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Waste Management
Division

SECTION A

PART A APPLICATION

LIST OF ATTACHMENTS

ATTACHMENT A-1 PART A APPLICATION

ATTACHMENT A-2 FACILITY PLAN

ATTACHMENT A-3 FACILITY PHOTOGRAPHS

ATTACHMENT A-4 OPERATING PERMITS

ATTACHMENT A-5 TOPOGRAPHIC MAP

SECTION A

PART A APPLICATION
[329 IAC 3.1-13-3, 40 CFR 270.11 (A) AND (D), 270.13]

This Licnese Application is submitted for the Detrex Corporation facility located at 12886 Eaton Ave., Detroit, MI. Detrex Corporation is the legal name of the Owner/Operator, however, the facility generally operates under the name Detrex Corporation Solvents and Environmental Services Division. The information in this section is supplied in accordance with 40 CFR 270.10(d), 270.11(a) and (d), 270.13 as adopted in Michigan Act 451, **Rule 299.9508(1).**

The following attachments provide the information as required in the Part A Permit Application.

Attachment A-1 provides the information as required under MDEQ's Operating License, Forms 1 and 3.

Attachment A-2 provides a scale drawing of the facility showing the location of all proposed hazardous waste management units. In June of 1996 Detrex Corporation submitted a request to MDEQ to close the Hazardous Waste storage tanks associated with the reclamation operations. Although these tanks are still located on site, they may be used for the storage of Non-Hazardous Wastes. Beyond the closed Hazardous Waste storage tanks, there are no additional historic hazardous waste operations that have been discontinued

Attachment A-3 provides photographs of the facility.

Attachment A-4 provides a copy of a letter from the City of Detroit Water amd Sewarage Department denoting that Detrex is no longer required to operate under a license. Documentation regarding the discontinuation of air monitoring is also included in this attachment.

Attachment A-5 provides a topographic map which extends at least one mile beyond the property boundary Additional topographic mapping requirements are addressed in Section B of this license renewal application

ATTACHMENT A-1

PART A APPLICATION

DEQ Michigan Department of Environmental Quality, Waste Management Division

APPLICATION FORM FOR CONSTRUCTION PERMITS AND OPERATING LICENSES

HAZARDOUS WASTE TREATMENT, STORAGE AND DISPOSAL FACILITIES

Required under authority of Part 111, Hazardous Waste Management, of the Natural Resources and Environmental Protection Act, 1994 P.A. 451, as amended. Failure to submit this information may result in civil or criminal penalties.

I. FACILITY EPA ID NUMBER	MID 091605972
II. NAME OF FACILITY	DETREX SOLVENTS & ENVIRONMENTAL SERVICES DIVISION

III. FACILITY CONTACT PERSON

A. NAME AND TITLE	HANI HAMAWI, FACILITY MANAGER
B. PHONE (Area Code and Number)	313-491-4550

IV. FACILITY MAILING ADDRESS

A. STREET OR P. O. BOX	12886 EATON AVENUE
B. CITY OR TOWN, STATE, ZIP CODE	DETROIT, MI 48227

V. FACILITY LOCATION:

A. STREET, OR OTHER IDENTIFIER	12886 EATON AVENUE
B. CITY OR TOWN, STATE, ZIP CODE	DETROIT, MI 48227
C. LAND TYPE	P
D. COUNTY NAME	WAYNE

VI. FACILITY'S LEGAL OWNER

A. NAME	DETREX CORPORATION						
B. STREET OR P. O. BOX	P.O. BOX 5111						
C. CITY OR TOWN, STATE, ZIP CODE	SOUTHFIELD, MI 48086-5111						
D. PHONE NUMBER (Area Code and Number)	248-358-5800						
E. OWNER TYPE	P	F. OWNER CHANGE?	Y		N	X	DATE

