATURE





TANK FARM BUILDING

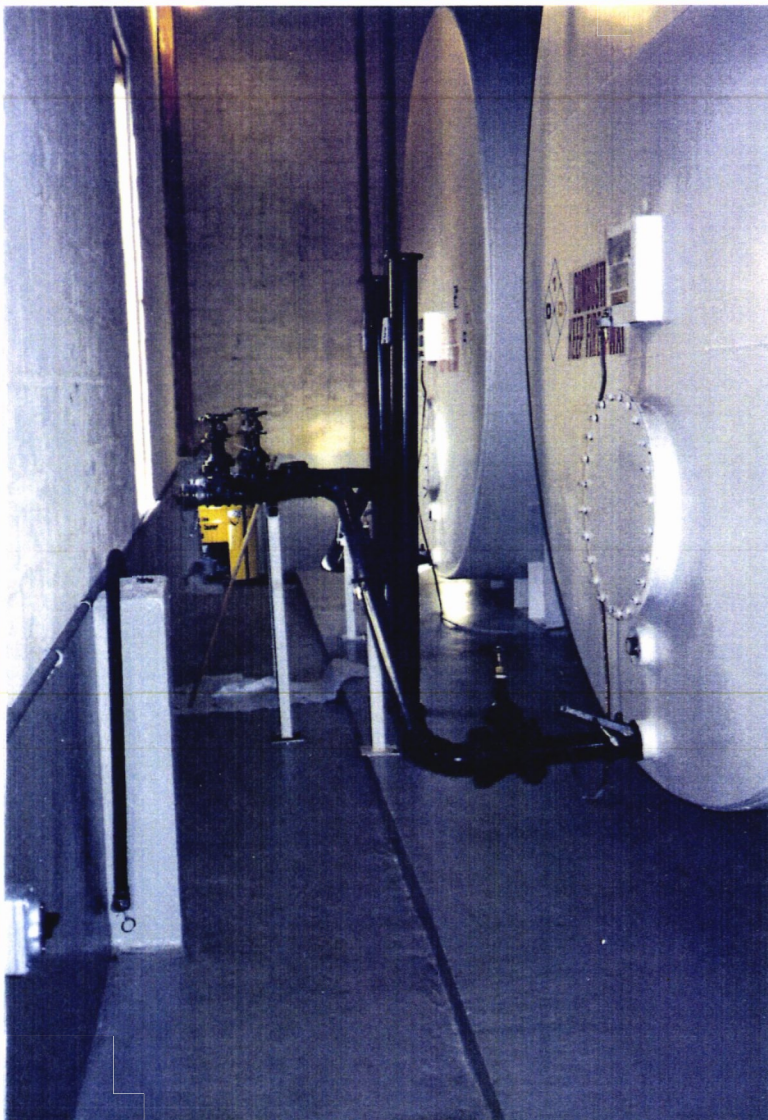


TRUCK PAD

BOYNTON BEACH BRANCH FACILITY

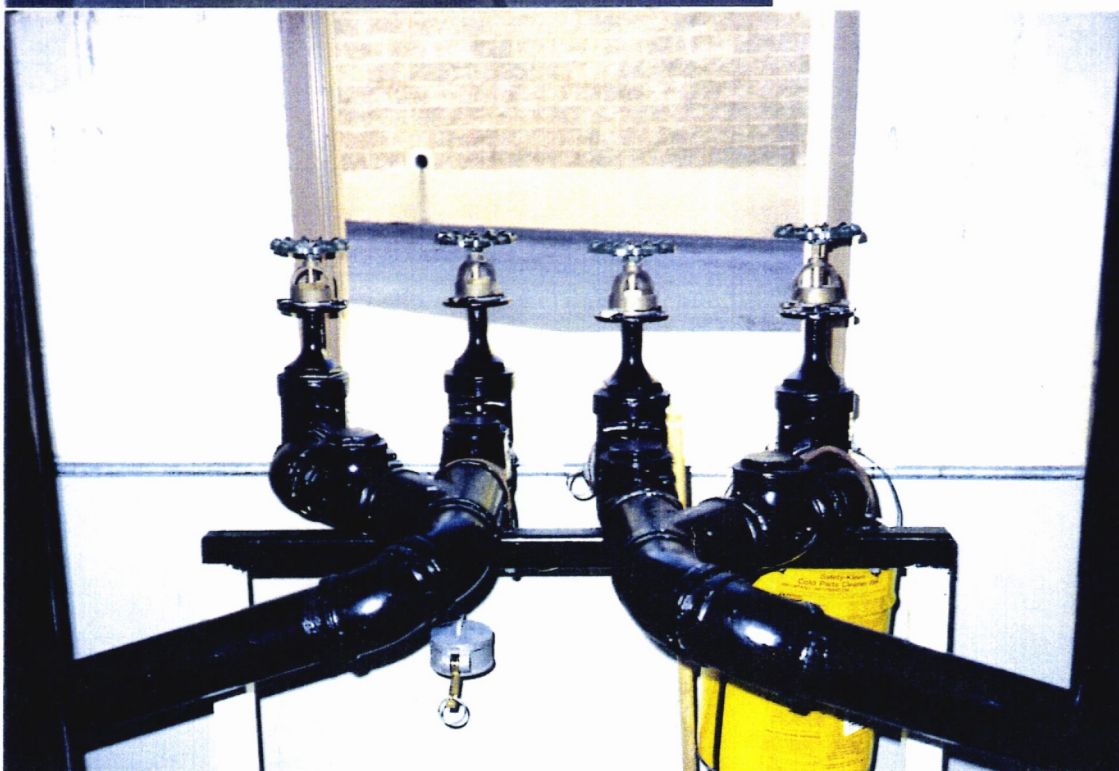


91-208-1  
D-7b

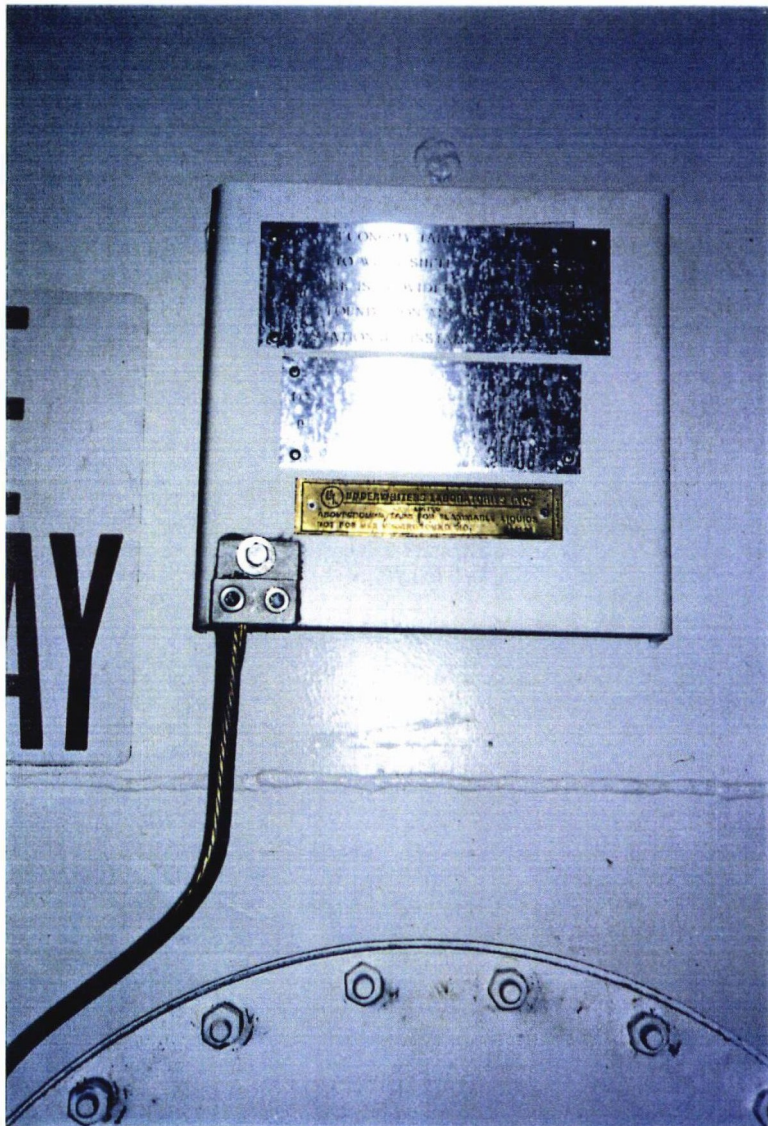


USED ANTIFREEZE TANK  
LIQUID LEVEL GAUGE

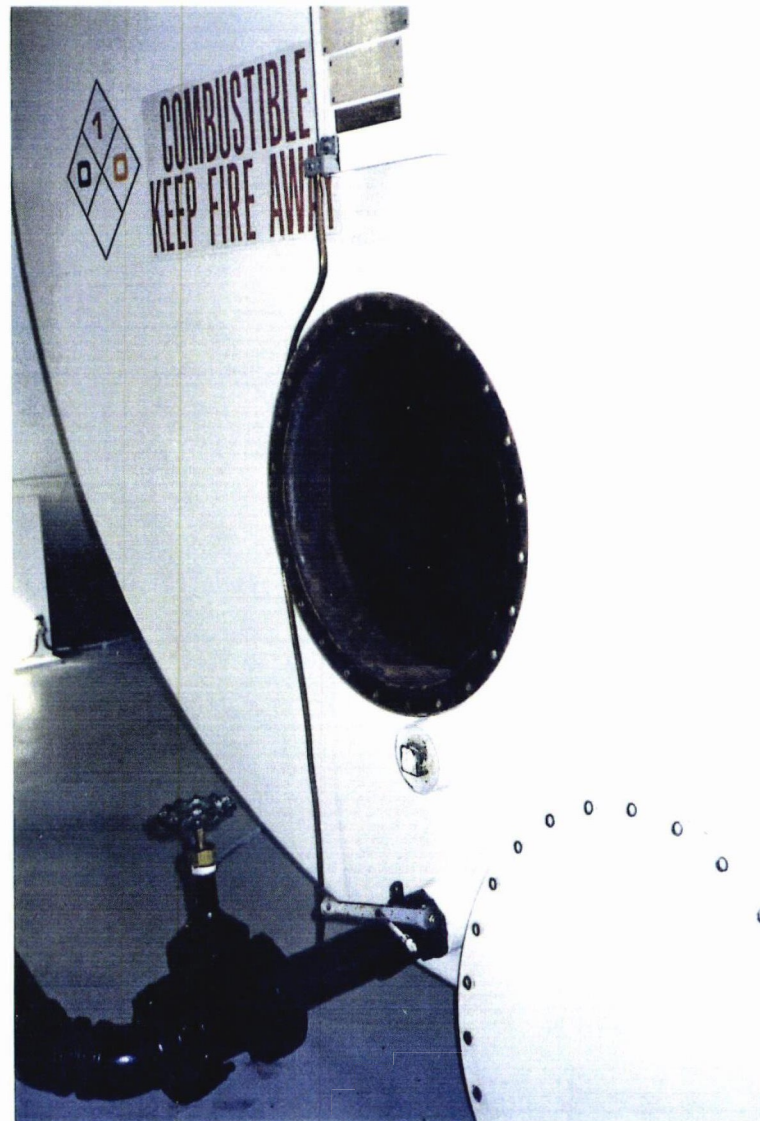
LOAD/UNLOAD  
PIPING AND HOOK-UP





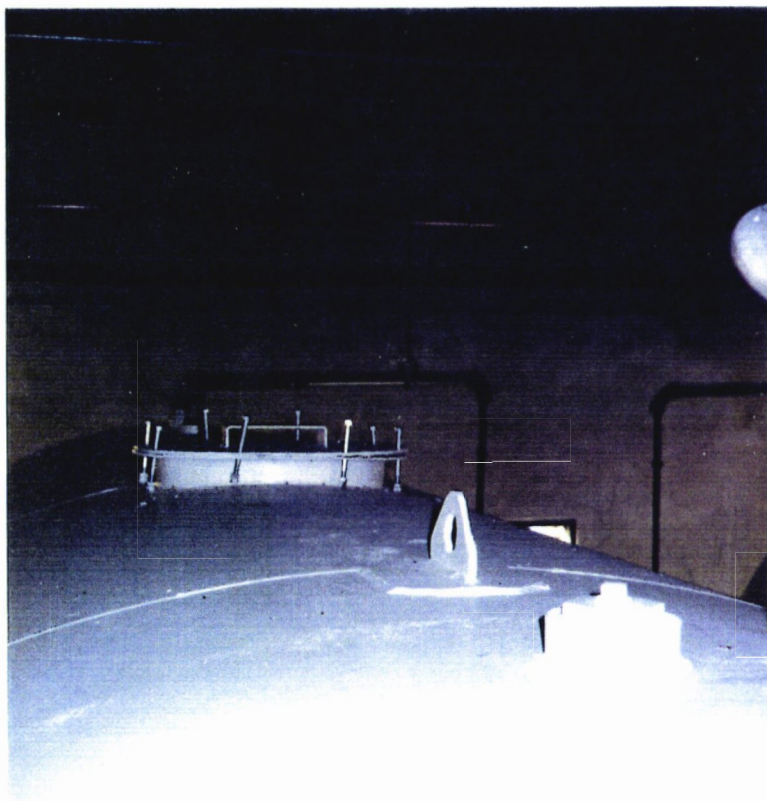


USED ANTIFREEZE TANK NAMEPLATE



OPEN-MANWAY; EMERGENCY  
SHUT-OFF AND GATE VALVE





HIGH LEVEL ALARM; LIQUID LEVEL GAUGE;  
EMERGENCY VENT (MANWAY W/LOOSE BOLTS)

USED ANTIFREEZE TANK

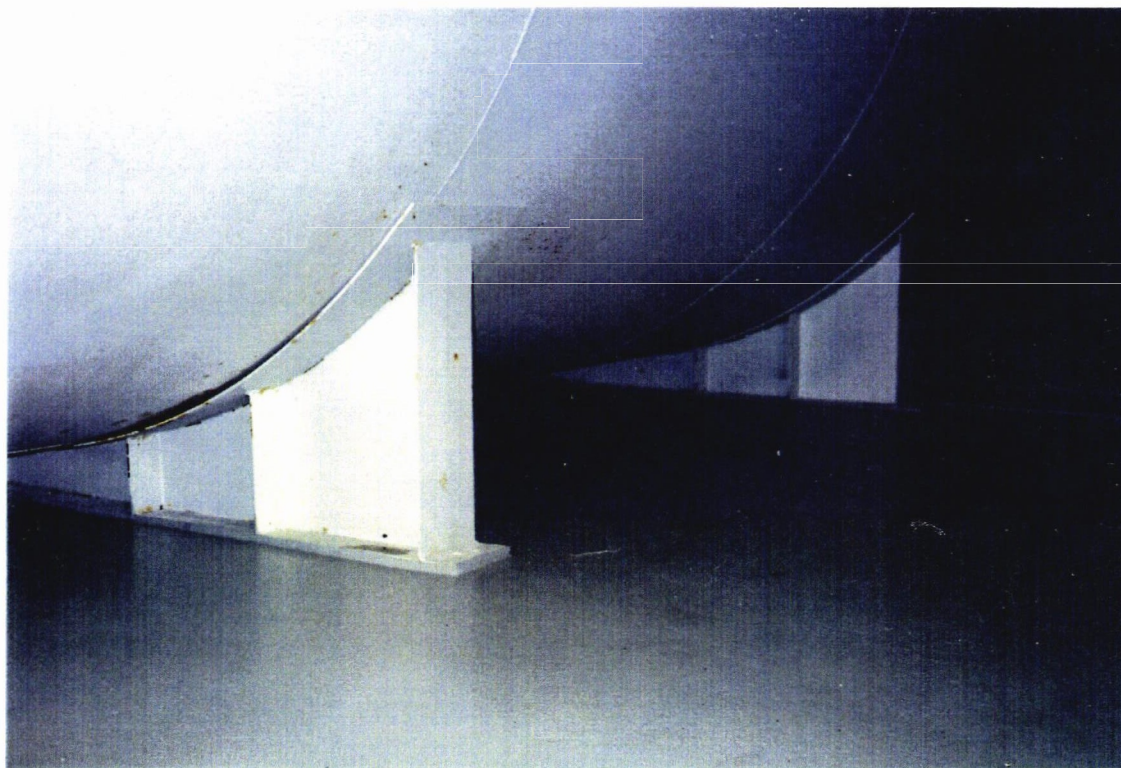


NORMAL 3" VENT





INTERNAL TANK WELDS



INTEGRAL TANK SUPPORTS

**ATTACHMENT II.C.2**  
**TANK SYSTEM SPECIFICATIONS**

Revision 2 - 12/06/91



## ATTACHMENT II.C.2

### TANK SYSTEM SPECIFICATIONS

The facility includes five aboveground steel tanks (Figure II.C.2-1). Used mineral spirits contained in drums returned by the customers are transferred via the wet dumpster into a 15,000-gallon tank, awaiting bulk shipment to the recycle center. The spent antifreeze is transferred