



FEDERAL EXPRESS

July 10, 1990
RO 90-232

Ms. A. Elizabeth Gordon, Ph.D.
New Mexico Health and Environment Department
1190 St. Francis Drive
Santa Fe, NM 87503

Subject: Farmington Service Center

Dear Dr. Gordon,

This has been prepared as an addendum to my June 11, 1990 letter. Please find enclosed copies of the design and integrity assessment of the used solvent storage tank system for the subject facility.

If you have any questions or require further information, please contact me on extension 2550.

Sincerely,

Rob Omiecinski

Rob Omiecinski
Environmental Permit Writer

RO/dfh

cc: W. Johnson, Denver Reg. Mgr.
Br. Mgr. (7-008-21)
B. Wachsmuth

DESIGN AND INTEGRITY ASSESSMENT
USED SOLVENT STORAGE TANK SYSTEM
FARMINGTON, NEW MEXICO BRANCH

To:

SAFETY-KLEEN CORPORATION

 **TERA, inc.**



TERA, inc.

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

90-150

TANK SYSTEM CERTIFICATION

I have conducted the design and integrity assessment dated July 5, 1990, of the used solvent storage tank system at the Safety-Kleen Corp. facility in Farmington, New Mexico. The EPA ID Number for this facility is: NMD 000804294.

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.

John W. Cox

Registered Professional Engineer

New Mexico No. 10317

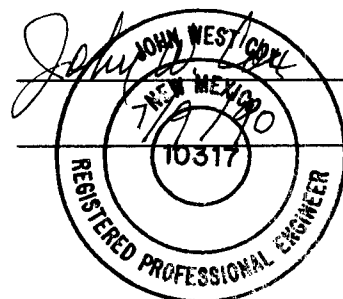
TERA, Inc.

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

July 5, 1990
90-150

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

Attention: Mr. Rob Omiecinski

Subject: Design and Integrity Assessment
Used Solvent System
Farmington Branch

Gentlemen:

Submitted here is our assessment report for the used solvent storage tank system at your Farmington 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.

John W. Cox, Ph.D., P.E.
Vice President

JWC/sv

Enclosures: Five (5) copies

Copy to Mr. Wayne Olson w/Enclosure



DESIGN AND INTEGRITY ASSESSMENT
USED SOLVENT STORAGE TANK SYSTEM
FARMINGTON, NEW MEXICO, BRANCH

* * *

To

SAFETY-KLEEN CORPORATION

* * *

By

TERA, Inc.
Houston, Texas

July 1990

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. Documented Age of System.....	4
5. Additional Design Considerations.....	5
INTEGRITY ASSESSMENT.....	5
SECONDARY CONTAINMENT ASSESSMENT.....	5
CONCLUSIONS OF ASSESSMENTS.....	9

ILLUSTRATION

<u>Title</u>	<u>Plate No.</u>
System Schematic.....	1

APPENDICES

- A. Design Documentation
- B. Design Review
- C. Description of Waste
- D. Inspection Records

This report documents the design and integrity assessment for a used solvent storage tank system at the Safety-Kleen facility in Farmington, New Mexico. The assessments described here are written to address the requirements of 40 CFR 264.191 and 40 CFR 264.193. These sections have been adopted entirely in Part VI of the Hazardous Waste Management Regulations of the New Mexico Environmental Improvement Board (EIB/HWMMR-5).

SYSTEM DESCRIPTION

Used mineral spirits solvent is poured from containers into an open-top aboveground steel solvent return receptacle (wet dumpster). The used solvent is pumped from the dumpster through aboveground piping to a nearby 12,000-gallon capacity steel storage tank. Accumulated used solvent and sludge are periodically removed from this "used solvent storage tank" for offsite recycling. Solvent removal is performed by a tank truck through a 3-inch pipe. Sludge and solids are removed through a manway.

The storage tank is a vertical cylinder with a shallow cone roof and a flat bottom. The tank is supported on a skid of galvanized steel rectangular tubes. The dumpsters and pump are located within a curbed concrete containment area in an adjacent "dump and fill" dock. The used solvent storage tank is vented to the atmosphere. Liquid level is monitored daily by reading a level indicator. A schematic drawing of the used solvent storage system is shown on Plate 1.

CONSIDERATIONS OF DESIGN ASSESSMENT

1. Design Standards (40 CFR 264.191(b)(1))

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.

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

- National Fire Protection Association, NFPA 30, Flammable and Combustible Liquids Code, 1987 Ed. (tank and piping)
- American Petroleum Institute, API 12F, Specification for Shop Welded Tanks for Storage of Production Liquids (tank)
- Hydraulics Institute Standards (pump)
- American Concrete Institute, ACI 318-89, Building Code Requirements for Reinforced Concrete (containment slab floor)
- American Concrete Institute/American Society of Civil Engineers, Building Code Requirements for Masonry Structures, ACI 530-88/ASCE 5-88 (containment walls)
- American Petroleum Institute, API 650, Appendix E (tank seismic response analysis)
- American National Standards Institute, ANSI A58.1-1982 (tank wind response analysis)

The dumpster design has been developed by Safety-Kleen's engineering staff and incorporates the experience of over 15 years of operating service. Standards are internal to the Company and are expressed mainly by their fabrication drawings. Appendix A contains a copy of the dumpster assembly drawing and a letter from Safety-Kleen's engineering manager giving the service history of this equipment.

CONSIDERATIONS OF DESIGN ASSESSMENT (Continued)

1. Design Standards (40 CFR 264.191(b)(1)) (Continued)

Calculations, discussion and checklists which evaluate compliance with these codes are given in Appendices B and D. The design review shows that:

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

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

The conclusion upon review of the documents is that the design of the used solvent storage tank system is appropriate for the intended service.

2. Hazardous Characteristics of the Waste (40 CFR 264.191(b)(2))

The waste stored in this system is a used mineral spirits (petroleum distillate) solvent from a variety of cleaning and degreasing operations. A description of the expected waste materials is attached in Appendix C.

The material will be two-phase (liquid and sludge) at ambient temperatures. Its primary hazardous characteristic is ignitability, EPA hazard code I. Materials such as heavy metals from cleaning operations may also cause the used solvent and/or sludge to exhibit the characteristic of EP toxicity, EPA hazard code E.

3. Corrosion Protection (40 CFR 264.191(b)(3))

The exterior of the dumpster is protected from corrosion by paint. Pipes outside the dump and fill shelter are galvanized and painted for protection from weather. Inside piping is either galvanized or left with its mill finish. Both have proven to be adequate corrosion protection under roof. The exterior of the steel tank is protected by a paint coating. As described by the inspection record and photographs of Appendix D the tank paint was found to be in a satisfactory condition.

System components are not provided with any specific internal corrosion protection measures. Review of the chemical composition of the waste material shows it to be compatible with and not corrosive to the dumpster, piping, and tank materials. A possible exception is water which tends to form a layer at the bottom of the tank. However, corrosion at the tank wall/water interface is inhibited because of limited free oxygen in the waste, together with waste removal procedures by Safety-Kleen which result in little if any exposure of this interface to air. Additionally, prior experience at other Safety-Kleen installations indicates that the waste material is compatible with the system materials of construction.

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

No external metal component will be in contact with soil or water. Therefore, the tank system does not require cathodic protection.

4. Documented System Age (40 CFR 264.191(b)(4))

The fabricator's nameplate on the tank shows the tank was fabricated in 1981. Safety-Kleen personnel recall that the tank system

4. Documented System Age (40 CFR 264.191(b)(4)) (Continued)

was also installed in 1981. Based on this information the system age is taken to be nine (9) years at the time of this assessment.

5. Additional Design Considerations

No underground components are used in this system, and no adverse effects from vehicular traffic have been identified. The dumpsters are separated from vehicles by concrete filled steel pipes embedded in reinforced concrete. The storage tank is located within the walls of the secondary containment system. Piping not within secondary containment has welded joints.

The tank foundation appears to be adequately designed to support the load of a full tank, and there was no sign of distress due to frost heave. Anchorage is not required to resist anticipated seismic or wind loads. The tank system is not located in a saturated zone.

INTEGRITY ASSESSMENT (40 CFR 264.191(b)(5))

Visual inspection of system components was made on June 13, 1990. The purpose of this inspection was to confirm compliance with plans and to identify leaks, defects or damage. Inspection records are presented in Appendix D and show that the only corrective actions needed are to ground the tank and remove the padlock from the emergency vent cover. Ancillary equipment was found to be adequately supported and protected from damage.

SECONDARY CONTAINMENT ASSESSMENT

The following paragraphs give a comparison of the containment system features to current requirements. For brevity, "secondary containment" as used here means features that meet the requirements of 40 CFR 264.193.

SECONDARY CONTAINMENT ASSESSMENT (Continued)

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

This system was placed in service in 1981. Secondary containment is required by regulations in 1996.

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

The waste material collected and stored by the system is a used mineral spirits solvent which consists primarily of mineral spirits plus water, solids, oil, and grease picked up in various cleaning and degreasing operations. The primary hazardous characteristic of the waste is ignitability. Based both on literature and on Safety-Kleen's past experience, this material is compatible with and not corrosive to the materials of construction. These are primarily concrete, carbon steel, and polyurethane and epoxy coatings.

3. Strength (40 CFR 264.193(c)(1))

The most critical strength requirement for the floor slab of the tank containment structure is to provide foundation support for the clean and used solvent tanks when full. As shown by the calculations in Appendix B, and by satisfactory service, the strength of the floor slab appears to be adequate.

The most critical strength requirement for the containment walls is to resist hydrostatic pressure from containment of 12,000 gallons of spilled waste plus a 25-year, 24-hour rainfall. As shown in Appendix B, the concrete masonry unit wall construction appears to be adequate for this purpose.

3. Strength (40 CFR 264.193(c)(1)) (Continued)

The pressure containment capacity of the pump, piping and other ancillary equipment items was reviewed and found to be adequate for the intended service, as discussed in Appendix B.

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

As shown in Appendix B, the foundation support provided by the floor slab appears to be sufficient to avoid failure of the containment structure due to settlement, compression, uplift and pressure gradients. This conclusion is supported by satisfactory service of the foundation to date.

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

All components of this system are aboveground and accessible for visual inspection. Leak detection is provided by daily visual inspection of the containment system for prompt detection of leaks and removal of liquids if required.

6. Liquid Removal (40 CFR 264.193(c)(4))

A blind sump is located at mid-length of the south wall of the containment vault. The vault floor is sloped to promote drainage to this point. Liquid removal is accomplished by hand pump or vacuum truck.

7. Requirements for Vault System (40 CFR 264.193(d) and (e)(2))

As shown on page B-1 of Appendix B, the containment vault for the tank has a design capacity sufficient to hold 100 percent of the tank capacity plus precipitation from a 6.8 inch rainfall. According to Weather Bureau Technical Paper No. 40, the 25-year, 24-hour design

7. Requirements for Vault System (40 CFR 264.193(d) and (e)(2))
(Continued)

rainfall at this site is 2-1/2 to 3 inches. Thus, containment capacity is more than required by 264.193(e)(2)(ii).