VII. FACILITY OPERATOR

A. NAME	DETREX CORPORATION						
B. STREET OR P. O. BOX	P.O. BOX 5111						
C. CITY OR TOWN, STATE, ZIP CODE	SOUTHFIELD, MI 48086-5111						
D. PHONE NUMBER (Area Code and Number)	248-358-5800						
E. OPERATOR TYPE	P	F. OPERATOR CHANGE?	Y		N	X	DATE

VIII. TITLEHOLDER OF LAND

A. NAME:	DETREX CORPORATION
B. STREET OR P O BOX	P. O. BOX 5111
C. CITY OR TOWN, STATE, ZIP CODE	SOUTHFIELD, MI 48086-5111
D. PHONE NUMBER	248-358-5800

IX. CONSTRUCTION PERMIT OR OPERATING LICENSE APPLICATION (*Check One*)

A. ☐ CONSTRUCTION PERMIT APPLICATION
B. ☐ OPERATING LICENSE APPLICATION
B.1. ☐ FIRST APPLICATION
B.2. ☒ RENEWAL APPLICATION
B.3. ☐ APPLICATION FOR LICENSE MODIFICATION
B.4 ☐ RESEARCH, DEVELOPMENT AND DEMONSTRATION LICENSE APPLICATION

X. FIRST OR RENEWAL APPLICATION

Place an "X" in the appropriate box in A or B below (mark one box only) to indicate whether this is the first application you are submitting for your facility or a revised application. If this is your first application and you already know your facility's EPA ID Number, or if this is a revised application, enter your facility's EPA ID Number in Item I above.

A. FIRST APPLICATION	☐ 1 EXISTING FACILITY	☐ 2. NEW FACILITY
B. REVISED APPLICATION	☒ 1 EXISTING FACILITY	☐ 2. NEW FACILITY

For existing facilities, provide date operation or construction began.	1946	**For new facilities, provide date operation began or is expected to begin.**	

XI. PERMIT AND LICENSE FEES

A. ☐ CONSTRUCTION PERMIT FIXED FEE (complete the following)

1. Check type of facility:
   - ☐ Land Disposal ($9,000) $
   - ☐ Incineration or other treatment ($7,200) $
   - ☐ Storage ($500) $
2. Site size _____ acres (see fee schedule in section 324.11118 of Act 451) $
3. Projected waste volume (see fee schedule)
   _____ Gallons/day $
   OR _____ Cubic yards/day $
4. Hydrogeological characteristics for land disposal (see fee schedule)
   - ☐ Natural Clay
   - ☐ Sand
   - ☐ Compacted Clay
   - ☐ Artificial Liner $
5. For treatment or storage facilities Is there surface water on the Site?
   - ☒ No
   - ☐ Yes ($75) $

TOTAL CONSTRUCTION PERMIT FIXED FEE $

B ☒ OPERATING LICENSE FEE $ 500.00

XII. EXISTING ENVIRONMENTAL PERMITS

A. NPDES (Discharges to Surface Water)	N/A
B. UIC (Underground Injection of Fluids)	N/A
C. RCRA (Hazardous Wastes)	MID 091 605 972
D. PSD (Air Emissions From Proposed Sources)	N/A
E. OTHER (Specify)	

XIII. NATURE OF BUSINESS (*Provide a brief description*)

FACILITY RECEIVES HAZARDOUS WASTE IN DOT APPROVED CONTAINERS THAT ARE PLACED INTO CONTAINMENT AREAS PRIOR TO SHIPMENT TO ANOTHER PERMITTED FACILITY

XIV. FACILITY GEOGRAPHIC LOCATION

LATITUDE (degrees, minutes, and seconds)	Longitude (degrees, minutes, and seconds)
4 2 2 3 0 5 0	0 8 3 1 0 0 2 2

XV. MAP

Attach to this application a topographic map of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structure each of its hazardous waste treatment, storage, or disposal facilities and each well where it injects fluids underground Include all springs, rivers and other surface water bodies in the map area. See instructions for specific requirements