from a tanker truck into a 20,000-gallon tank. The other three tanks consist of one 15,000-gallon mineral spirits product tank, one 20,000-gallon nonhazardous waste oil tank, and one 5,000-gallon dry cleaning product tank. These three tanks are not considered RCRA tanks.

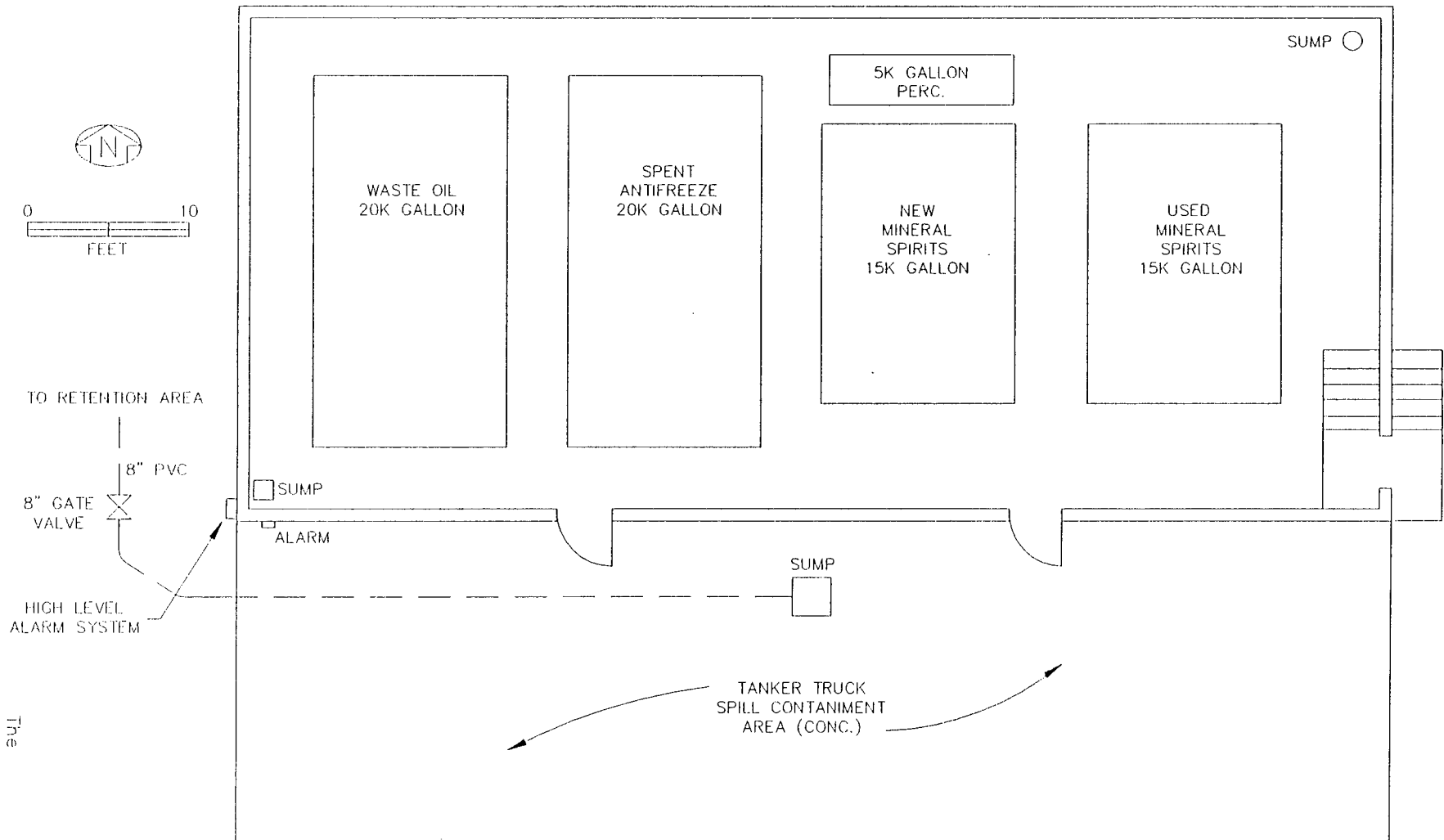
#### MATERIAL COMPATIBILITY

Mineral spirits (petroleum naphtha) is compatible with the mild steel tank structure; in fact, mineral spirits are often used as a light hydrocarbon coating to prevent rusting of metal parts. As with all petroleum storage vessels, water will accumulate over time due to condensation. The mineral spirits has a specific gravity less than water and the water will accumulate in the bottom of the tank. There is the potential for corrosion of the tank at the mineral spirits/water interface. Experience, however, has shown that the corrosion potential at the interface is minimal when compared to the potential for corrosion from soil conditions. Antifreeze and water are soluble in all proportions and no separate water plume will form in this tank.