Interior concrete surfaces have been coated with a polyurethane epoxy paint. Based on manufacturer's literature and previous experience at other Safety-Kleen facilities, the paint appears to be impermeable to and compatible with the waste to be stored.

Both containment areas (dump and fill curbed area and concrete tank vault) are well ventilated and open to the atmosphere. This feature, together with daily inspections minimize the opportunity for accumulation of explosive vapors.

The containment structures are not subject to external hydrostatic pressures. These could only come from beneath the concrete slabs, and surrounding topography makes this an unlikely event.

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

As shown on page B-2 of Appendix B, the curbed containment area for the dump and fill dock has adequate capacity to contain the entire contents of a full dumpster.

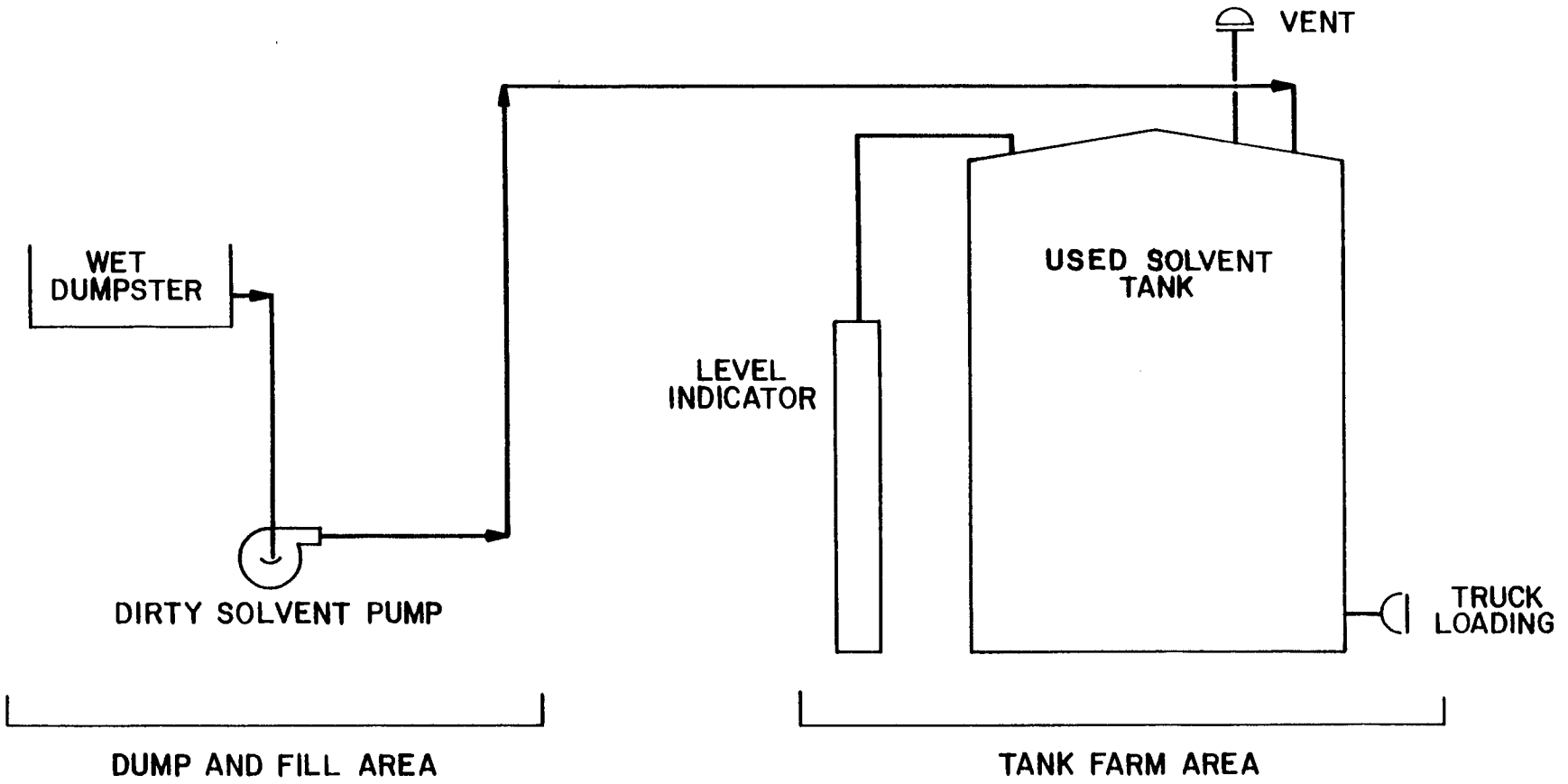
The piping and pump of this system are aboveground. The pump and all non-welded piping joints are located within (or above) the concrete containment structures. The pressure containment capacity, support and protection of ancillary equipment appears to be satisfactory.

CONCLUSIONS OF ASSESSMENTS

Based on the information presented in this report, the used solvent storage tank system at Safety-Kleen's facility in Farmington, New Mexico, appears to be designed to have adequate structural strength and compatibility with the wastes being handled. The system was found to be structurally sound; was not leaking or threatening to leak to the environment; and has adequate secondary containment for the tank and its ancillary equipment.

When the corrective actions named above are complete the tank system will be in compliance with 40 CFR 264.191 and 40 CFR 264.193, the governing rules for these assessments.

ILLUSTRATION



SYSTEM SCHEMATIC

APPENDIX A
Design Documentation

APPENDIX A

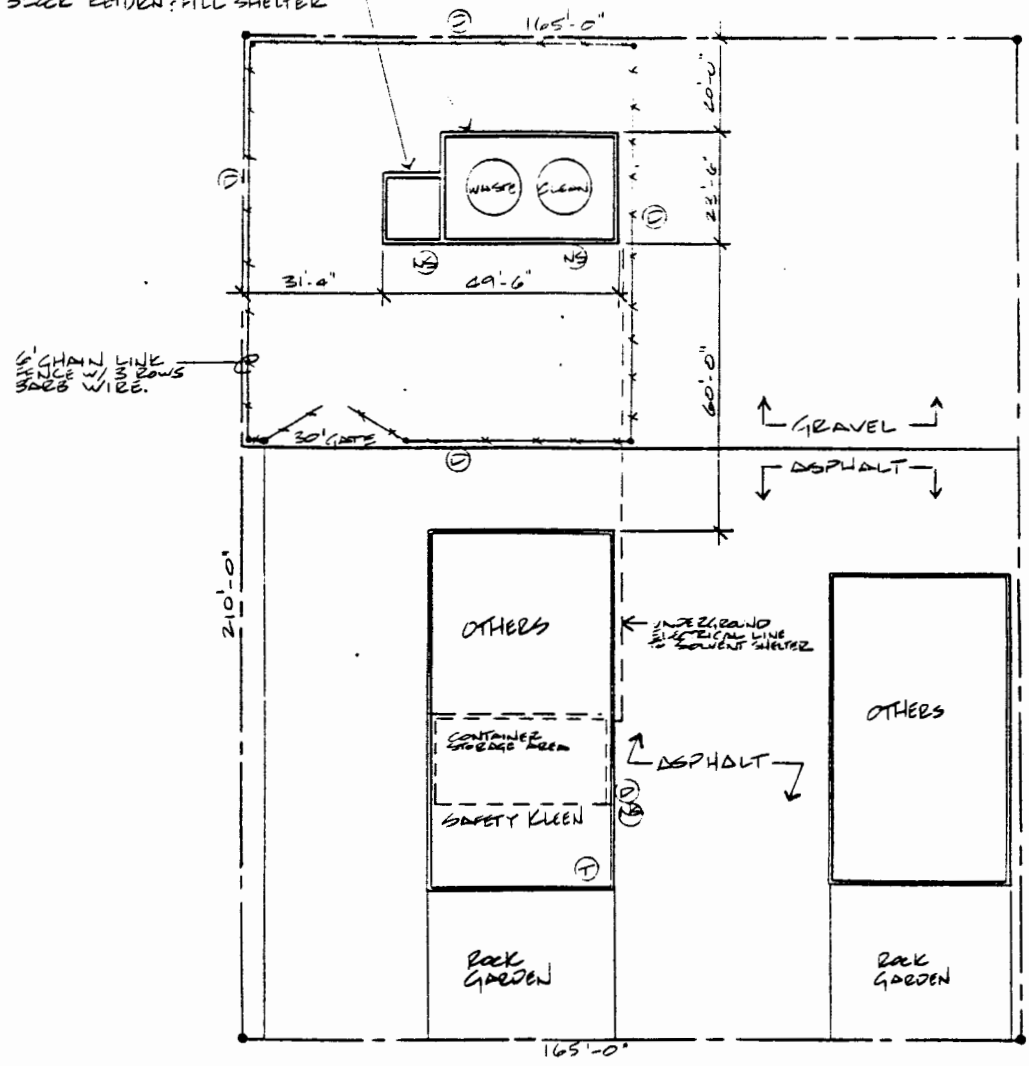
Design Documentation

The following drawings and other design data were provided by Safety-Kleen to describe the used solvent tank system design. These were used in the design and integrity assessment. Those marked * are included in this appendix.