XVI. FACILITY DRAWING

All existing facilities must include a scale drawing of the facility (see instructions for more detail)

XVII. PHOTOGRAPHS

All existing facilities must include photographs (aerial or ground-level) that clearly delineate all existing structures; existi storage, treatment and disposal areas, and sites of future storage, treatment or disposal areas (see instructions for more detail)

XVIII. PROCESS CODES AND DESIGN CAPACITIES (See instructions.)

LINE NUMBER	A. PROCESS CODE (from list)	B. PROCESS DESIGN CAPACITY 1. AMOUNT (specify)	2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY	LINE NUMBER	A. PROCESS CODE (from list)	B. PROCESS DESIGN CAPA 1. AMOUNT (specify)	2. UNIT OF MEASURE (enter code)	FC OFF A US ON
1	S01	13750	G		7				
2					8				
3					9				
4					10				
5					11				
6					12				

C THIS SPACE FOR ADDITIONAL PROCESS CODES OR FOR DESCRIBING OTHER PROCESSES (code "T04")
FOR EACH PROCESS ENTERED HERE INCLUDE DESIGN CAPACITY

XIX. DESCRIPTION OF HAZARDOUS WASTES

Line No.	A. EPA HAZARD. WASTE NO (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter code)				2. PROCESS DESCRIPTION [if no code entered in D.
	F001	5000	T	S01				INCLUDED WITH ABO
	D002							" "
	D004 - D012							" "
	D018							" "
	D035							" "
	F002	2000	T	S01				
	D002							INCLUDED WITH ABO
	D004 - D012							" "
	D018							" "
	D035							" "
	F006	1450	T	S01				
	F019	1450	T	S01				
	U037	1450	T	S01				
	U044	1450	T	S01				
	U072	1450	T	S01				
	U075	1450	T	S01				
	U076	1450	T	S01				
	U077	1450	T	S01				
	U078	1450	T	S01				
	U080	1450	T	S01				
	U121	1450	T	S01				
	U127	1450	T	S01				
	U131	1450	T	S01				
	U208	1450	T	S01				
	U209	1450	T	S01				
	U210	1450	T	S01				
	U211	1450	T	S01				
	U226	1450	T	S01				
	U228	1450	T	S01				
	U161	1450	T	S01				
	F003	1450	T	S01				
	F005	1450	T	S01				

XIX. DESCRIPTION OF HAZARDOUS WASTES

Line No.	A. EPA HAZARD. WASTE NO (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter code)				2. PROCESS DESCRIPTION (if no code entered in D.
	D002	1450	T	S01				
	D004	1450	T	S01				
	D005	1450	T	S01				
	D006	1450	T	S01				
	D007	1450	T	S01				
	D008	1450	T	S01				
	D009	1450	T	S01				
	D010	1450	T	S01				
	D011	1450	T	S01				
	D012	1450	T	S01				
	D018	1450	T	S01				
	D019	1450	T	S01				
	D021	1450	T	S01				
	D022	1450	T	S01				
	D027	1450	T	S01				
	D028	1450	T	S01				
	D029	1450	T	S01				
	D030	1450	T	S01				
	D031	1450	T	S01				
	D032	1450	T	S01				
	D034	1450	T	S01				
	D035	1450	T	S01				
	D036	1450	T	S01				
	D039	1450	T	S01				
	D040	1450	T	S01				
	D043	1450	T	S01				
	D001	1450	T	S01				

XX. OTHER REQUIRED ATTACHMENTS

A. GENERAL INFORMATION

Attach each of the following separately to the application:

1. General facility description
2. Chemical & physical analyses
3. Waste analysis plan*
4. Security procedures & equipment
5. Inspection schedules
6. Preparedness/prevention or waiver
7. Contingency plan
8. Traffic information
9. Location information
10. Personnel training program
11. Closure/post-closure (C/PC) plan*
12. C/PC cost estimates*
13. Topographic map
14. C/PC liability mechanism
15. Financial assurance Instrument

*Refer to Instructions for Guidance.