#### TANK DESIGN AND OPERATION PROCEDURES

Spent mineral spirits from parts washers is accumulated in the 15,000-gallon aboveground storage tank by transfer through the return and fill station. Containers are poured into the dumpsters (barrel washers) in the return and fill station, and material in the dumpster is pumped into the storage tank for spent solvent. The return and fill station has secondary containment.

Figure II.C.2-1  
 Tank Farm  
 Safety-Kleen Corp. Facility  
 Boynton Beach, Florida



13112.28/31128TF/110791-2

II.C.2-1A

Revised 12/06/91



The barrel washers are located within the mineral spirits return and fill shelters. The return/fill shelters have been coated with Sikagard® 62. When recoating is required in the future, it will be performed using Semstone® 140 or equivalent. The drawings (Figures II.C.2-2(a) through II.C.2-2(j)) provide detail information on the barrel washers.

Used solvent is returned from customers via drums and poured into the barrel washers. The barrel is then placed on roller brushes contained within the barrel washer. As the machine is turned on, the barrel rotates on the brush and the outside of the barrel is cleaned. There is also a nozzle that sprays a stream of solvent into the bottom of the barrel to clean the inside of the barrel. The machine is turned off and the barrel is removed. The procedure takes approximately five seconds per barrel. The barrel is then refilled using a pump and nozzle (Figure II.C.2-3) similar to a gasoline pump.

The used solvent goes to a sump in the bottom of the barrel washer and is automatically pumped to the used mineral spirits storage tank. There is a basket in the sump that collects sludge. Approximately twice a day, this basket is removed and sludge is removed and placed into a sludge drum for recycle.

The barrel washer is a totally enclosed unit. A small amount of mist is generated while operating the unit. This is controlled by closing the lid of the unit. Spent antifreeze is transferred from a tanker truck into the bulk tank.

The tanks are designed and constructed to be compatible with the materials stored in them. Typical construction and installation standards for the aboveground tanks are shown in Figures II.C.2-4(a) and II.C.2-4(b). All tanks are vented in accordance with National Fire Protection Association (NFPA) standards, and the tanks are equipped with high-level alarms. The design and installation of the tank alarm system is shown in Figures II.C.2-5(a) through II.C.2-5(d). The tank seams are lapped with full fillet welds.

The barrel washers are located within the mineral spirits return and fill shelters. The return/fill shelters have been coated with Sikagard® 62. When recoating is required in the future, it will be performed using Senstone® 40 or equivalent. The drawings (Figures II.C.2-2(a) through II.C.2-2(j)) provide detail information on the barrel washers.

Used solvent is returned from customers via drums and poured into the barrel washers. The barrel is then placed on roller brushes contained within the barrel washer. As the machine is turned on, the barrel rotates on the brush and the outside of the barrel is cleaned. There is also a nozzle that sprays a stream of solvent into the bottom of the barrel to clean the inside of the barrel. The machine is turned off and the barrel is removed. The procedure takes approximately five seconds per barrel. The barrel is then refilled using a pump and nozzle (Figure II.C.2-3) similar to a gasoline pump.

The used solvent goes to a sump in the bottom of the barrel washer and is automatically pumped to the used mineral spirits storage tank. There is a basket in the sump that collects sludge. Approximately twice a day, this basket is removed and sludge is removed and placed into a sludge drum for recycle.

The barrel washer is a totally enclosed unit. A small amount of mist is generated while operating the unit. This is controlled by closing the lid of the unit. Spent antifreeze is transferred from a tanker truck into the bulk tank.

The tanks are designed and constructed to be compatible with the materials stored in them. Typical construction and installation standards for the aboveground tanks are shown in Figures II.C.2-4(a) and II.C.2-4(b). All tanks are vented in accordance with National Fire Protection Association (NFPA) standards, and the tanks are equipped with high-level alarms. The design and installation of the tank alarm system is shown in Figures II.C.2-5(a) through II.C.2-5(d). The tank seams are lapped with full fillet welds.



The weld is done with an E70 electrode and can withstand a 4-psi air pressure test (which is performed by the manufacturer). All tanks are new and unused.

Attachment II.C.1 provides an independent assessment of the tank system. The mineral spirits assessment by Wishmeier & Associates includes a detailed description of the tank system components and operation. The assessment of the ethylene glycol tank was prepared by TERA, Inc. The following is a concise description of the main features of the tank system.

All tanks are aboveground, underlain by a 71' x 32'4" x 6" concrete slab, surrounded by a 36" concrete dike and are in an enclosed building. The dike has been sealed with a chemical resistant coating. Therefore, no surface run-on or precipitation would be in contact with the wastes stored in the tank farm and no run-off collection and management system is deemed necessary. Gauges are used to measure liquid levels in tanks and float switch-activated automatic high level alarms (which consist of a strobe light and siren) will signal the tank's being 95 percent full. This alarm allows an operator more than two minutes to stop operations and avoid overfilling the tank. In addition, the gauges of the tank must be read before filling and before and during the filling of a tanker truck (the available volume of which must be noted prior to emptying the tank) to prevent overfilling of the truck. A suction pump equipped with the tanker truck is used to withdraw used mineral spirits from the tank. No other equipment or standby equipment is used in the operation of the aboveground tanks. The secondary containment under the tanks and return/fill station must be cleaned within 24 hours of a spill. The used mineral spirits tank may be operated at a maximum volume of 14,250 gallons (95 percent). The spent antifreeze tank may be operated at a maximum volume of 19,000 gallons (95 percent).

Material which collects in the tank dike and return/fill station can be removed using a "wet/dry" vacuum, sorbents, or mop.

"No smoking" signs are posted on the entrance to the tank farm and return/fill station.

## TECHNICAL BULLETIN

March 1988

### DESCRIPTION AND USES:

SEMSTONE 140 is Sentry's primary epoxy floor topping system for concrete. Self-priming and semi-leveling, it will typically be aggregate filled and spray applied to yield an economical and highly serviceable floor for areas subject to harsh chemical exposure.

SEMSTONE 140 is a two component system that possesses the following characteristics in common with all members of Sentry's 140 family of products:

- excellent resistance to:
  - chemical attack;
  - thermal shock;
  - wear and impact.
- superior bonding qualities;
- high cohesive strength, coupled with the flexibility necessary to resist cracking;
- low permeability;
- low odor;
- 100 % solids.

Example uses include:

Process slabs  
Tank farm floors  
Chemical loading and unloading areas  
Spill containment areas  
Waste proof coating for secondary containment systems

### PACKAGING/COVERAGE:

SEMSTONE 140 is available in 1 gallon and 5 gallon units. Each unit consists of a premeasured Part A component and a premeasured Part B component.

Coverage rates are effected by the condition of the surface being coated. The following are theoretical coverage rates:

32 sq. ft. per gallon at 50 mils.  
12.8 sq. ft. per gallon at 125 mils.

Coverage can be increased by up to 100% when extended with silica aggregate. (See paragraph 3 of the application guidelines under MIXING AND APPLICATION.)

Application thickness depends upon expected service conditions. Consult Sentry Polymers or your local representative for specific recommendations.

## SEMSTONE® 140

### Sprayable Epoxy Floor Topping



2101 BOX 20734  
2500 E. HWY 322  
PUEBLO, CO 81001  
409-233-0312  
713-333-1666 (TOLL FREE)  
800-271-3344 (TOLL FREE)

## TYPICAL PROPERTIES - WET:

Solids, by Volume \_\_\_\_\_ 100%  
Weight per Mixed Gallon \_\_\_\_\_ 9.3 lbs  
Pot Life @ 75°F \_\_\_\_\_ 45 - 60 minutes  
(significantly less at elevated temperatures)  
Cure Time @ 75°F:  
Foot Traffic \_\_\_\_\_ 12 hrs.  
Light Vehicular Traffic \_\_\_\_\_ 24 hrs.  
Chemical Service \_\_\_\_\_ 36 hrs.  
Primer \_\_\_\_\_ Not Required  
Nonflammable

## TYPICAL PROPERTIES - CURED:

Color \_\_\_\_\_ Light Gray (selected other colors available)  
Hardness \_\_\_\_\_ ASTM D - 2240 Shore D \_\_\_\_\_ 70 - 75  
Compressive Strength \_\_\_\_\_ ASTM C - 579 \_\_\_\_\_ 14,000 psi  
Tensile Strength \_\_\_\_\_ ASTM D - 638 \_\_\_\_\_ 3,000 psi  
Tensile Elongation \_\_\_\_\_ ASTM D - 638 \_\_\_\_\_ 8%  
Flexural Strength \_\_\_\_\_ ASTM D - 790 \_\_\_\_\_ 11,000 psi  
Flexural Modulus  
of Elasticity \_\_\_\_\_ ASTM C - 722 \_\_\_\_\_ Complies with Epoxy Type B  
Abrasion Resistance \_\_\_\_\_ ASTM D - 1044 \_\_\_\_\_ 55 mg  
(CS17 wheels)  
Water Vapor Transmission \_\_\_\_\_ ASTM E - 96  
WVT \_\_\_\_\_ 0.0120 grain per hr ft<sup>2</sup>  
Permeability \_\_\_\_\_ 0.0042 perm. in.

## RELATED AND ANCILLARY PRODUCTS:

SEMSTONE 140 - S Epoxy Coating and Lining  
SEMSTONE 140 - SL Epoxy Self-Leveling Floor Coating  
SEMSTONE 140 - CT Epoxy Floor Coating - Cold Temperature Formulation  
SEMSTONE 300 Epoxy Polymer Concrete  
SEMSTONE 500 Epoxy Putty  
SEM-CRETE Rapid Hardening Underlayment Mortar  
SEMSTONE Sclrim

Refer to separate technical bulletin on each product for uses, application instructions, etc.

## STORAGE AND SHELF LIFE:

Keep SEMSTONE 140 components tightly sealed in their original containers until ready for use. Store at 50° - 75°F, out of direct sunlight. Properly stored, SEMSTONE 140 has a minimum shelf life of one year.

Refer to batch number on label for date of manufacture.

# CHEMICAL RESISTANCE GUIDE

This guide is intended as an aid in determining the potential usefulness of SEMSTONE 140 as a protective barrier against chemical exposure. Each application should be evaluated according to its particular circumstances and conditions.