<u>Title</u>	<u>Plate No.</u>
* Site Plan, Farmington, NM Branch, D13712.....	A- 1
* Floorplan Showing Various Improvements to Building, Satellite Branch, Farmington, NM, D10239.....	A- 2
* Tank Farm Plan, Farmington, NM Branch, D13713.....	A- 3
* Typical Concrete Construction Details, D11322.....	A- 4
Tank Skid, D13146	
High Level Alarm System Details, D13102	
Used Solvent Storage Tank Installation Details, D11124	
* Solvent Pump Piping Installation Details, D11150.....	A- 5
* Dumpster Final Assembly Details, D10450.....	A- 6
* Safety-Kleen Letter re Standard Dumpster Design and Performance.....	A- 7
Dumpster Valve and Hose Assembly, D10452	
* Emergency & Gate Valve Installation Details, C11302.....	A- 8
Aboveground Vertical Tank Anchoring Assembly Details, C10262	
* Moorman Bros. Tank Gauge Installation, A10243.....	A- 9
* Coating Information Letter, 7/31/89.....	A-10
Carboline, Sikaflex, Federal International Chemicals, and DuPont Coating Product Data Sheets	



DISCOVER/ROUND TANK FARM
 NO 12,000 GALLON STORAGE
 TANKS FOR CLEAN & WASTE
 MINERAL SPIRITS. ONE BAY
 BLACK RETURN/FILL SHELTER



HAWKIN LANE

SITE PLAN
 SCALE 1" = 20'

(A)

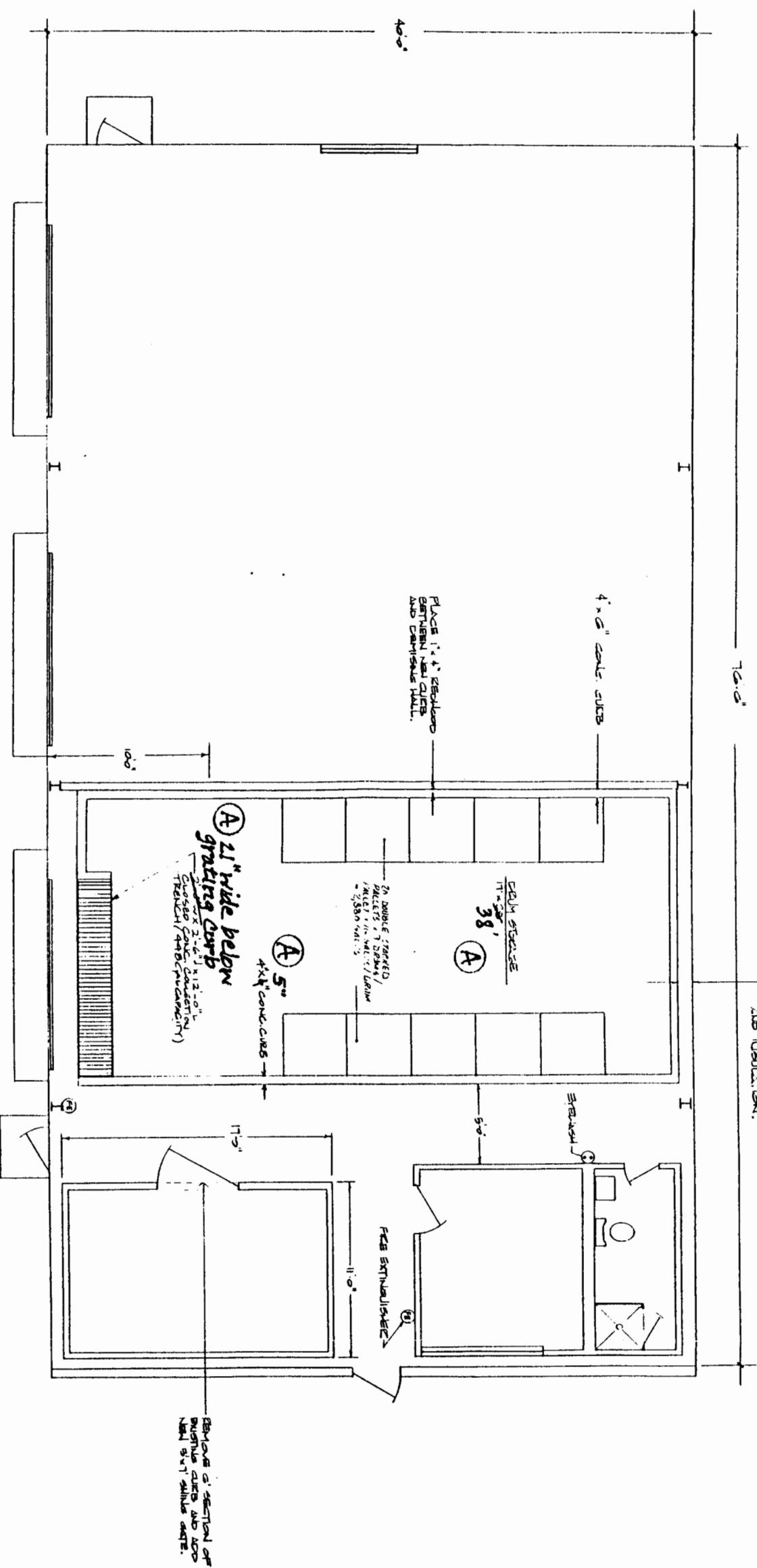
- LEGEND:
- (1) (7) - TELEPHONE
 - (12) (13) - FIRE EXTINGUISHER (TYPICAL 5" ABC CLASS)
 - (14) (15) - FIRST AID STATION
 - (16) (17) - "DANGER" SIGN
 - (18) (19) - "NO SMOKING" SIGN
 - (20) (21) - "CORROSIVE" SIGN
- NEW ——— EXISTING

(A) As shown
 J. W. Coyle
 6/13/90

PLATE A-1

TITLE		SITE PLAN 4200 HAWKIN LANE	
DRAWN BY		SAFETY-KLEEN CORP. 777 W. TANNER ROAD - ELKON, ALABAMA 35120	
NO	DESCRIPTION	BY	ONE
1	REVISION FROM CBS PROVIDED INFO AS BUILT DATED 9/82	WEY	11/81
SCALE		1" = 20'	DATE
DRAWING NO.		7-008-21	DATE
PROJECT NO.		D13712	DATE
REV		1	DATE

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.



Allow structural steel installation of interior wall over exposed beams and insulation.

Remove a section of existing curb and top NEW 5' x 1' slabs set.

LEGEND:

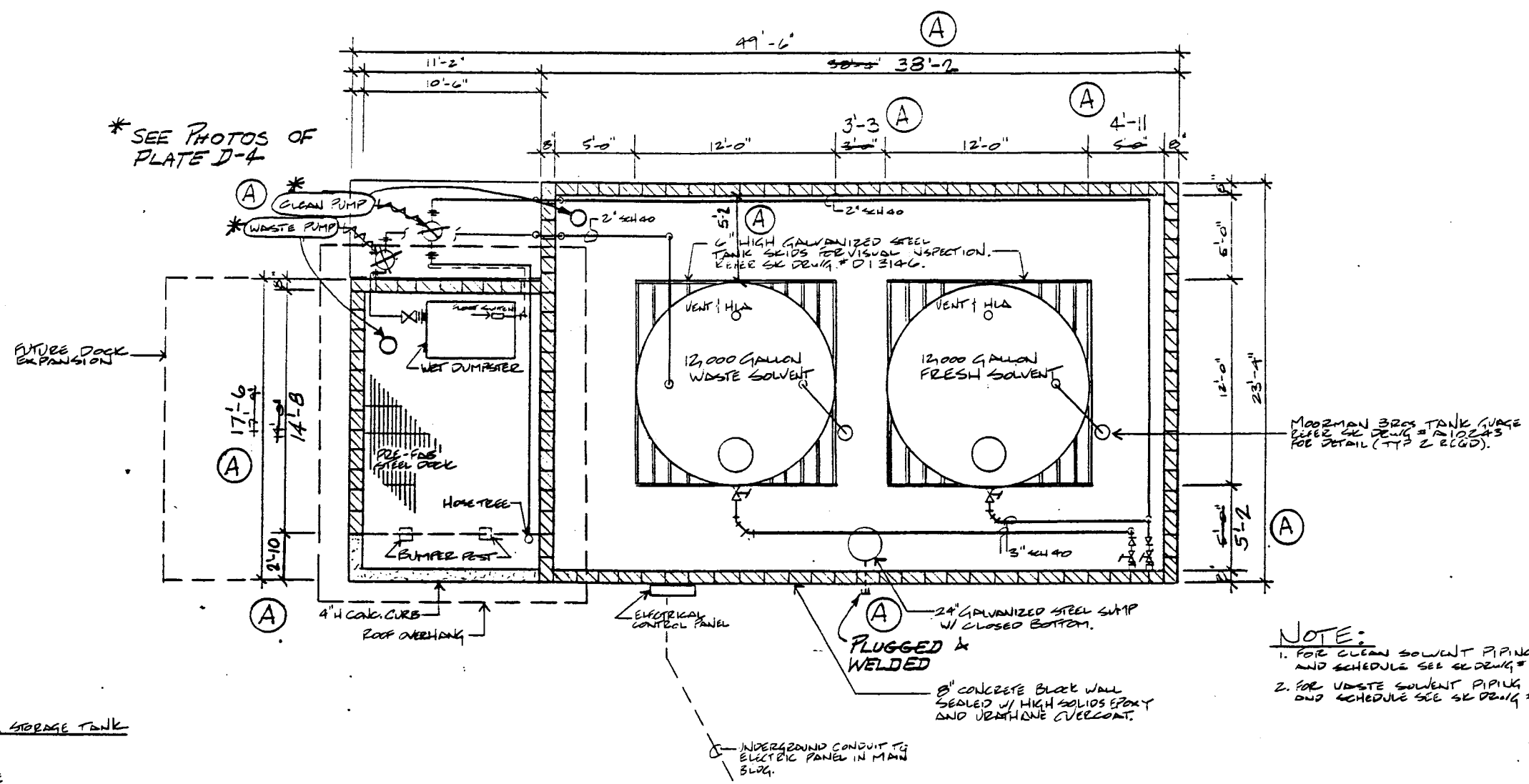
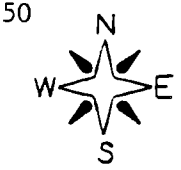
- ① - TELEPHONE
- ② - FIRE EXTINGUISHER (TYPICAL 5" J.D.C. GLASS)
- ③ - RACK AND SWITCH
- ④ - DANGER SIGN
- ⑤ - NO SMOKING SIGN
- ⑥ - CARESSIVE SIGN
- NEW
- EXISTING

RE-BUILT
 J. W. Lee 6/13/90

PLATE A-2

S
 FLORIDIAN STAINLESS METALS
 IMPROVEMENTS TO BUILDINGS

DATE	BY	PROJECT	NO.
6-1-90	J. W. Lee	SATELLITE BRANCH	D10231



NOTE:
1. FOR CLEAN SOLVENT PIPING DIAGRAM AND SCHEDULE SEE SK DWG # D11123.
2. FOR WASTE SOLVENT PIPING DIAGRAM AND SCHEDULE SEE SK DWG # D11124.