B. SUPPLEMENTAL INFORMATION

Attach each of the following separately to all applications:

1. Status of compliance with other federal laws
2. Corrective Action information
3. Hydrogeological report
4. Environmental assessment
5. Environmental monitoring programs*
6. Engineering plans

*Refer to Instructions for Guidance.

Attach each of the following separately to operating license applications:

1. Proof of issuance of other permits or licenses
2. For new facilities, construction certification
3. Capability certification/compliance schedule
4. Restrictive covenant (landfills only)

C. FACILITY SPECIFIC INFORMATION

Attach the required technical information to all applications separately for each of the following units or processes:

1. Containers
2. Tanks
3. Incineration or thermal treatment
4. Treatment
5. Surface impoundments
6. Waste piles
7. Landfills
8. Land treatment
9. Miscellaneous units
10. Underground mines or caves
11. Air emissions from process vents & equipment leaks
12. Drip pads
13. Boilers and industrial furnaces

XXI. CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant personalities for submitting false information, including the possibility of fine and imprisonment for knowing violations.

OWNER NAME (type or print)	SIGNATURE	DATE SIGNED
David R Crandell	David R Crandell	6/12/00
OPERATOR NAME (type or print)	SIGNATURE	DATE SIGNED
David R Crandell	David R. Crandell	6/12/00
NAME OF TITLEHOLDER OF LAND (type or print)	SIGNATURE	DATE SIGNED
David R Crandell	David R. Crandell	6/12/00