KEY: 1 = Suitable for constant immersion  
2 = Suitable for shorter term containment and continual spillage  
3 = Suitable for intermittent spills when followed promptly with water flushing  
NR = Not recommended  
C = Consult Sentry Polymers

RATING		RATING		RATING	
Acetic Acid, 10%	2	Corn Oil	1	Naphthalene	1
Acetic Acid, 30%	3	Crude Oil, Sour	1	Nitric Acid, 5%	3
Acetic Acid, Glacial	3	Crude Oil, Sweet	1	Nitric Acid, 30%	NR
Acetone	NR	Cyclohexane	3	Nitric Acid, 50%	NR
Acrylic Acid, up to 25%	NR	Cyclohexanol	3	Nitric Acid/Sulfuric Acid	NR
Acrylonitrile	NR	Cyclohexanone	3	Nitrobenzene	NR
Alum		Dichlorobenzene	NR	n-Octyl Alcohol	1
(Aluminum Potassium Sulfate)	1	Diesel Fuel	1	Oils	1
Aluminum Chloride	1	Diethyl Benzene	NR	Oleum	NR
Aluminum Fluoride	1	Ethyl Alcohol	2	Oleic Acid	3
Aluminum Hydroxide	1	Ethyl Benzene	NR	Oxalic Acid	3
Aluminum Nitrate	1	Ethyl Chloride	NR	Perchloroethylene	2
Aluminum Sulfate	1	Ethylene Dichloride	NR	Perchloric Acid	NR
Ammonia	2	Ethylene Glycol	1	Phenol	NR
Ammonium Bisulfite	1	Fatty Acids	1	Phosphoric Acid, 50%	1
Ammonium Chloride	1	Ferric Chloride	1	Phosphoric Acid, 85%	2
Ammonium Hydroxide	1	Ferric Nitrate	1	Phosphorous Acid	3
Ammonium Nitrate	1	Ferric Sulfate	1	Potassium Carbonate	1
Ammonium Sulfate	1	Ferrous Chloride	1	Potassium Chloride	1
n-Amyl Alcohol	NR	Fluocilic Acid	2,C	Potassium Dichromate	NR
Aniline	NR	Formaldehyde	1	Potassium Hydroxide	1
Barium Chloride	1	Formic Acid	3	Potassium Nitrate	1
Barium Hydroxide	1	Fuel Oil	2	Propionic Acid	NR
Barium Sulfate	1	Gasoline	1	Silver Nitrate	1
Barium Sulfide	1	Glycerine	1	Sodium Acetate	1
Benzene	2	Heptane	1	Sodium Bicarbonate	1
Benzene Sulfonic Acid	1	Hexane	1	Sodium Bisulfate	1
Benzoic Acid	1	Hydrobromic Acid	2	Sodium Bisulfite	1
Black Liquor, Pulp Mill	1	Hydrochloric Acid, 15%	1	Sodium Carbonate	1
Bleach Liquor, Pulp Mill	1	Hydrochloric Acid, 37%	2	Sodium Chloride	1
Boric Acid	1	Hydrofluoric Acid	C	Sodium Chlorate	NR
Brine	1	Hydrogen Peroxide	2	Sodium Hydroxide, 10%	1
Bromine, Liquid	NR	Hydrogen Sulfide	1	Sodium Hydroxide, 50%	1
Bromine Gas (Dry & Wet)	NR	Isomethyl Alcohol	1	Sodium Hypochlorite	2
n-Butyl Alcohol	2	Jet Fuel	1	Sodium Sulfate	1
Butyl Cellulosic Solvent	3	Kerosene	1	Sodium Sulfide	1
n-Butyric Acid	NR	Lactic Acid	2	Stannic Chloride	1
Cadmium Chloride	1	Lauryl Chloride	1	Stannous Chloride	1
Calcium Chloride	1	Lead Acetate	1	Stearic Acid	1
Calcium Hydroxide	1	Linseed Oil	2	Styrene	1
Calcium Hypochlorite	2,C	Lithium Bromide	1	Sugar/Sucrose	1
Calcium Nitrate	1	Lithium Chloride	1	Sulfur Dioxide	1
Calcium Sulfate	1	Lithium Hypochlorite	2,C	Sulfuric Acid, 10%	1
Calcium Sulfite	1	Lithium Hydroxide	1	Sulfuric Acid, 50%	1
Carbon Dioxide Gas	1	Magnesium Bisulfite	1	Sulfuric Acid, 98%	1
Carbon Disulfide	NR	Magnesium Carbonate	1	Tall Oil	1
Carbon Tetrachloride	NR	Magnesium Chloride	1	Tannic Acid	1
Chlorine Dioxide	3	Magnesium Hydroxide	1	Tartaric Acid	1
Chlorine Gas (Dry & Wet)	3	Magnesium Sulfate	1	Toluene	1
Chlorine Water	2	Maleic Acid	2	Toluene Sulfonic Acid	1
Chlorobenzene	NR	Mercuric Chloride	1	Trichloroacetic Acid	1
Chloroform	NR	Mercurous Chloride	1	Trichloroethylene	1
Chromic Acid, 15%	3	Methyl Alcohol	2	Tosodium Phosphate	1
Chromic Acid, 50%	3	Methyl Chloride	NR	Urea	1
Citric Acid	1	Methylene Chloride	NR	Water, Deionized	1
Copper Chloride	1	Methyl Ethyl Ketone	NR	Water, Demineralized	1
Copper Cyanide	1	Mineral Spirits	2	Water, Distilled	1
Copper Nitrate	1	Monochloroacetic Acid	3	Xylene	1
Copper Sulfate	1	Muratic Acid	1	Zinc Chloride	1
		Nacantha	1	Zinc Sulfate	1

## APPLICATION GUIDELINES

### TEMPERATURE CONSIDERATIONS

1. The temperature of the surface to be coated, and the ambient air temperature should be at least 50° F while applying SEMSTONE 140 and while it cures.

In general, we recommend against applying SEMSTONE 140 if the temperature is expected to drop below 50°F. Instead, use SEMSTONE 140-CT.

2. Twenty-four hours before application, all materials (components A and B, aggregate, etc.) should be stored at a 70° - 83°F, to facilitate handling.

### SURFACE PREPARATION - GENERAL

Surfaces must be dry and free of dirt, dust, oil, grease, chemicals and other contaminants immediately prior to applying each coat of SEMSTONE 140.

### SURFACE PREPARATION OF CONCRETE

1. New concrete generally should be cured a minimum of 28 days.

NOTE: Check with Sentry Polymers for recommendations regarding concrete cured less than 28 days.

2. Concrete must be structurally sound and must not contain any accelerators or curing compounds.
3. Remove all oil and grease.
4. Remove all surface laitance and expose sound concrete.

We recommend abrasive blasting to do this. However, other methods, such as acid etching and neutralizing, may be used.

5. In general, any existing coating should be completely removed.

In certain instances this may not be necessary, but consult with Sentry Polymers first.

Always remove coatings which have failed due to lack of adhesion or thermal shock.

6. Locate all expansion joints, control joints, floor drains, equipment base plates and mid-floor termination points. Handle them as per Sentry's Construction Details Sheet No. 87-1.
7. Degraded concrete on horizontal surfaces should be restored using SEMSTONE 300 Epoxy Polymer Concrete or SEM-CRETE.
8. Fill all honeycombs, form voids, etc. in vertical surfaces using SEMSTONE 300 Epoxy Putty or SEM-CRETE.

### SURFACE PREPARATION OF INCIDENTAL STEEL

Equipment base plates, etc. to be coated along with the concrete should be abrasive blasted to a near white metal finish with a 1 - 2 mil anchor profile. (Ref.SSPC-SP-10)

### MASKING

Mask surfaces that are not to be coated. This material is difficult to remove, once applied.

### APPLICATION EQUIPMENT

1. SEMSTONE 140 may be applied using a spray rig, notched trowel, brush or roller.
2. Spraying Aggregate Filled Material

We recommend the use of a peristaltic spray rig, such as the Carrousel Pump by Quik Spray, Port Clinton, Ohio.

DO NOT use a plural component or a single component airless rig with aggregate filled material.

Set up the peristaltic rig with a 1 inch ID, 15 foot long material line and a 3 foot pole spray gun.

Prwet the hoses by pumping a small amount of mixed SEMSTONE 140 (see paragraphs 1 and 2 under MIXING AND APPLICATION) without aggregate through the lines and hose gun; about 1/2 gallon should be sufficient.

### 3. Spraying Material Without Aggregate

We recommend the use of a plural component or single component airless rig when the material will be sprayed without aggregate. The peristaltic rig can also be used.

Plural Component Airless Spray Equipment (Graco Bulldog Hydro-Cat, or equal):

Set equipment at a 4 to 1 volumetric mix ratio. Use a Graco Silver Gun, or equivalent, equipped with a reversible, self-cleaning tip, orifice size .035 - .041 inch.

Single Component Airless Spray Equipment (Graco "King" 45 to 1 Hydro Spray Pump, or equal): set up as follows:

No screens, filters or surge tank.

Spray hose should be 1/2" or 3/4" ID, and a maximum of 30 feet in length.

Use Graco Golden Mastik Gun, or equivalent, equipped with a reversible, self-cleaning tip, orifice size .035 - .041 inch.

Inlet air pressure should be a minimum of 100 psi. Recommended operating pressure is 60 - 100 psi.

### 4. Always use spray equipment in accordance with manufacturer's instructions.

### 5. Care of Spray Rig hoses

Take care to prevent the mixed material from setting up in your hoses. For best results, keep your hoses as short as possible, purge them immediately if work is interrupted, keep them out of direct sunlight and insulated from hot surfaces.

## MIXING AND APPLICATION

1. The components must be individually agitated immediately prior to use.

Part A - Blend each Part A component to a uniform consistency in its individual container, using a Jiffy type mixer.

Part B - Stir each Part B component to a uniform color in its individual container.

2. If using a plural component spray rig, skip this step. Otherwise, do this:

Pour the entire contents of Part B into the container holding Part A, and mix thoroughly for two minutes using a Jiffy type mixer.

The pot life of the mixture will be approximately 45-60 minutes @ 75°F; significantly less time at elevated temperatures.

The longer the material is in the bucket after mixing, the shorter its pot life will be. So, use it immediately.

3. SEMSTONE 140 may be extended by adding silica sand. This can provide a more economical floor topping and is also useful when coating rough or milchly eroded concrete.

a. Do not add sand to SEMSTONE 140 unless your coating thickness will be at least 75 mils.

b. Use only clean, dry, bagged 20/40 mesh round silica sand.

c. Pour half the mixed SEMSTONE 140 into another clean, 5 gallon bucket.

d. Slowly add sand to each bucket while blending with a Jiffy type mixer. Do both buckets right away.

e. You may add up to 3 parts, by weight, of sand to 1 part, by weight, of SEMSTONE 140.

At 3 to 1 you get a mixture of gravel-like consistency.

At 2 to 1, you will obtain a still fluid mixture and extend coverage by 100%. This is the optimum mixture for spray applications.

f. The mixture may be sprayed or applied by notched trowel.

If spraying, work the pole gun in a circular motion to achieve an even coating thickness.

4. When working a large or congested area, it may be desirable for applicator to wear spiked shoes.
5. To obtain a nonskid surface, broadcast your grit media onto the coated surface before the coating jells.
6. SEMSTONE 140 is semi-leveling. When used on an area that has a pitch or slope, use a 2 to 1 silica sand mixture (see 3 paragraph above) in order to keep the material from sliding.
7. To coat vertical surfaces, we generally recommend our SEMSTONE 140-S Epoxy Coating and Lining system.