DIKE VOLUME CALCULATION: 12,000 GAL STORAGE TANK

FORMULAE USED:

$T(7.48 \text{ GAL/ft}^3) = \text{TANK DISPLACEMENT VOLUME}$
 $LWH(7.48 \text{ GAL/ft}^3) = \text{DIKE VOLUME}$

- r (TANK RADIUS) = 6'-0"
- L (DIKE LENGTH) = 37'-0"
- W (DIKE WIDTH) = 22'-0"
- H (DIKE HEIGHT) = 3'-0"

DIKE VOLUME: $(37'-0")(22'-0")(3'-0")(7.48 \text{ GAL/ft}^3) = 18,266 \text{ GAL}$
 VOLUME OF LARGEST TANK WITHIN THE DIKE AREA: - 12,000 GAL
 TANK DISPLACEMENT VOLUME: $T(7.48 \text{ GAL/ft}^3) = 2,115 \text{ GAL}$
 Note: TANK DISPLACEMENT ADJUSTED FOR TANK SLID.
 25 YEAR RAIN 24 HOUR PERIOD: 4.5" x DIKE AREA = - 2,203 GAL
 10% SAFETY FACTOR = - 1,200 GAL
TOTAL EXCESS 668 GAL

TANK FARM PLAN
SCALE = 1/4" = 1'-0"

- LEGEND:**
- (T) = TELEPHONE
 - (F) = FIRE EXTINGUISHER (TYPICAL 5" ABC CL.)
 - (A) = FIRST AID STATION
 - (D) = "DANGER" SIGN
 - (S) = "NO SMOKING" SIGN
 - (H) = "DANGEROUS" SIGN

NEW ——— EXISTING ———

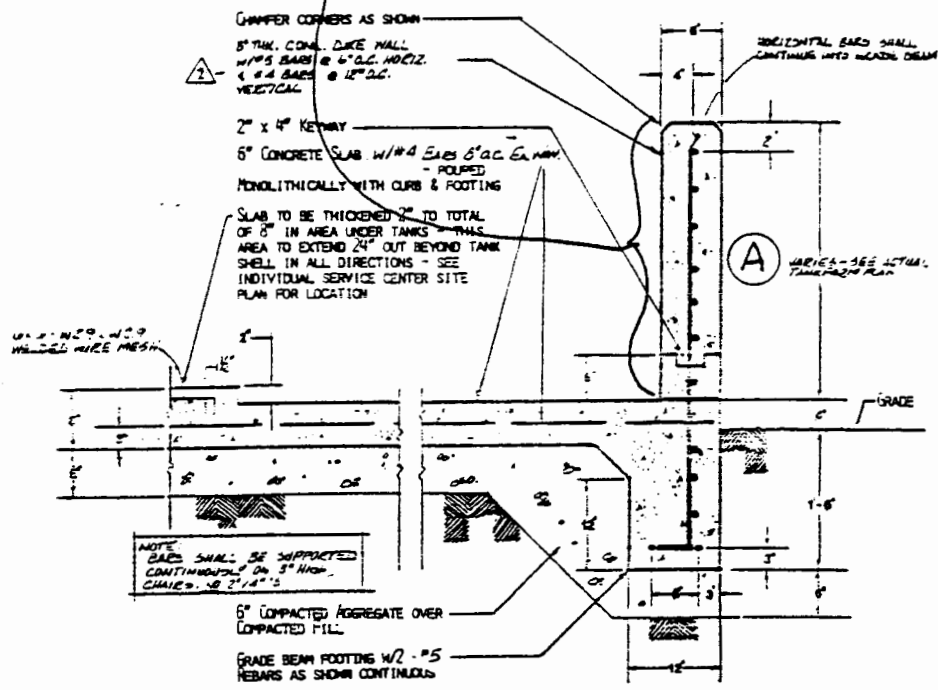
PLATE A-3

(A) As-built details observed 6/13/90
J.W. Coy

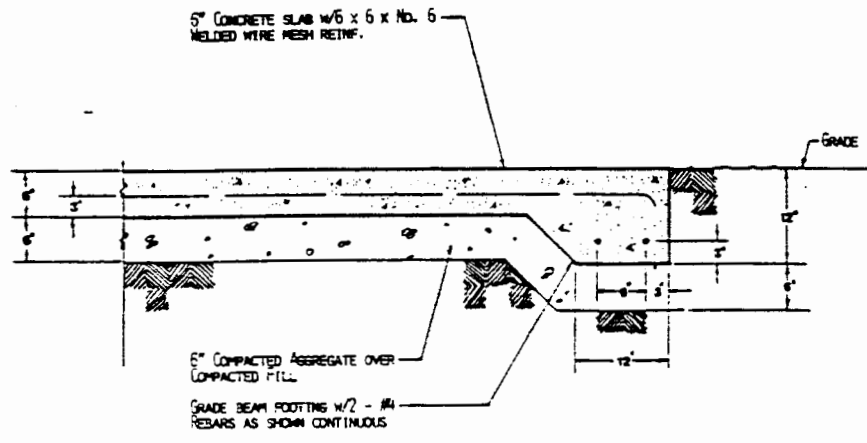
TITLE TANK FARM PLAN											
SAFETY-KLEEN CORP. 777 BIG THREE ROAD • BLOOMINGDALE, ILL. 61710 PHONE 708/237-6400											
NO	DESCRIPTION	BY	CHK	APPV	DATE	SCALE	DRAWN	CHECKED	ENGINEERING APPV	OPERATION APPV	DATE
1	REDESIGNED FROM CBS SUPPLIED INFO REPLACES SK # D10238 & D10758	WEY			4/89	1/4" = 1'-0"	WEY				
							FAZMINOTON, N.M.				
							7-COB-21			D13713	1

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.

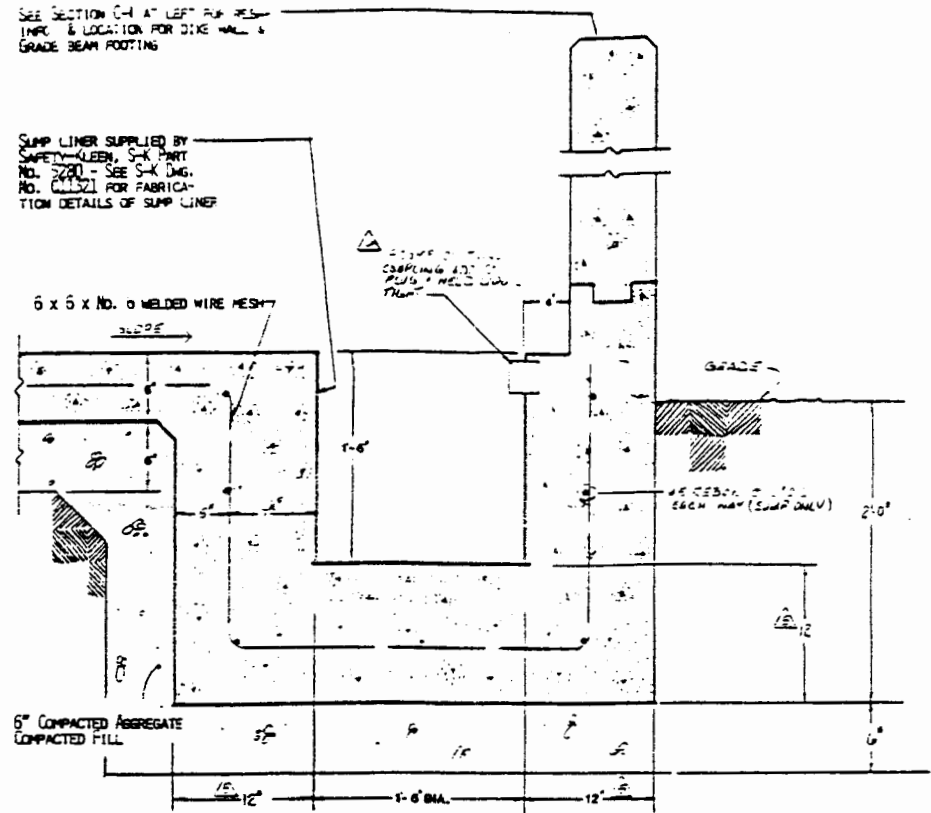
CONTAINMENT WALL IS MASONRY (8"x8"x16" CMU'S) SEE PLATE D-4 PHOTOS (A)



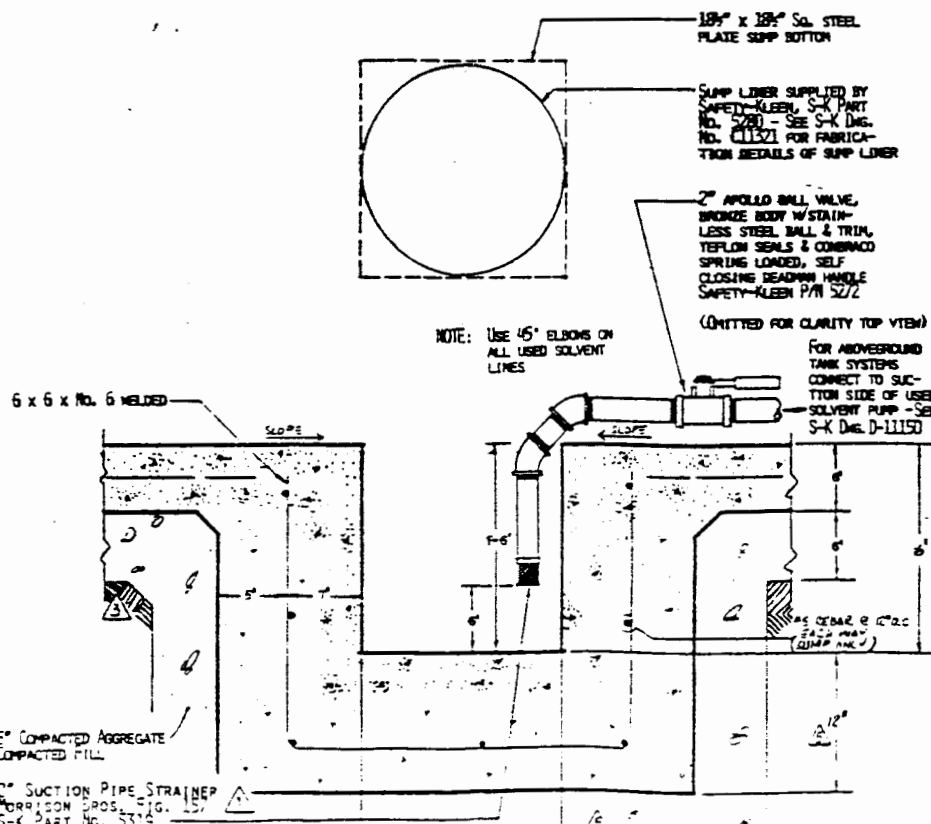
(C1) SECTION C-1: TANK SLAB & DIKE WALL CONSTRUCTION DETAIL SCALE: 1" = 1'-0"