However, for convenience, and when service conditions are not rigorous, SEMSTONE 140 may be used to coat short verticals, such as curbs. Multiple coats will probably be required to obtain a coating free of pin holes. We recommend a minimum of three coats. Allow each coat to cure tack free before applying the next coat. Prepare the surface between coats in accordance with paragraph 8.

**DO NOT USE AGGREGATE ON VERTICAL SURFACES.**

8. Prepare surfaces for intercoat adhesion as follows:
  - a. Allow SEMSTONE 140 to cure until jelled before recoating.
  - b. If the surface cures firm to the touch, but less than 24 hours, it must be washed with soap and water, rinsed and dried before recoating.
  - c. Surfaces cured beyond 24 hours must be washed with soap and water, rinsed, dried and lightly sanded or abrasive blasted.

9. If work is interrupted, and at the end of the day, terminate the coating in a straight line.

10. As it cures, SEMSTONE 140 will sometimes develop a thin, oily film on its surface.

This film may be easily removed by washing with soap and water.

## CLEANUP

Before it jells, SEMSTONE 140 may be cleaned from tools and equipment using hot, soapy water.

After SEMSTONE 140 jells, Xylene or MEK will be required. Chlorinated solvents may be used if flammable solvents are not allowed.

## SAFETY PRECAUTIONS

### FOR INDUSTRIAL USE ONLY.

Avoid contact with eyes and skin; do not ingest or inhale.

When working with SEMSTONE 140, always wear chemical goggles, rubber gloves, and appropriate work clothing.

When spraying in a confined area, also wear a fresh air hood and make provision for forced ventilation.

When spraying in an open area, an organic mist respirator can replace the fresh air hood.

Prolonged or repeated exposure to SEMSTONE 140 may cause skin irritation or allergic reactions.

Refer to material safety data sheets regarding individual components.



**ATTACHMENT II.C.7**  
**TANK SYSTEM SECONDARY CONTAINMENT**

## ATTACHMENT II.C.7

### TANK SYSTEM SECONDARY CONTAINMENT

#### TANK CONTAINMENT

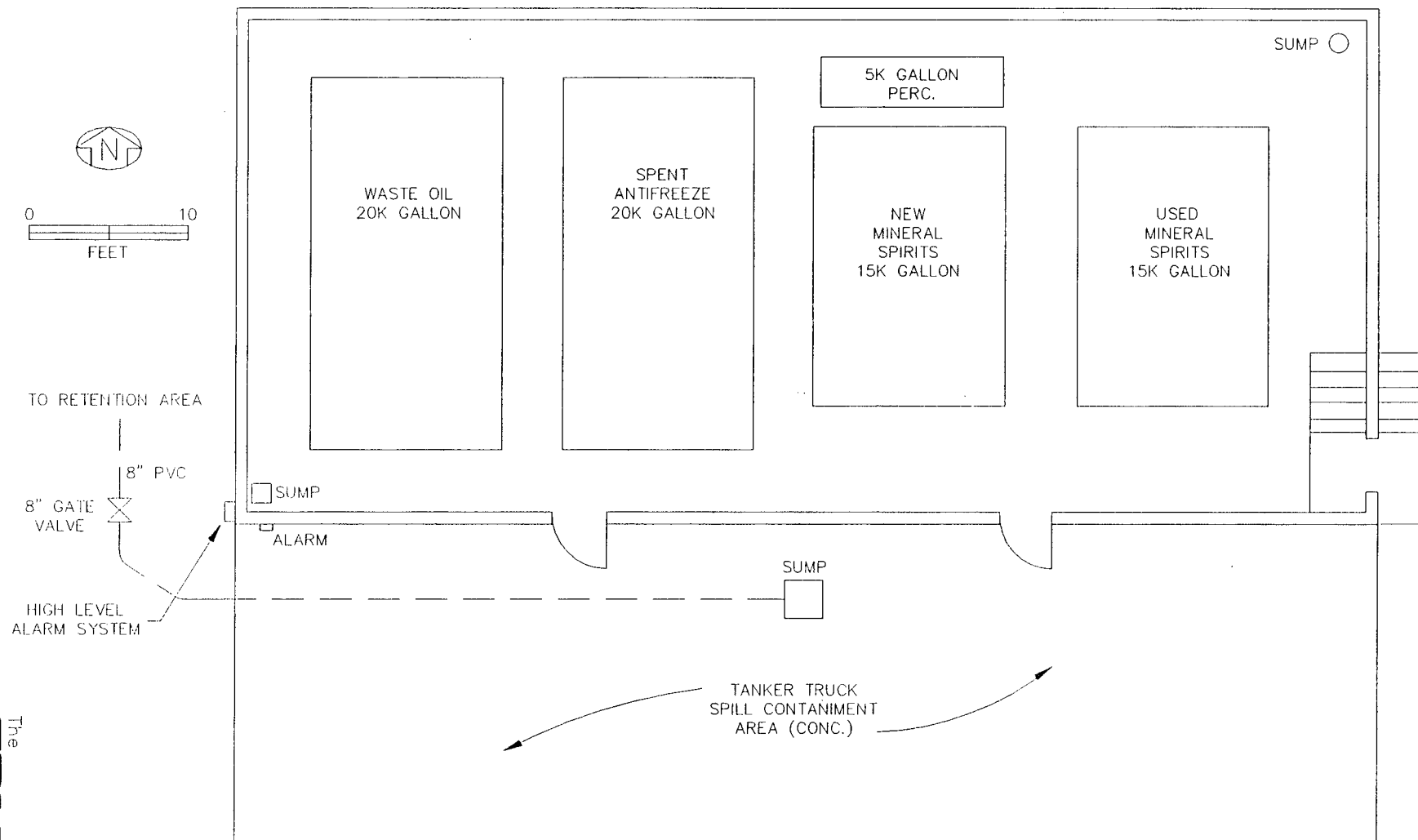
All tanks are aboveground, underlain by a 71' x 32'4" x 6" concrete slab, surrounded by a 36" concrete dike and in an enclosed building. The dike has been sealed with a chemical resistant coating. When recoating occurs in the future, the coating used will be Semstone 140 or equivalent. No surface run-on or precipitation would be in contact with the wastes stored in the tank farm and no run-off collection and management system is deemed necessary. The layout of the tank storage building is provided in Figure II.C.7-1. Containment calculations are in Figure II.C.7-2.

#### RETURN/FILL CONTAINMENT

The return/fill shelter is located inside the center portion of the main building. The floor is sloped to a containment trench located in the center of the return/fill shelter. The entire area is coated with a chemical resistant coating. The barrel washers are on a raised grating which measures 54'0" x 78'0" (Figure II.C.7-3).

The area is designed such that the route trucks can be backed inside the building and the garage doors shut so that no precipitation can get into the return/fill shelter containment area. The containment capacity for the return/fill area is 3,626 gallons which exceeds the storage capacity of the two dumpsters (275 gallons per dumpster). The containment calculations are presented in the tank system assessment report (Attachment II.C.1).

Figure II.C.7-1  
 Tank Farm  
 Safety-Kleen Corp. Facility  
 Boynton Beach, Florida



II.C.7-1A

**ATTACHMENT II.C.9**  
**CONTROLS AND SPILL PREVENTION**



## ATTACHMENT II.C.9

### CONTROLS AND SPILL PREVENTION

The tank system is designed to minimize the potential for spills and to control any spills which may occur. The tank area prevention and control system includes proper tanks, and containment walls and trenches. The return/fill shelter consists of dumpsters (barrel washers) located inside a containment area.

The prevention and control system minimizes the opportunity for an uncontrolled release of material to the environment.

#### DESCRIPTION OF FACILITY

The facility utilizes five aboveground steel tanks. Used mineral spirits housed in containers returned by the customers are transferred via the wet dumpster into a 15,000-gallon tank, awaiting bulk shipment to the recycle center. The spent antifreeze is transferred from a tanker truck into the 20,000-gallon tank. The other three tanks consist of one 15,000-gallon mineral spirits product tank, one 20,000-gallon nonhazardous waste oil tank, and one 5,000-gallon dry cleaning product tank. These three tanks are not considered RCRA tanks.

#### MATERIAL COMPATIBILITY

Mineral spirits (petroleum naphtha) is compatible with the mild steel tank structure. In fact, mineral spirits is often used as a light hydrocarbon coating to prevent rusting of metal parts. As with all petroleum storage vessels, water will accumulate over time due to condensation. The mineral spirits has a specific gravity less than water and the water will accumulate in the bottom of the tank. There is the potential for corrosion of the tank at the mineral spirits/water interface. Antifreeze and water are soluble in all proportions and no separate water plume will form in this tank.

Spent mineral spirits from parts washers is accumulated in a 15,000-gallon aboveground storage tank via the return and fill station. Used solvent is returned from customers via containers and poured into the barrel washers. The barrel is then placed on roller brushes contained within the barrel washer. As the machine is turned on, the barrel rotates on the brush and the outside of the barrel is cleaned. There is also a nozzle that sprays a stream of solvent into the bottom of the barrel to clean the inside of the barrel. The machine is turned off and the barrel is removed. The procedure takes approximately five seconds per barrel.

The used solvent goes to a sump in the bottom of the barrel washer and is automatically pumped to the used mineral spirits storage tank. There is a basket in the sump that collects sludge. Approximately twice a day, this basket is removed and sludge is removed and placed into a sludge container for recycle.

The barrel washer is a totally enclosed unit. A small amount of mist is generated while operating the unit. This is controlled by closing the lid of the unit. The spent antifreeze is transferred from a tanker truck into the bulk tank.

## TANKS

The tanks are designed and constructed to be compatible with the materials stored in them. Typical construction and installation standards for the aboveground tanks are discussed in Attachment II.C.2. All tanks are vented in accordance with National Fire Protection Association (NFPA) standards, and the tanks are equipped with high level-alarms. The tank seams are lapped with full fillet welds. The weld is done with an E70 electrode and can withstand a 4-psi air pressure test (which is performed by the manufacturer).

Attachment II.C.1 provides an independent assessment of the tank systems. This assessment includes a detailed description of the tank systems' components and operation. The following is a concise description of the main features of the tank system.

All tanks are aboveground, underlain by a 71' x 32'4" x 6" concrete slab, surrounded by a 36" concrete dike and are in an enclosed building. The dike has been sealed with a chemical resistant coating. Therefore, no surface run-on or precipitation would be in contact with the wastes stored in the tank farm and no run-off collection and management system is deemed necessary. Gauges are used to measure liquid levels in tanks and float switch-activated automatic high level alarms (which consist of a strobe light and siren) will signal the tank's being 95 percent full. This alarm allows an operator more than two minutes to stop operations and avoid overfilling the tank. In addition, the gauges of the tank must be read before filling and before and during the filling of a tanker truck (the available volume of which must be noted prior to emptying the tank) to prevent overfilling of the truck. A suction pump equipped with the tanker truck is used to withdraw used mineral spirits from the tank. No other equipment or standby equipment is used in the operation of the aboveground tanks. The secondary containment under the tanks and return/fill station must be cleaned within 24 hours of a spill. The used mineral spirits tank may be operated at a maximum volume of 14,250 gallons (95 percent). The spent antifreeze tank may be operated at a maximum volume of 19,000 gallons (95 percent).