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

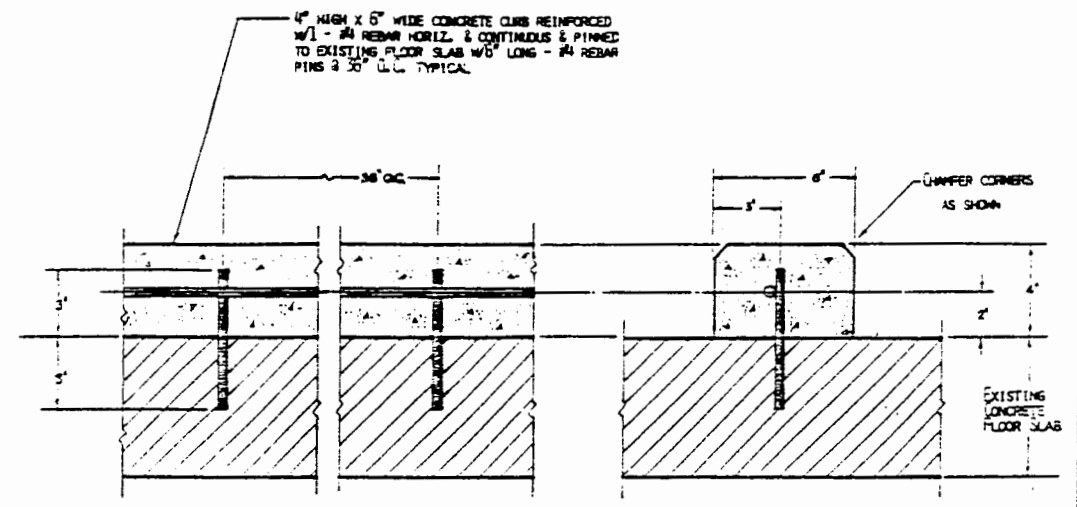


(C3) SECTION C-3: TANK FARM SUMP CONSTRUCTION DETAIL SCALE: 1 1/2" = 1'-0"

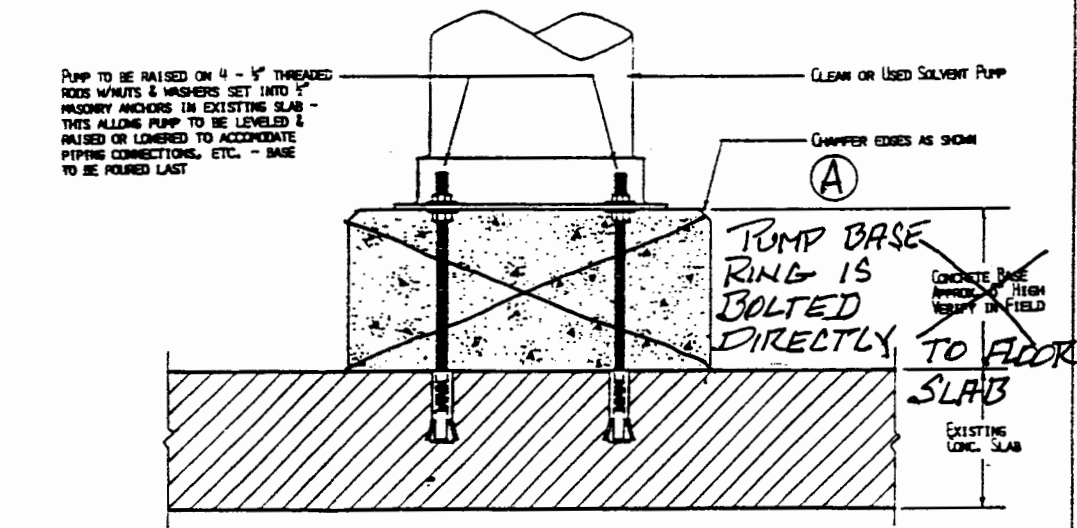


(C4) SECTION C-4: RETURN & FILL AREA SUMP CONSTRUCTION DETAIL SCALE: 1 1/2" = 1'-0"

NOTE: FOR AREAS WHERE CURBING IS TO BE INSTALLED FLOOR SURFACE TO BE CLEANED & SCOURED W/ 3-20 ACID SOLUTION IN PREPARATION FOR EPOXY BONDING AGENT. BONDING AGENT TO BE N.A. MENDOCINO INTRALOX ACRYLIC LATEX OR APPROVED EQUAL AND TO BE APPLIED PRIOR TO POURING CURB.



(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 SUPERSEDES SAFETY-KLEEN DRAWINGS 010240, 010622, 010507 AND 010555.
 - 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.

(A) *As built* PLATE A-4
J.W. Cox 6/13/90

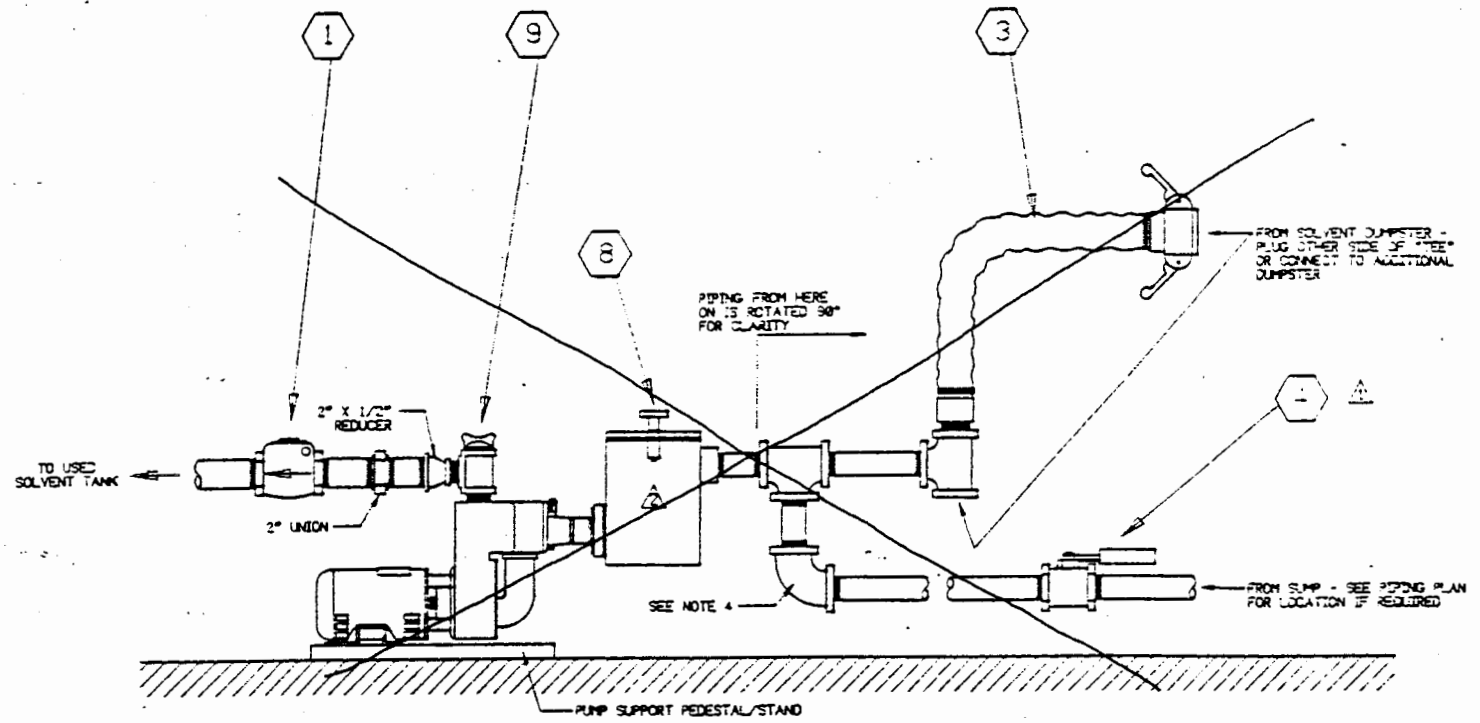
REV	DESCRIPTION	BY	DATE
1	ADDED SUMP LINER	RD	11-27-90
2	THICKENED CURB IN SUMP SECT. 09 & 24	RD	11-27-90
3	ADDED 2" DRAIN LINE & BALL VALVE/S	RD	11-27-90
4	ADDED U.G. DRAIN LINE FROM SUMP DET. 24	RD	11-27-90
5	VERT. BAR SPACING WAS 48"	WLD	11-27-90
6	ADDED NOTE 5 & PIPE STRAINER	WLD	11-27-90

SAFETY-KLEEN CORP.
 19000 TOWER ROAD • ELGIN, ILL. 60120 • PHONE 708/838-8888

TYPICAL CONCRETE CONSTRUCTION DETAILS - AS SHOWN

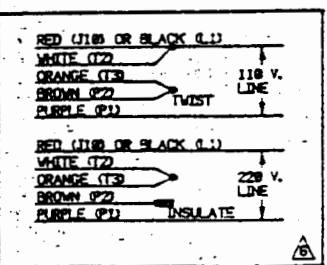
FOR SERVICE CENTER BRANCH IMPROVEMENTS &/OR CONSTRUCTION

D11322

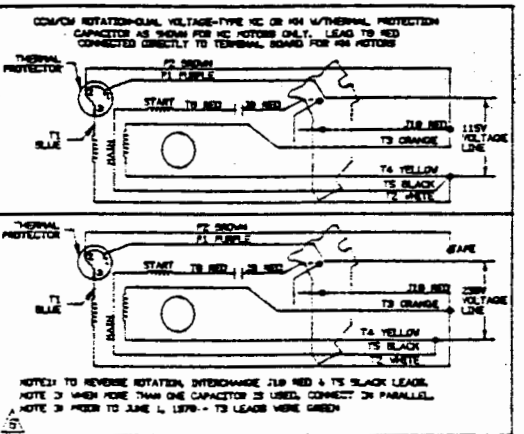


EQUIPMENT / FIXTURE SCHEDULE				
MARK	SIZE	DESCRIPTION	SK PART NO.	REMARKS
1	2"	2" BRONZE CHECK VALVE - MORRISON BROS. FIG. 246-A	S288	
2	2"	2" HARLOW PUMP - 28 EVP 18A 1 HP EXPLOSION PROOF MOTOR W/FUNCTION BOX - VITON FITTED	S248	SEE SPECIFICATION DETAILS ON SAFETY-KLEEN DWG. A11118 BELOW
3	2"	2" DUMPSTER HOSE ASSEMBLY	S234	SEE SAFETY-KLEEN DWG. D12452 FOR DETAILED INFORMATION
4	2"	2" APOLLO BALL VALVE BRONZE BODY 1/4" STAINLESS STEEL BALL & TITAN TEFLON SEALS & CORBRACO SPRING LOADED SELF CLOSING DEADMAN HANDLE	S272	
5	2"	2" BACK PRESSURE VALVE VERTICAL TYPE WITH 8 PSI SPRING SETTING - MORRISON BROS. FIG. 158-3/PR (15 P.S.I. OPEN)	S258	FOR ABOVEGROUND TANK INSTALLATION ONLY
6	2"	2" LINE STRAINER W/TOP CLEAN-OUT 1/2" MESH MORRISON BROS. FIG. 286	S269	
7	2"	2" BRONZE GATE VALVE MORRISON BROS. FIG. 255	S236	
8	2"	2" HARLOW SUCTION STRAINER ASSEMBLY MODEL 312X 1/2" STAINLESS STEEL BASKET W/818 PERFORATIONS	S313	FLANGED DISCHARGE PORT OF STRAINER SERVES AS UNION ON SUCTION SIDE OF PUMP
9	1 1/2"	1 1/2" HARLOW PUMP - 1 1/2" 2R4SEC. SINGLE PHASE EXPLOSION PROOF, BUMA FITTED, SELF PRIMING CENTRIFUGAL	S338	SEE DETAIL BELOW LEFT

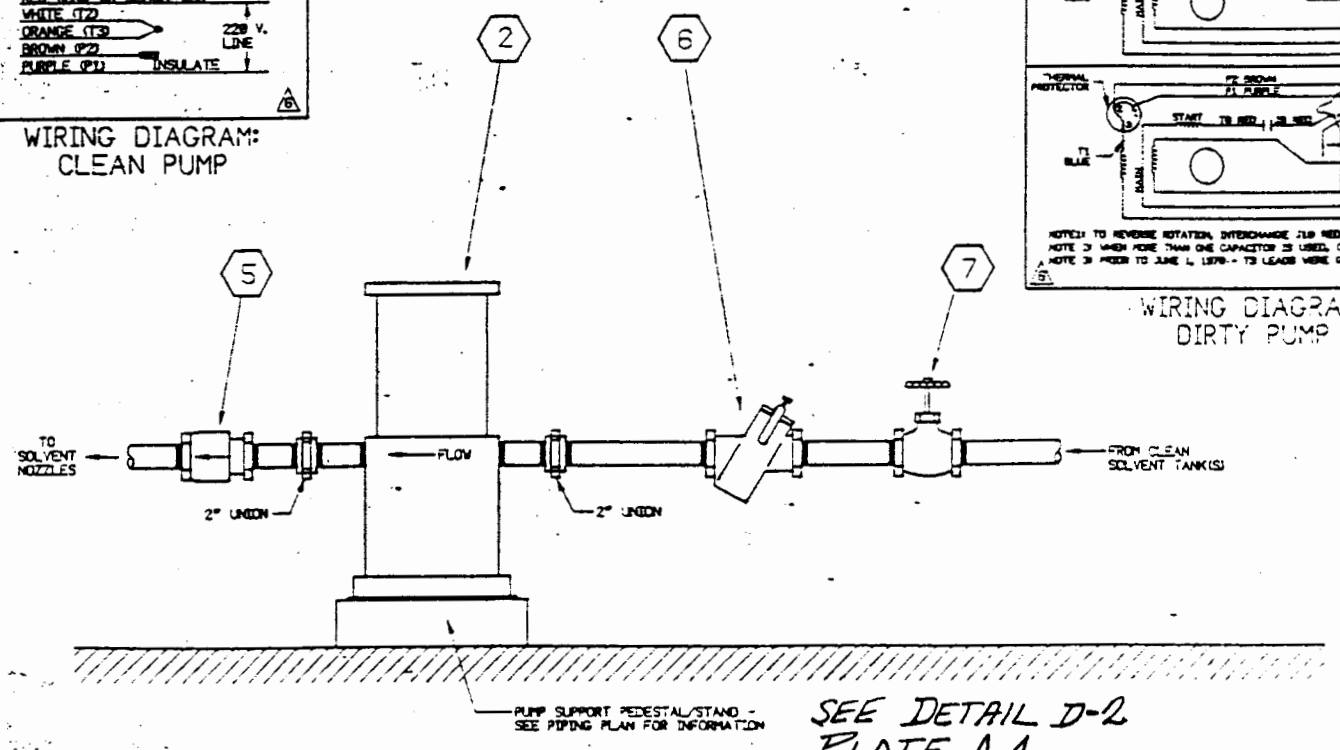
USED SOLVENT PUMP INSTALLATION



WIRING DIAGRAM: CLEAN PUMP

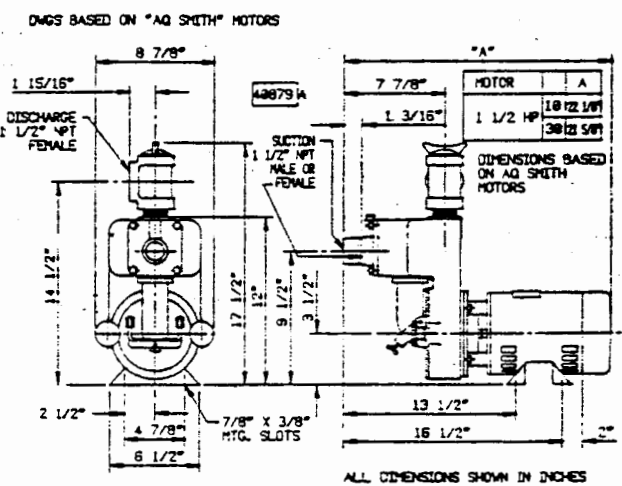


WIRING DIAGRAM: DIRTY PUMP



CLEAN SOLVENT PUMP INSTALLATION

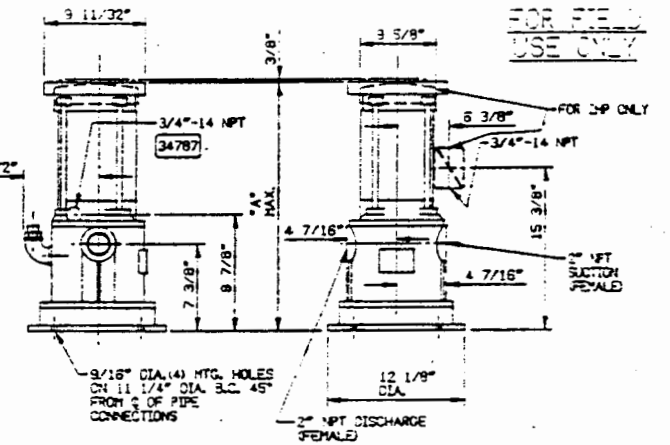
PUMP UNITS WITH OPEN MOTORS 1 1/2" 2R4SEC



ALL DIMENSIONS SHOWN IN INCHES
THESE DIMENSIONS NOT TO BE USED FOR CONSTRUCTION PURPOSES WITHOUT FORMAL FACTORY APPROVAL

GENERAL NOTES

- 1 THIS DRAWING SUPERCEDES SAFETY-KLEEN CORP. DRAWING A1118
- 2 SEE INDIVIDUAL SERVICE CENTER SITE & PIPING PLANS FOR LOCATIONS & ARRANGEMENT OF THESE DETAILS.
- 3 FOR UNDERGROUND TANK INSTALLATIONS, A 90° CHECK VALVE MORRISON BROS. FIG. 127 OR APPROVED EQUAL SHOULD BE INSTALLED AT TOP OF TANK ON CLEAN PUMP SUCTION LINE (CLEAN TANKS ONLY).
- 4 ALL PIPING TO BE 2" SCHEDULE 40 GALVANIZED UNLESS OTHERWISE SPECIFIED. ALL CHANGES OF DIRECTION IN DIRTY SOLVENT PIPING TO BE ACCOMPLISHED USING EITHER (2) 45° ELBOWS OR (1) LONG RADIUS 90° ELBOW.
- 5 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.
- 6 ALL ITEMS WITH SAFETY-KLEEN PART NO. REFERENCES WILL BE SUPPLIED TO CONTRACTOR.



GENERAL NOTES

- 1 MODEL TO BE USED BY SAFETY-KLEEN CORP. - MODEL 28 EVP-18A 1 HP - 2" WITH EXPLOSION PROOF MOTOR W/FUNCTION BOX & VITON FITTED, SINGLE PHASE 60 CYCLE 115/230V.
- 2 SEE INDIVIDUAL SERVICE CENTER SITE PLANS FOR LOCATION OF THE INSTALLATION.

S.E. EXPL. PROOF MOTORS			
SK PART NO.	HP	PHASE	CYCLE
S248	1	3	A

PLATE A-5

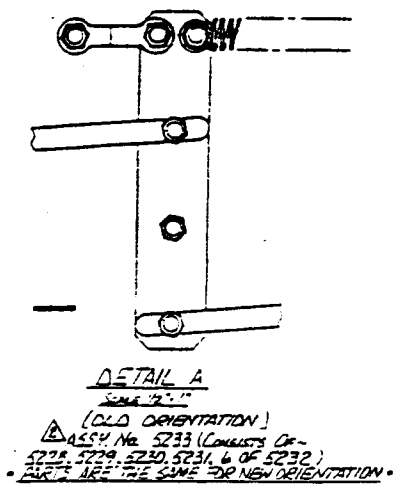
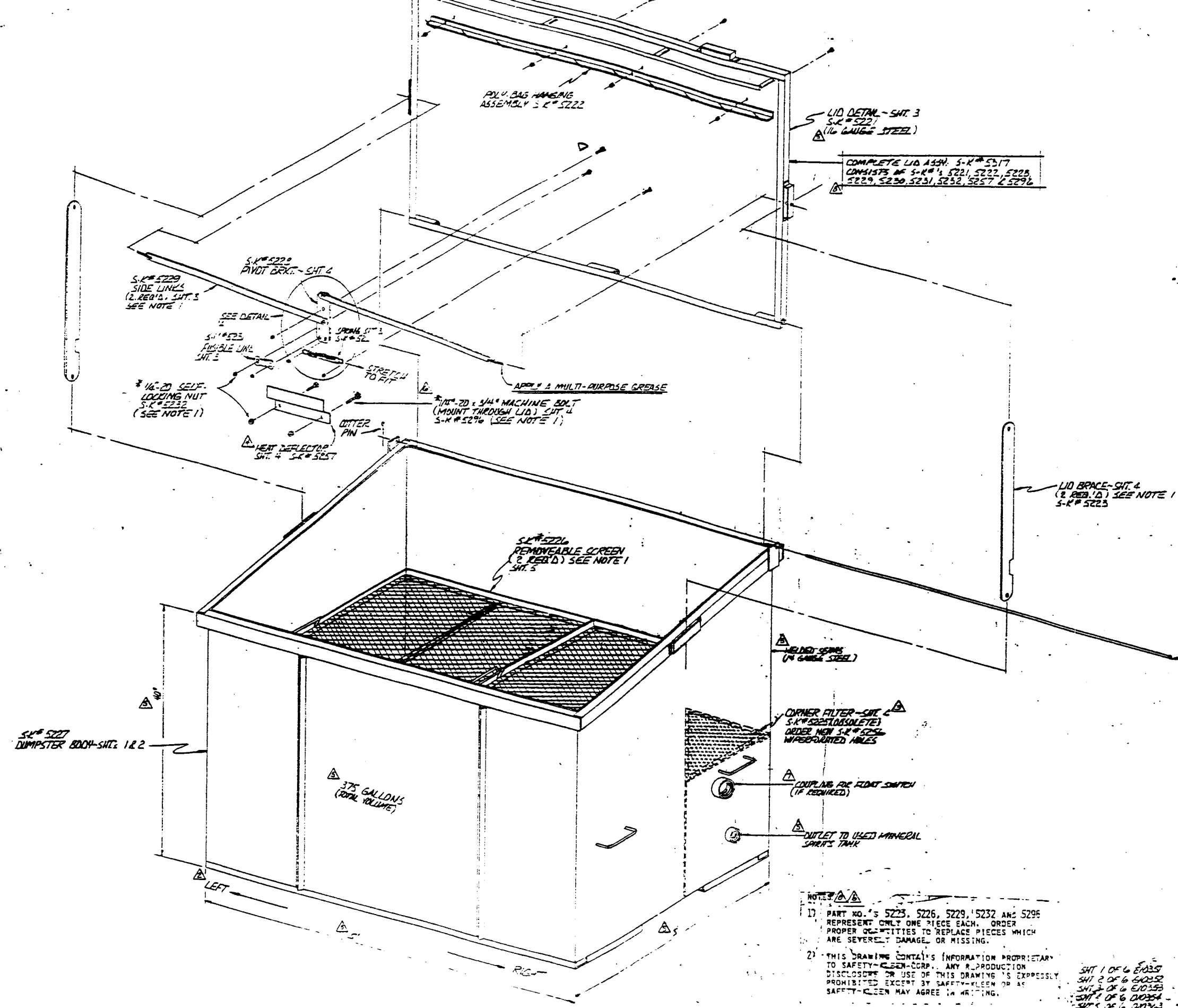
NO.	DESCRIPTION	BY	CHKD	APPR	DATE
1	ADDED 40'S FOR CLEAN & USED PUMPS	RC			3/5/94
2	ADDED NEW PUMP FOR DIRTY SOLVENT TO VIEW & TABLE ADDED PUMP SPEC'S	RC			4/18/94
3	ADDED NOTE 6	MLJ			10/23/94
4	ADDED PUMP SPEC'S - DWG A11118	MLJ			5/3/94
5	ADDED ITEM 5 & ADDED TO NOTE 4	MLJ			2/21/94
6	CHANGED ITEM 4 TO NEW TYPE VALVE	MLJ			12/19/93