Material which collects in the tank dike and return/fill station can be removed using a "wet/dry" vacuum, sorbents, or mop.

No smoking signs are posted on the entrance to the tank farm and return/fill station.

**ATTACHMENT II.C.12(a)**  
**TANK SYSTEM CLOSURE PLAN**





**ATTACHMENT II.C.12(a)**  
**TANK SYSTEM CLOSURE PLAN**

**CLOSURE INTRODUCTION**

The Safety-Kleen Corp. has constructed each service center with the intent that each will be a long-term facility for the distribution of Safety-Kleen products. No onsite disposal activity occurs at any plant and hence no disposal capacity will be exhausted that will necessitate closure of a facility. Based on current business and facility conditions, this facility is expected to remain in operation beyond the year 2000.

In the event that presently unforeseen circumstance(s) would result in the discontinuance of operations and permanent closure or sale of the facility, the following closure plan is designed to identify the steps necessary to completely close the facility at any point during its intended life, and should be used for tanks, container storage area, and equipment.

It is intended that all closures will be complete and final with removal of waste and decontamination of the facility and associated equipment, in order to eliminate the need for maintenance after closure and a chance of the escape of hazardous waste constituents into the environment.

Procedures described in this closure plan are also applicable to cleaning up spills and repairing/decontamination of facility or equipment.

An anticipated closure schedule can be seen in Figure II.C.12(a)-1. An anticipated maximum waste inventory for the tank system of the facility is presented in the following section.

- The dumpsters and the dock area will be cleaned with detergent solution and the rinsate analyzed for mineral spirits, volatile organic compounds, lead, and cadmium to determine the effectiveness of the decontamination. The area will continue to be washed and rinsed until levels are below MCLs, or PQLs if MCLs are not available.
- The rinsing fluids will be discharged through the appurtenant piping system into the storage tank, which will be subjected to a separate closure procedure as described Attachment II.C.12(a).
- The cleansed dumpster and dock structure will be reused by Safety-Kleen, or scrapped.
- The cleanup equipment and solutions disposal is the same as that listed earlier.

#### **PHASE I--OPEN THE TANK**

- Access to aboveground tanks is obtained by removing manways.
- Prior to opening the tanks, the personnel should have full face respiratory protection and protective clothing. Once the tanks have been opened, they will be provided with positive ventilation. The tanks will then be inspected to determine the approximate quantity and physical conditions of the remaining material.

## **PHASE II--REMOVING WASTE AND CLEANING TANK**

- Before removing the waste from the tank, all piping and appurtenant equipment will be flushed first with clean mineral spirits followed by a detergent solution.
- The method to remove the waste material from the tanks will depend on the physical properties and quantities of that material. Prior to any person entering the tank, an effort will be made to remove as much liquid and sludge as possible.
- Subsequent to vacuuming the majority of the material from the tank, it may be necessary to use a high pressure wash system using a clean solvent and detergent solution to rinse residual material from the walls and bottom of the tanks. The evacuated material and the rinse solution will be returned to the recycle center for reclamation. The quantity of wash fluid used will be kept to a minimum in order to limit the amount of unnecessary material. The final rinsate will be analyzed for mineral spirits, volatile organic compounds, lead, and cadmium, using SW-846 to determine the effectiveness of decontamination. The tank will continue to be washed and rinsed until levels are below MCLs, or PQLs if MCLs are not available. Rinsate will be removed using a vacuum tanker truck and will be disposed of as hazardous waste. It is anticipated that approximately 2,000 gallons of rinsate will require RCRA disposal.
- Storage tanks are considered confined spaces, i.e., spaces open or closed having a limited means of egress in which poisonous gases or flammable vapors might accumulate or an oxygen deficiency might occur.
- Confined space entry requires special operating procedures:
  - Tanks are to be washed, neutralized and/or purged (where flammable atmosphere is present) prior to being entered.



- ▶ Supply valves must be closed and "tagged" and bleeder valves left open, or supply piping should be disconnected.
  - ▶ Pumps or motors normally activated by automatic controls shall be operated manually to be sure they have been disconnected. Instrument power switches should be tagged "OFF."
  - ▶ On tanks where flammable vapors may be present, all sources of ignition must be removed.
  - ▶ All tanks must be tested for flammable vapors, toxic gases, or oxygen deficiency in that order, as applicable. The results of such tests should be displayed on the job site.
- 
- In all tank entering situations, an Oxygen Deficiency Test shall be performed prior to tank entry.
  - Under circumstances where "hot work" (welding, burning, grinding, etc.) is to be performed in or on the vessel, a test for combustible gases shall be taken. This is referred to as a "flash test."
  - In most circumstances, flash tests and oxygen deficiency tests will be performed by the supervisor of the area in which the work is being performed.
  - Under any conditions where a possibility (no matter how remote) of toxic vapors being present in the tank to be entered exists, the supervisor will arrange to have the air tested.

- ▶ There must be a set of wristlets or a rescue harness and sufficient rope at the job site to effect a rescue. Any other rescue equipment considered necessary must also be on the job site.
- ▶ Workers should wear a rescue harness if entering a tank with a large enough opening to easily effect a rescue. In tanks with small openings, only wristlets may be used. However, in cases where there are agitator shafts, containers, or other hazards in which the man's life-line would be entangled and the supervisor in charge feels that wearing the life-line may entrap a man and increase the hazard, the wearing of a harness or wristlets may be eliminated.
- ▶ A constant source of fresh air must be provided to ensure a complete change of air every few minutes. In cases of short-term entry for inspection or removal of objects, an air mask is recommended. In cases of long-term entry (generally for repair) the use of an air mover should be considered.
- ▶ When a ladder is required to enter a tank, the ladder must be secured and not removed while anyone is in the vessel. In cases where a rigid ladder could become an obstacle, a chain ladder may be used.
- ▶ Adequate illumination must be provided.
  - A flashlight or other battery-operated light must also be available to provide illumination for safety exit in the event of an electrical power failure.
  - Explosion-proof lighting must be used in any tank used to store flammable liquids.

- ▶ All electrical equipment to be used inside the tank must be in good repair and grounded.
- ▶ Others working in the immediate area shall be informed of the work being done and they shall inform the watcher or supervisor immediately of any unusual occurrence which may make it necessary to evacuate the tank.
- The "buddy" (standby observer) system:
  - ▶ Men working inside a confined space must be under the constant observation of a fully-instructed standby observer.
  - ▶ Before anyone enters the tank, the standby observer will be instructed by the person in charge of the entry that:
    - An entry authorization must be obtained from the person in charge by anyone entering the tank.
    - A rescue harness or wristlets must be on the job.
    - The standby observer must know the location of the nearest telephone (with emergency numbers posted); safety eyewash/shower; fire extinguisher; and oxygen inhalator.
    - For all "hot work" inside a tank, the standby observer must be instructed how to shut down welding/burning equipment.

- As long as personnel are inside the vessel, the standby observer must remain in continuous contact with the worker. **HE IS NOT TO LEAVE THE JOB SITE EXCEPT TO REPORT AN EMERGENCY.**
  - **UNDER NO CIRCUMSTANCES SHOULD THE STANDBY OBSERVER ENTER THE VESSEL.** If the worker(s) in the tank becomes ill or injured, the watcher is to put in effect the emergency plan described in the attached Standard Operating Procedure.
  - The standby observer still **DOES NOT ENTER THE TANK** until help is available.
  - After being instructed in his responsibilities, the standby observer will sign an instruction form indicating his understanding.
- Welding and burning within a tank:
- ▶ All welding and burning equipment must be provided with a shutoff device under the control of the standby observer; and the standby observer must know how to shut off the equipment if it becomes necessary.
  - ▶ Welding and burning equipment will only be taken into a tank immediately prior to its use and must be removed from the tank immediately after the job is finished.
  - ▶ For all "hot work" inside a tank, a properly executed flame permit, if needed, must be displayed at the job site.
  - ▶ Standard welding and burning safety precautions will always be followed.

**PHASE III--REMOVE TANK**

- Disconnect and cap all appurtenant piping.
- Disconnect and decontaminate all appurtenant pumping equipment.
- The vessels shall be removed and reused by Safety-Kleen or cut up and sold as scrap.
- The surface soil beneath the fill pipes and beneath each tank will be sampled and analyzed for volatile organic compounds, mineral spirits, lead, and cadmium.
- The secondary containment system will be disassembled. The construction materials will be tested with TCLP (pertinent constituents only). If the construction materials are classified as non-hazardous via TCLP, then they will be disposed of as a solid waste in a sanitary landfill. In the event the construction materials are identified as hazardous via TCLP, then the construction materials will be disposed of as a hazardous waste in accordance with RCRA regulations.
- Contaminated soil, if it exists, shall be removed and properly disposed of. An additional work plan to determine the extent of contamination and remediation procedures will be submitted in this case.

**PHASE IV--BACKFILLING AND REGRADING**

- Backfill any excavation with previously excavated material with proper compaction.
- Add additional backfill with proper compaction if necessary. The material must be of clean materials and easily compacted in place.
- Regrade the site to proper topography.



- Remove and dispose of nonusable debris.

### **FACILITY CLOSURE SCHEDULE AND CERTIFICATION**

- Safety-Kleen may amend the closure plan at any time during the active life of the facility. The active life of the facility is that period during which wastes are periodically received. Safety-Kleen shall amend the plan any time changes in operating plans or facility design affect the closure plan or whenever a change occurs in the expected year of closure of the facility. The plan must be amended within 60 days of the changes.
- Within 90 days of receiving the final volume of hazardous wastes, or 90 days after approval of the closure plan, if that is later, Safety-Kleen shall remove from the site all hazardous wastes in accordance with the approved closure plan. The Regional Administrator may approve a longer period if Safety-Kleen demonstrates that:

The activities required to comply with this paragraph will, of necessity, take longer than 90 days to complete; or

The following requirements are met:

- ▶ The facility has the capacity to receive additional wastes;
- ▶ There is a reasonable likelihood that a person other than Safety-Kleen will recommence operation of the site;
- ▶ Closure of the facility would be incompatible with continued operation of the site; and

- ▶ Safety-Kleen has taken and will continue to take all steps to prevent threats to human health and the environment.
- Safety-Kleen shall complete closure activities in accordance with the approved closure plan and within 180 days after receiving the final volume of wastes or 180 days after approval of the closure plan, whichever is later.
- When closure is completed, all facility equipment and structures shall have been properly disposed of, or decontaminated by removing all hazardous waste and residues.
- When closure is completed, Safety-Kleen shall submit to the certification by an independent registered professional engineer that the facility has been closed in accordance with the specifications in the approved closure plan.