SAFETY-KLEEN CORP.
777 60 THIRD AVE. S.W. ALBUQUERQUE, NM 87102-1000

FOR SERVICE CENTER BRANCH

D:1150

2/24/99 PSC



- NOTES
- PART NO.'S 5223, 5226, 5229, 5232 AND 5296 REPRESENT ONLY ONE PIECE EACH. ORDER PROPER QUANTITIES TO REPLACE PIECES WHICH ARE SEVERELY DAMAGED OR MISSING.
 - 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.

SHT 1 OF 6 E1035
SHT 2 OF 6 E1035
SHT 3 OF 6 E1035
SHT 4 OF 6 E1035
SHT 5 OF 6 E1035
SHT 6 OF 6 E1035

REV.	DESCRIPTION	DATE	BY
1	ISSUED NOTE 1 TO ALLIANCE...	04-04-82	...
2	ADDED 1/4" HALF COUPLING	9-28-83	ED
3	ADDED W/FLANGE LATCH THE HINGE ROD SHT. 3 (OLD); ADDED NOTE 1; ADDED BRACE FOR FRONT HINGE.	4-28-85	ED
4	ADDED FLANGELATCH FOR FRONT HINGE ROD SHT. 3 (OLD); ADDED NOTE 1; ADDED BRACE FOR FRONT HINGE.	3-24-85	ED
5	ADDED HEAT DEFLECTOR & S-K # 5257	5-14-85	ED
6	ADDED 1/4" SELF-LOCKING NUTS; CHANGED HINGE ROD SHT. 3 TO S-K # 5224	5-14-85	ED

Safety-Kleen Corp.
10000 THUNDER ROAD • ELK GROVE, ILLINOIS 60120 • PHONE 312/791-1000

DUMPSTER FINAL ASSY. DETAILS TS-R#5000
SHT 6 OF 6

1/4" - 1-0"

10-5-81 (ADDED S-K # 5271 & 5276)

ED

ADDED ASSY. # 5233 (ORIENTATION) BY ED

ADDED NOTE 1 TO ALLIANCE

SERVICE CENTER CONSULTATION

ED: UPDATE

D10450



Safety-Kleen

July 19, 1989

WOH 89-149

Mr. W. R. Vines
TERA, INC.
PO Box 740038
Houston, TX 77274

Re: Standard Dumpster Design and Performance

Dear Wendell:

This letter confirms our several telephone conversations on the design and performance history of standard dumpsters used at Safety-Kleen branches. Fabrication and assembly drawings have been furnished to illustrate the configuration of the dumpsters.

The dumpster design was originally adapted in the mid-1970's by a Safety-Kleen engineer from similar garbage dumpsters that had been successfully employed in this service for several years. The design adaptation was primarily empirical since there were no codes or recognized procedures for wall or support design.

The standard dumpsters have performed satisfactorily over a period of more than ten years. Approximately 309 dumpsters are currently in service in the U.S. Minor modifications have been made in the design to enhance operational convenience, but no change in the basic design parameters have been required. The primary causes of problems or occasional minor leaks in dumpsters have been:

1. Accidental damage from vehicle impact.
2. Weld defects (pinhole leaks).

I am not aware of any instance of failure or inadequate structural performance of a dumpster in normal operations, or from overfilling with liquid.

Please contact me if you have any questions.

Very truly yours,

WILLIAM O. HEYN, P.E.
Illinois Registration No. 062-033293
Manager of Engineering
Safety-Kleen Corp.

WOH/vsb

777 BIG TIMBER ROAD

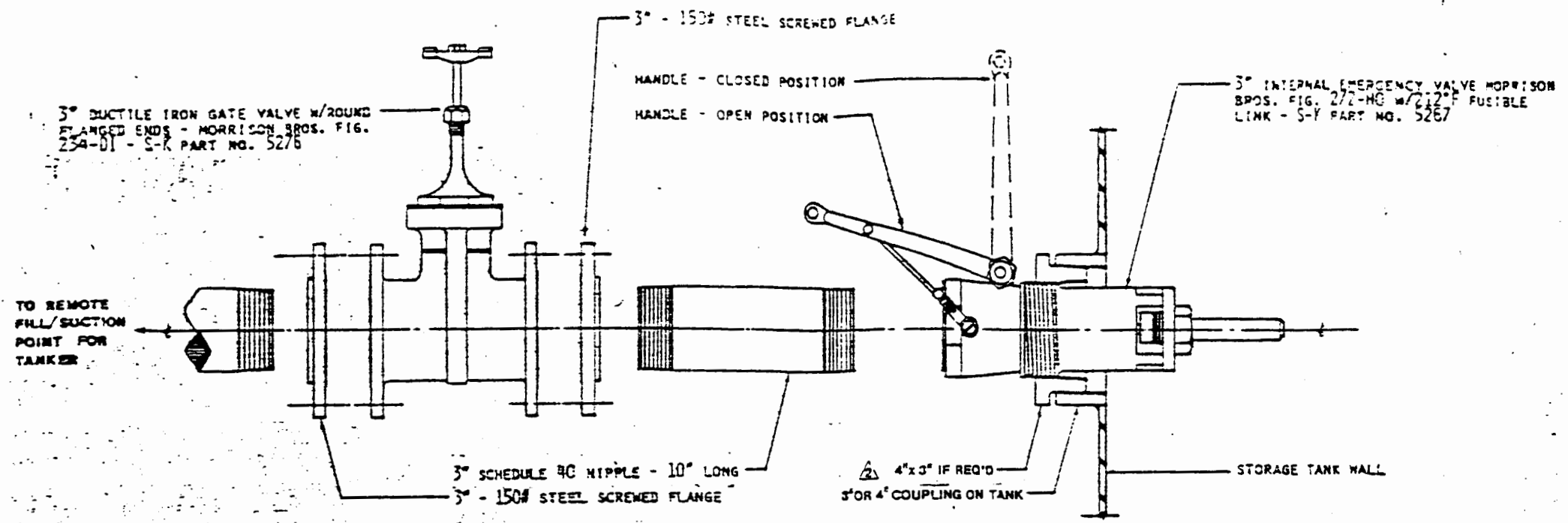
ELGIN, ILLINOIS 60123

PHONE 312/697-3460

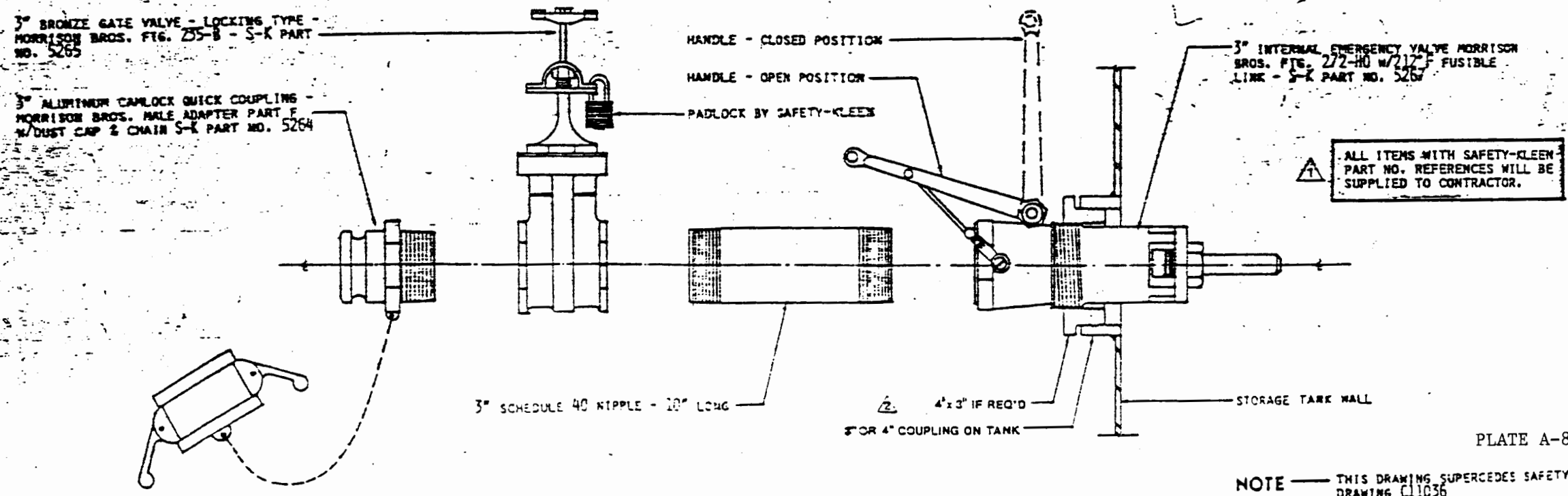
TELEX 910 251 4473

PLATE A-7

10/1 1504/81



— 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 —)