**PART II K**  
**CLOSURE**



**ATTACHMENT II.K.1**

**CLOSURE PLAN**

**ATTACHMENT II.K.1****CLOSURE PLAN****CLOSURE INTRODUCTION**

The Safety-Kleen Corp. has constructed each service center with the intent that each will be a long-term facility for the distribution of Safety-Kleen products. No onsite disposal activity occurs at any plant and, hence, no disposal capacity will be exhausted that will necessitate closure of a facility. Based on current business and facility conditions, this facility is expected to remain in operation until the year of 2000.

In the event that some presently unforeseen circumstance(s) would result in the discontinuance of operations and permanent closure or sale of the facility, the following closure plan is designed to identify the steps necessary to completely close the facility at any point during its intended life, and should be used for tanks, container storage area, and equipment.

It is intended that all closures will be complete and final with removal of waste and decontamination of the facility and associated equipment, in order to eliminate need for maintenance after closure and chance of escape of hazardous waste constituents into the environment.

Procedures described in this closure plan are also applicable to cleaning up of spills and repairing/decontamination of facility or equipment.

**Facility Data****Tank Area**

15,000-gallon waste mineral spirits tank in a three-foot-high concrete containment area enclosed inside a building and a 20,000-gallon spent antifreeze tank. This building also

houses one 20,000-gallon nonhazardous waste oil tank, a 15,000-gallon clean mineral spirits tank, and a 5,000-gallon clean perchloroethylene tank.

Container Storage Area:

A 48' x 78' foot area with sloped floor and collection sump. The maximum total volume stored is 18,750 gallons with 6,912 gallons anticipated to be waste mineral spirits dumpster mud containers, dry cleaner wastes, antifreeze, spent immersion cleaner, paint wastes, and/or FRS wastes.

Solvent Return/Fill Shelter:

One 45-foot by 44-foot structure with two solvent return receptacles (wet dumpsters) each and ancillary equipment. Each dumpster can hold 275 gallons of waste.

**MAXIMUM INVENTORY OF WASTE**

Tank Wastes

The maximum amount of waste mineral spirits in the tank is 15,000 gallons, and spent antifreeze in the tank is 20,000 gallons.

Containerized Waste: Anticipated maximum of 6,912 gallons

This amount includes any combination of 5-, 15-, 16-, split 30- (also known as 20-gallon), 30-, 55-, and 85-gallon containers.

Dumpsters: 550 gallons (two 275-gallon dumpsters)

## CLOSURE PROCEDURE

### Container Storage Areas

- The container storage area houses containers of used immersion cleaner, mineral spirits, dumpster mud, antifreeze, paint waste, dry cleaning wastes, and FRS wastes.
- At closure, all containers will be removed and transported to the recycle center with proper packaging, labeling, and manifesting where the contents in the containers will be reclaimed and the containers will be cleaned for reuse.
- The concrete floor and spill containment areas will be cleaned with detergent solution and the rinsate will be analyzed for mineral spirits, volatile organic compounds, lead, and cadmium, using SW-846 methods, to determine the effectiveness of decontamination. The area will continue to be washed and rinsed until levels are below maximum contaminant levels (MCLs), or if MCLs are not available, practical quantification levels (PQLs) as specified in Appendix IX of 40 CFR 264.
- If the wash water or other wastes generated in the closure process are determined to be hazardous, they will be disposed of properly as a hazardous waste; otherwise, the material will be disposed of as an industrial waste. It should be noted that wash water and rinsate will not be allowed to drain to the waterway. It is anticipated that approximately 350 gallons of rinsate will require RCRA disposal.
- The equipment used to clean this area includes mops, pails, scrub brushes, a wet/dry vacuum, and containers. The mops, pails, and scrub brushes will be containerized and disposed of as hazardous waste. The wet/dry vacuum hose will be washed with a detergent solution to decontaminate it. The containers will be used to store the wastewater.

### Solvent Return/Fill Shelter Area

- This area is used to return the used mineral spirits to the storage tank.
- Closure of the solvent return receptacles (wet dumpster) will be made prior to the cleaning and removal of the storage tank.
- At closure, the sludge in the dumpsters ("dumpster mud") will be cleaned out and containerized, labeled, and manifested for proper disposal at permitted facilities.
- The dumpsters and the dock area will be cleaned with detergent solution and the rinsate analyzed for mineral spirits, volatile organic compounds, lead, and cadmium to determine the effectiveness of the decontamination. The area will continue to be washed and rinsed until levels are below detectable MCLs, or PQLs if MCLs are not available.
- The rinsing fluids will be discharged through the appurtenant piping system into the storage tank, which will be subjected to a separate closure procedure as described herein.
- The cleansed dumpster and dock structure will be reused by Safety-Kleen, or scrapped.
- The cleanup equipment and solutions disposal are the same as those listed earlier.

### PHASE I--OPEN THE TANK

- Access to aboveground tanks is obtained by removing manways.
- Prior to opening the tanks, the personnel should have full-face respiratory protection and protective clothing. Once the tanks have been opened they will be provided



with positive ventilation. The tanks will then be inspected to determine the approximate quantity and physical conditions of the remaining material.

## **PHASE II--REMOVING WASTE AND CLEANING TANK**

- Before removing the waste from the tank, all piping and appurtenant equipment will be flushed first with clean mineral spirits followed by detergent solution.
- The method to remove the waste material from the tanks will depend on the physical properties and quantities of that material. Prior to any person entering the tank, an effort will be made to remove as much liquid and sludge as possible.
- Subsequent to vacuuming the majority of the material from the tanks, it may be necessary to use a high pressure wash system using clean solvent and detergent solution to rinse residual material from the walls and bottom of the tanks. The evacuated material and the rinse solution will be returned to the recycle center for reclamation. The quantity of wash fluid used will be kept to a minimum in order to limit the amount of unnecessary material. The final rinsate will be analyzed for mineral spirits, volatile organic compounds, lead, and cadmium, using SW-846, to determine the effectiveness of decontamination. The tank will continue to be washed and rinsed until levels are below MCLs, or PQLs if MCLs are not available. Rinsate will be removed using a vacuum tanker truck and will be disposed of as hazardous waste. It is anticipated that approximately 2,000 gallons of rinsate will require RCRA disposal.
- Storage tanks are considered confined spaces, i.e., spaces open or closed having a limited means of egress in which poisonous gases or flammable vapors might accumulate or an oxygen deficiency might occur.

- Confined space entry requires special operating procedures:
  - ▶ Tanks are to be washed, neutralized and/or purged (where flammable atmosphere is present) prior to being entered.
  - ▶ Supply valves must be closed and "tagged" and bleeder valves left open, or supply piping should be disconnected.
  - ▶ Pumps or motors normally activated by automatic controls shall be operated manually to be sure they have been disconnected. Instrument power switches should be tagged "OFF."
  - ▶ On tanks where flammable vapors may be present, all sources of ignition must be removed.
  - ▶ All tanks must be tested for flammable vapors, toxic gases or oxygen deficiency, in that order, as applicable. The results of such tests should be displayed on the job site.
    - In all tank entering situations, an Oxygen Deficiency Test shall be performed prior to tank entry.
    - Under circumstances where "hot work" (welding, burning, grinding, etc.) is to be performed in or on the vessel, a test for combustible gases shall be taken. This is referred to as a "flash test."
    - In most circumstances, flash tests and oxygen deficiency tests will be performed by the supervisor of the area in which the work is being performed.

- Under any conditions where a possibility (no matter how remote) of toxic vapors being present in the tank to be entered exits, the supervisor will arrange to have the air tested.
- ▶ A set of wristlets or a rescue harness and sufficient rope must be present at the job site to effect a rescue. Any other rescue equipment considered necessary must also be on the job site.
- ▶ Workers should wear a rescue harness if entering a tank with a large enough opening to easily effect a rescue. In tanks with small openings, only wristlets may be used. However, in cases where there are agitator shafts, containers, or other hazards in which the man's life-line would be entangled and the supervisor in charge feels that wearing the life-line may entrap a man and increase the hazard, the wearing of a harness or wristlets may be eliminated.
- ▶ A constant source of fresh air must be provided to ensure a complete change of air every few minutes. In cases of short-term entry for inspection or removal of objects, an air mask is recommended. In cases of long-term entry (generally for repair) the use of an air mover should be considered.
- ▶ When a ladder is required to enter a tank, the ladder must be secured and not removed while anyone is in the vessel. In cases where a rigid ladder could become an obstacle, a chain ladder may be used.
- ▶ Adequate illumination must be provided.
- A flashlight or other battery operated light must also be available to provide illumination for a safe exit in the event of an electrical power failure.

- In any tank used to store flammable liquids, explosion-proof lighting must be used.
- ▶ All electrical equipment to be used inside the tank must be in good repair and grounded.
- ▶ Others working in the immediate area shall be informed of the work being done and they shall inform the watcher or supervisor immediately of any unusual occurrence which may make it necessary to evacuate the tank.
- The "buddy" (standby observer) system:
  - ▶ Men working inside a confined space must be under the constant observation of a fully-instructed standby observer.
  - ▶ Before anyone enters the tank, the standby observer will be instructed by the person in charge of the entry that:
    - An entry authorization must be obtained from the person in charge by anyone entering the tank.
    - A rescue harness or wristlets must be on the job.
    - The standby observer must know the location of the nearest telephone (with emergency numbers posted); safety eyewash/shower; fire extinguisher; and oxygen inhalator.
    - For all "hot work" inside a tank, the standby observer must be instructed how to shut down welding/burning equipment.

- As long as personnel are inside the vessel, the standby observer must remain in continuous contact with the worker. **HE IS NOT TO LEAVE THE JOB SITE EXCEPT TO REPORT AN EMERGENCY.**
  - **UNDER NO CIRCUMSTANCES SHOULD THE STANDBY OBSERVER ENTER THE VESSEL.** If the worker(s) in the tank becomes ill or injured, the watcher is to put in effect the emergency plan described in the attached Standard Operating Procedure.
  - The standby observer still **DOES NOT ENTER THE TANK** until help is available.
  - After being instructed in his responsibilities, the standby observer will sign an instruction form indicating his understanding.
- Welding and burning within a tank:
- ▶ All welding and burning equipment must be provided with a shutoff device under the control of the standby observer, and the standby observer must know how to shut off the equipment if it becomes necessary.
  - ▶ Welding and burning equipment will only be taken into a tank immediately prior to its use and must be removed from the tank immediately after the job is finished.
  - ▶ For all "hot work" inside a tank, a properly executed flame permit, if needed, must be displayed at the job site.
  - ▶ Standard welding and burning safety precautions will always be followed.

**PHASE III--REMOVE TANK**

- Disconnect and cap all appurtenant piping.
- Disconnect and decontaminate all appurtenant pumping equipment.
- The vessels shall be removed and reused by Safety-Kleen or cut up and sold as scrap.
- The surface soil beneath the fill pipes and beneath each tank (see Exhibit B) will be sampled and analyzed for volatile organic compounds, mineral spirits, lead, and cadmium.
- Contaminated soil, if it exists, shall be removed and properly disposed of. An additional work plan to determine the extent of contamination and remediation procedures will be submitted in this case.
- The secondary containment system will be disassembled. The construction materials will be tested with TCLP (pertinent constituents only). If the construction materials are classified as non-hazardous via TCLP, then they will be disposed of as a solid waste in a sanitary landfill. In the event the construction materials are identified as hazardous via TCLP, then the construction materials will be disposed of as a hazardous waste in accordance with RCRA regulations.

**PHASE IV--BACKFILLING AND REGRADING**

- Backfill any excavation with previously excavated material with proper compaction.
- Add additional backfill with proper compaction if necessary. The material must be of clean materials and easily compacted in place.

- Regrade the site to proper topography.
- Remove and dispose of nonusable debris.

#### **FACILITY CLOSURE SCHEDULE AND CERTIFICATION**

- Safety-Kleen may amend the closure plan at any time during the active life of the facility. The active life of the facility is that period during which wastes are periodically received. Safety-Kleen shall amend the plan any time changes in operating plans or facility design affect the closure plan or whenever a change occurs in the expected year of closure of the facility. The plan must be amended within 60 days of the changes.
- Within 90 days of receiving the final volume of hazardous wastes, or 90 days after approval of the closure plan, if that is later, Safety-Kleen shall remove from the site all hazardous wastes in accordance with the approved closure plan. The Regional Administrator may approve a longer period if Safety-Kleen demonstrates that:

The activities required to comply with this paragraph will, of necessity, take longer than 90 days to complete; or

The following requirements are met:

- ▶ The facility has the capacity to receive additional wastes;
  - ▶ There is a reasonable likelihood that a person other than Safety-Kleen will recommence operation of the site;
  - ▶ Closure of the facility would be incompatible with continued operation of the site;
- and

- ▶ Safety-Kleen has taken and will continue to take all steps to prevent threats to human health and the environment.
- Safety-Kleen shall complete closure activities in accordance with the approved closure plan and within 180 days after receiving the final volume of wastes or 180 days after approval of the closure plan, whichever is later.
- When closure is completed, all facility equipment and structures shall have been properly disposed of, or decontaminated by removing all hazardous waste and residues.
- When closure is completed, Safety-Kleen shall submit to the certification by an independent registered professional engineer that the facility has been closed in accordance with the specifications in the approved closure plan.



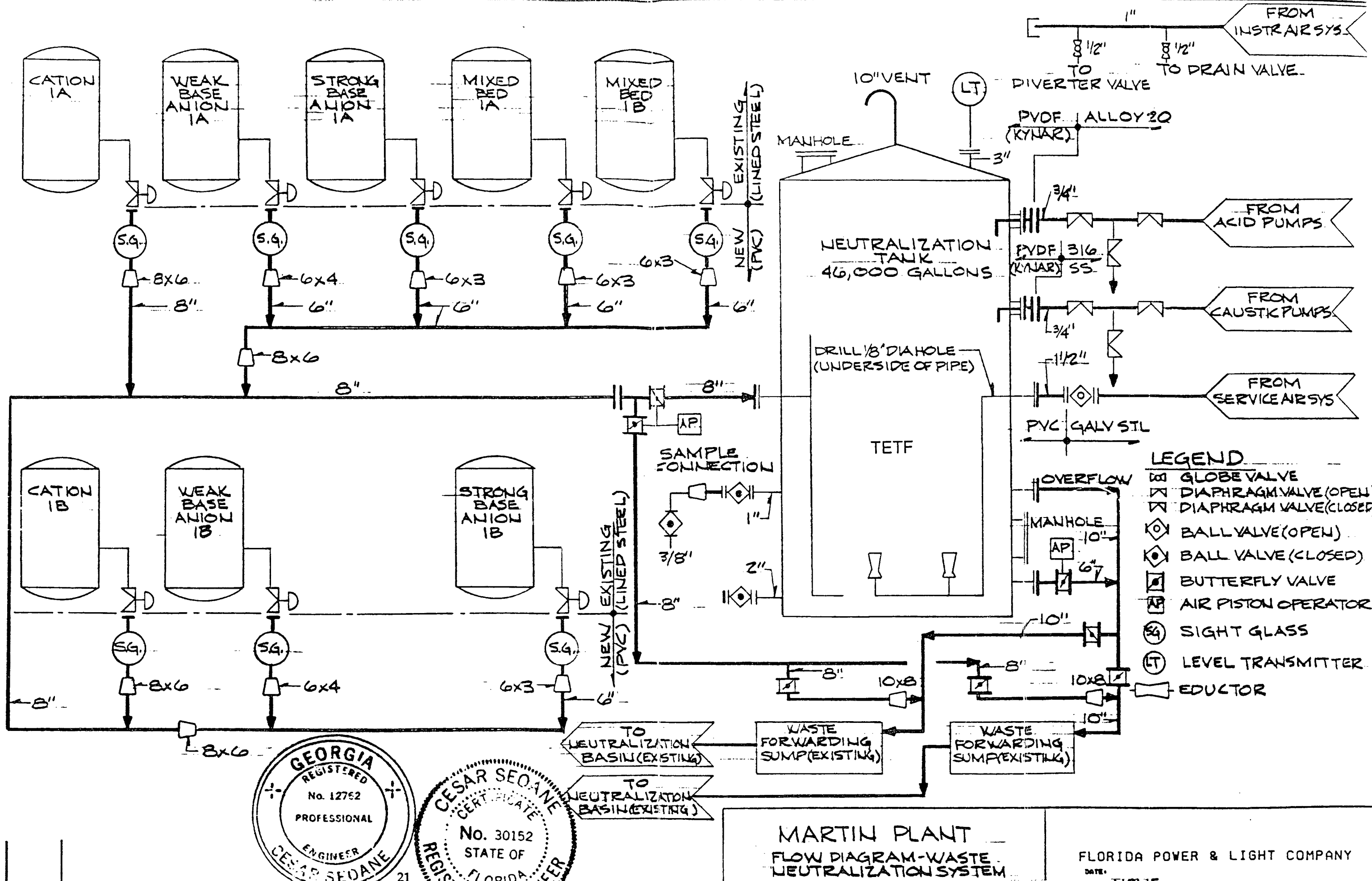
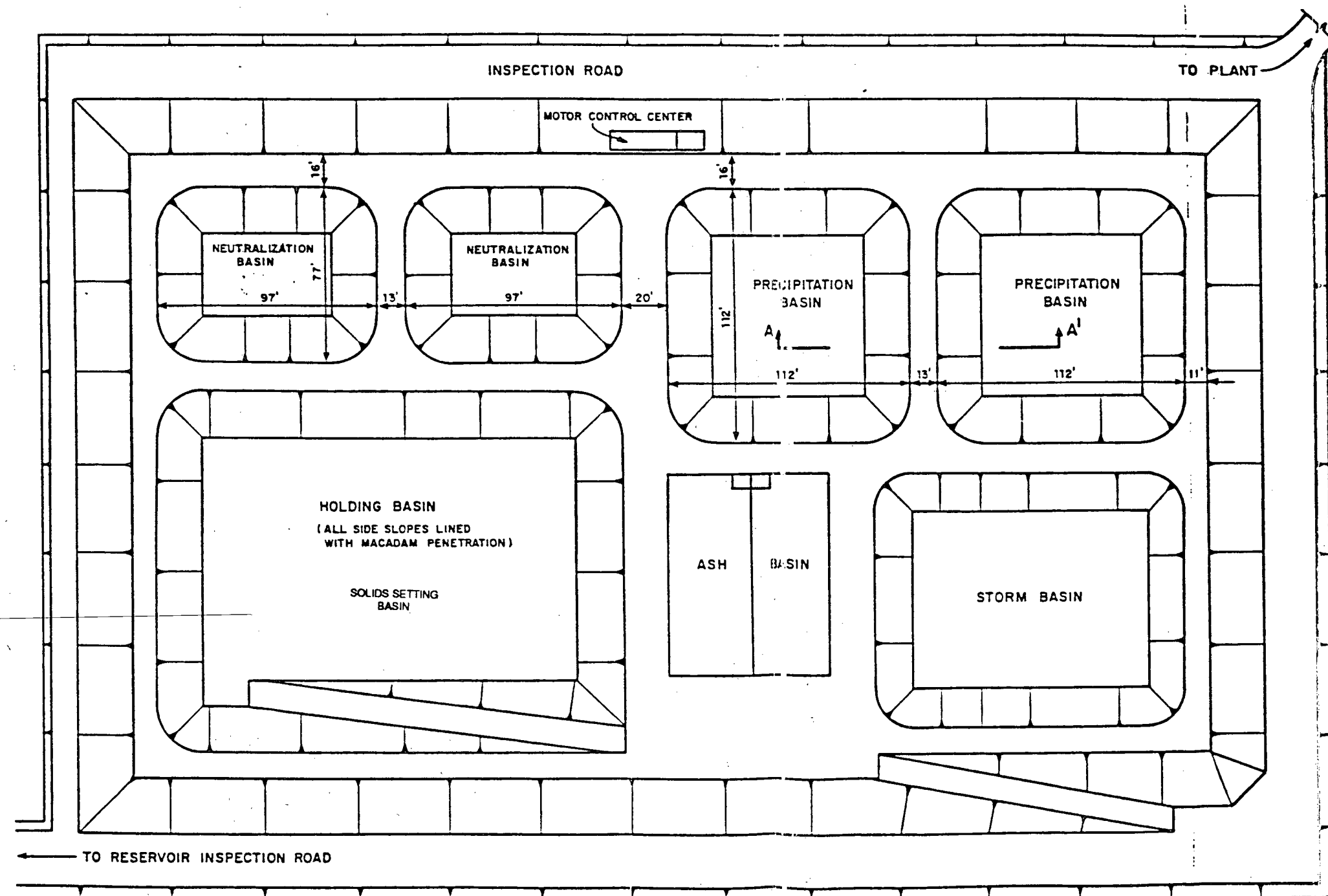


Figure 4. Schematic diagram of Martin Plant neutralization system.

FLORIDA POWER & LIGHT COMPANY  
 DATE: NONE  
 SCALE: NONE  
 SK 2269-M-64



NOTES:  
 1. BASED ON DRAWING BY MID-VALLEY INC., CIVIL, WASTE TREATMENT SYSTEM BASINS, PLAN, MARTIN PLANT MAY 25, 1977, DRAWING NO. 8-1095-4  
 2. FOR SECTION A-A' REFER TO FIGURE 12

0 40 80  
 SCALE FEET

Figure 5. Neutralization basins in plan view.