PLATE A-8

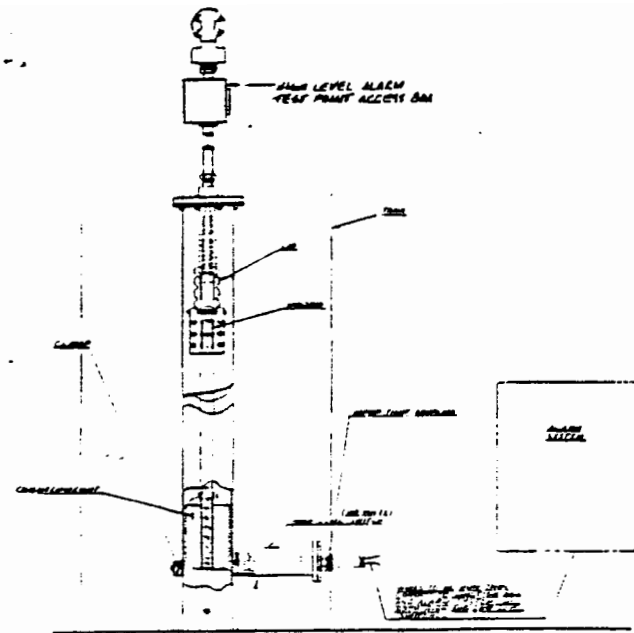
NOTE — THIS DRAWING SUPERCEDES SAFETY-KLEEN DRAWING C11036

Safety-Kleen Corp.
 1000 WILSON ROAD - ELON, N.C. 27220
 PHONE 336-867-1100

EMERGENCY & GATE VALVE INSTALLATION DETAILS

NO SCALE
 DATE 12-23-84
 WJL
 FOR: SERVICE CENTER BRANCH
 CONSTRUCTION & OR IMPROVEMENTS
 C11302

2	ADDED CLARIFICATION	NO	2/24/85
3	ADDED NOTE	WJ	12/23/84
REV	DESCRIPTION	BY	



MODEL 7-S OR 9-S GAUGES

High Level Alarm Pack
Supplied by Safety-Kleen
Co. Part # 5333

HIGH LEVEL ALARM INSTALLATION

SECTION OF TANK GAUGE ASSEMBLY OF THE TANK TO BE USED

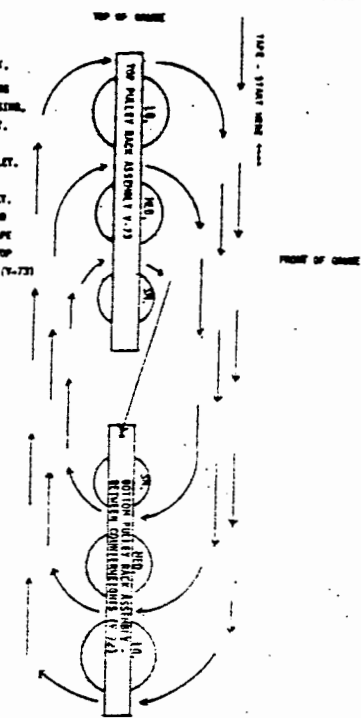
1. DETERMINE THE LOCATION OF THE TANK TO BE USED.
2. CHECK THE TANK FOR LEAKS AT JOINTS OR SEAMS.
3. DRILL 1/4" DIA. HOLES IN TANK TO ALLOW THE GAUGE TO BE INSTALLED AT POINT OF TANK TO BE USED.
4. CLEAN TANK AND SURFACE OF TANK TO BE USED WITH THE TANK OPEN AND SURFACE OF TANK TO BE USED IS CLEAN.
5. CHECK TANK FOR LEAKS AT JOINTS OR SEAMS.

SECTION OF TANK GAUGE ASSEMBLY OF THE TANK TO BE USED

1. DETERMINE THE LOCATION OF THE TANK TO BE USED.
2. CHECK THE TANK FOR LEAKS AT JOINTS OR SEAMS.
3. DRILL 1/4" DIA. HOLES IN TANK TO ALLOW THE GAUGE TO BE INSTALLED AT POINT OF TANK TO BE USED.
4. CLEAN TANK AND SURFACE OF TANK TO BE USED WITH THE TANK OPEN AND SURFACE OF TANK TO BE USED IS CLEAN.
5. CHECK TANK FOR LEAKS AT JOINTS OR SEAMS.

START TAPE, CLIP END WITH
KEY RINGS ON TAPE PULLEY
FRONT OF GAUGE HOUSING,
AROUND LARGE BOTTOM PULLEY,
UP TO LARGE TOP PULLEY,
DOWN TO MEDIUM BOTTOM PULLEY,
UP TO MEDIUM TOP PULLEY,
DOWN TO SMALL BOTTOM PULLEY,
UP TO SMALL TOP PULLEY, AND
THIS SECOND CLIP END OF TAPE
WITH A GUYER PIN TO THE TOP
OF THE BOTTOM PULLEY BACK (7-73)
ASSEMBLY.

See Note 14 below.



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

MATERIAL LIST
Model 7-S

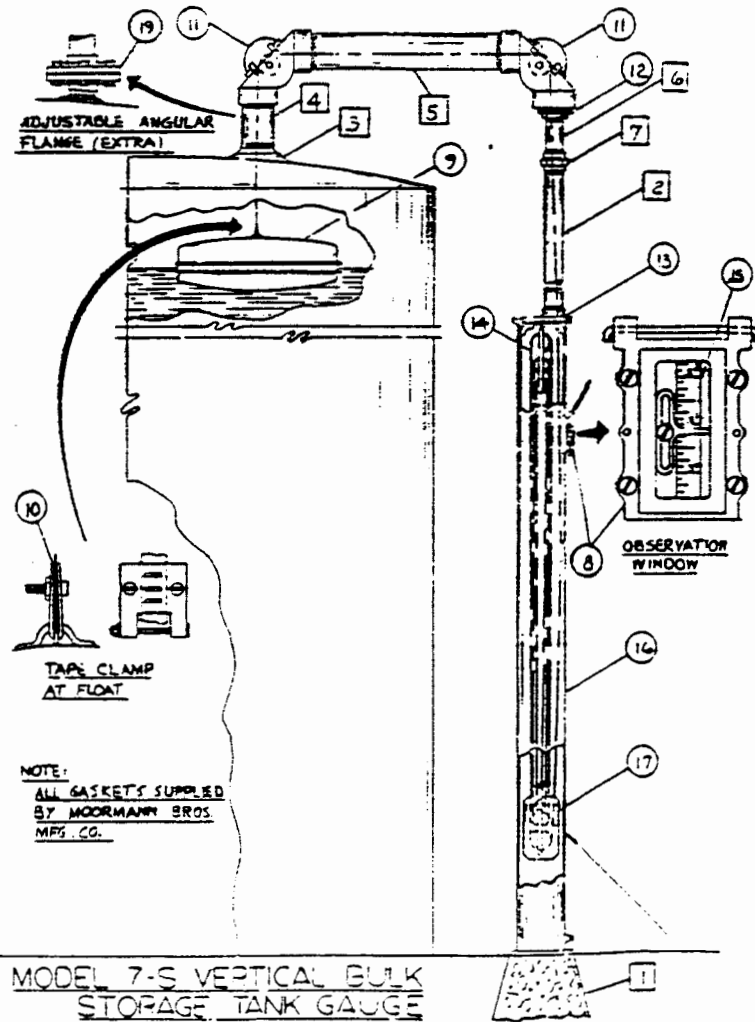
For All Vertical Tanks Up To & Including 25'

□ Material Supplied by CONTRACTOR

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

○ Material Supplied by Moormann Bros. (SAFETY-KLEEN)

ITEM NAME	PART No.	QUANTITY Per Tank
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-33	2
12. 2" to 1" Reducing Suction		1
13. Eccentric Cap Complete with Nuts & Bolts	V-71	1
14. Pulley Rack Assembly	V-73	2
15. Luffkin Stainless Steel High Visibility Tape	V-49	1
16. Rust-Proofed Steel Gauge Housing	V-77	1
17. Counterweight	V-72	2
18. Condensation Drain Plug		1
Pressure & Lid Assembly for Observation Window	A-34, A-38	1
Gasket - 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



NOTE:
ALL GASKETS SUPPLIED
BY MOORMANN BROS.
MFG. CO.

MODEL 7-S VERTICAL BULK
STORAGE TANK GAUGE

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 marked on print).
3. Use pipe clamps on all connections.
4. Assemble both A-30 elbows and 2" pipe as shown on print.
5. Secure 63 elbow A-30 onto 2" pipe with reducing bushing, clean nipple and union as shown on print after A-30 elbow onto 2" nipple in tank clean across other end of 2" pipe into tank elbow, clean straight with tank opening.
6. Lead 2" pipe, use temporary wood brace or aluminum flange, if necessary.
7. Set gauge housing with eccentric cap assembled on ground directly below overhanging elbow.
8. Measure for 1" pipe (including bushing in elbow to eccentric cap V-71 on gauge housing) allow for threads, cut and thread 1" pipe.
9. Secure 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 forward away from tank.
10. Fit pulley rack with large pulley up to eccentric cap using stainless steel pins.
11. Assemble other pulley rack in counterweights with large pulley down.
12. Place counterweight 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 set 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 leg 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 knot or braid tape.
15. Fasten tape to float with tape clamp (see print) CAUTION - Do not tension 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 sink as this may cause damage to bearings, also be sure the tape is in groove of elbows 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 twist 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 currently full set reading exactly with steel, make minor tape reading adjustments with the float by clipping tape through tape clamp. Minor adjustments (within 1" make) with observation finger.
20. In setting the reading on the gauge, 1/2", 3/4" or even 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 slowly. Do not let it drop.
22. Assemble observation frame and lid A-34-A-38 piece on housing, tighten for vapor-proofing.
23. Fit base for housing either concrete, wood post, or steel plate welded to tank. CAUTION - Do not weld gauge housing to tank.
24. In most climates, condensation forms inside the tank and gauge. A drain plug has been provided for draining at the bottom of housing. In most climates this is necessary 2 times a year (spring & fall). However, in arid climates 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) 932-3590 - ASK FOR: BOB GAINES OR JIM RAVENCRAFT

PLATE A-9

REV.	DESCRIPTION	BY	DATE
1	ADDED SAFETY-KLEEN PART #5	WLD	12-15-88
2	ADDED ADDITIONAL HIGH LEVEL ALARM INFO.	WLD	12-15-88
3	ADDED TAPE WINDING INFO ABOVE	WLD	12-15-88
4	ADDED NOTE 5	WLD	12-15-88

SAFETY-KLEEN CORP.
1800 S. 10TH AVE. - RICHMOND, INDIANA 47401
PHONE (317) 932-3590

MOORMANN BROS. TANK GAUGE INSTALLATION

For Service Center Branch Improvement &/or Construction

A10243