ATTACHMENT A-2

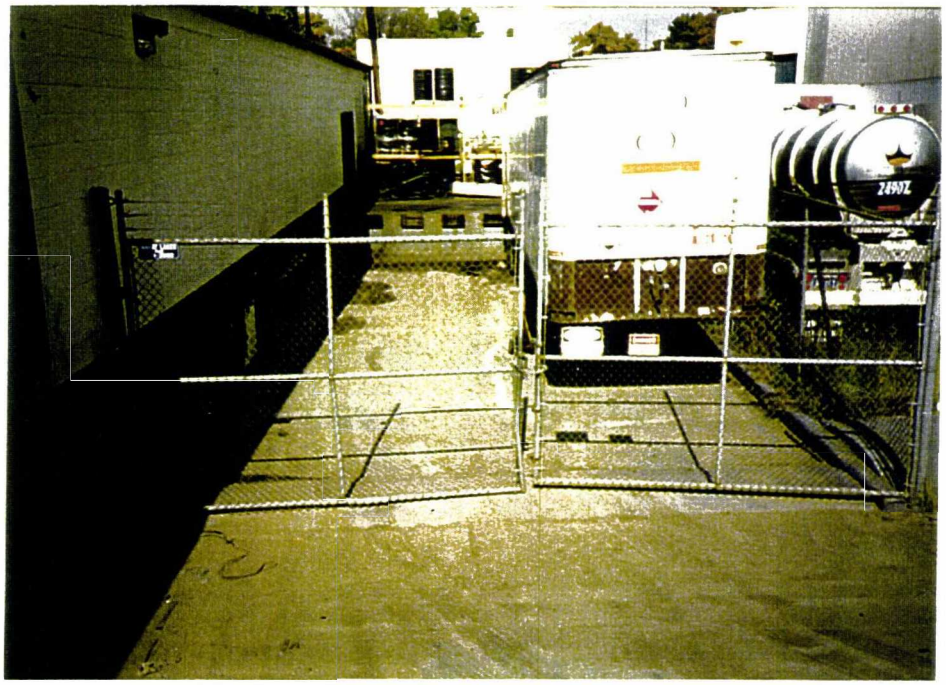
FACILITY PLAN

ATTACHMENT A-2
PROPOSED FACILITY LAYOUT

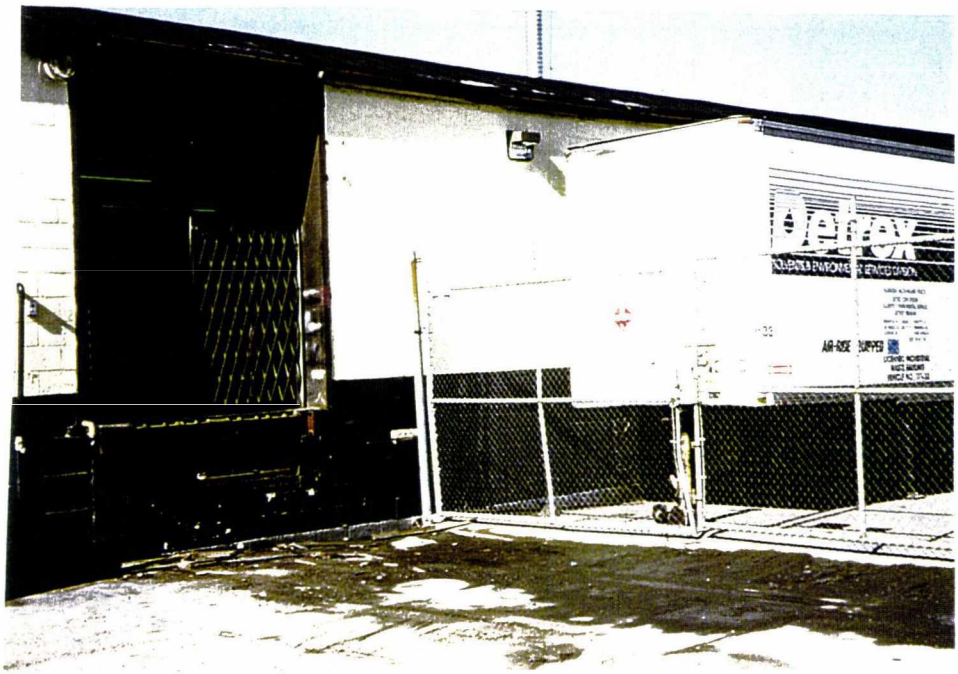
ID #	Equipment Name	Description
1.	Clayton Model E-100 Steam Generator	Out of service, slated for eventual removal
2.	Air Compressor	In use
3.	20,000 gal. Carbon steel Tank	Storage tank for Trichloroethylene
4.	10,000 gal. Carbon Steel Tank	This tank is currently out of service
5	4,500 gal. Carbon Steel Tank	This tank is currently out of service
6.	4,500 gal. Carbon Steel Tank	Storage tank for Trichloroethylene
7-9	Interior Hazardous Waste Storage	Active
10 A/B	2 – 600 gal. Receiver Tanks	Product storage
11	Exterior Hazardous Waste Storage	Storage of Flammables
12.	2,300 gal. Carbon Steel Tank	Storage of Non-Hazardous Wastes
13.	Detrex Model S-350 Still	Out of service, slated for eventual removal
15.	DCI Model Dyna-1-100 Still	Out of service, slated for eventual removal
16 A/B	Drying Columns	Out of service, slated for eventual removal
17	5,000 gal. Carbon Steel Tank	Storage of Non-Hazardous Wastes
20	2,500 gal. 316 Stainless Steel Tank	Storage of Non-Hazardous Wastes
21	4,500 gal Carbon steel tank	Storage of Non-Hazardous Wastes
22	4,500 gal. Carbon Steel Tank	Storage of Non-Hazardous Wastes
25	3,000 gal 316 stainless steel Tank	Storage of Non-Hazardous Wastes
27	Drum Filling Station	Product Drumming Station.
28	Product Blending Vessel	550 gal. Carbon steel vessel utilized for product blending.
29	Staging area	Sampling (containers weighed as needed)

ATTACHMENT A-3

FACILITY PHOTOGRAPHS



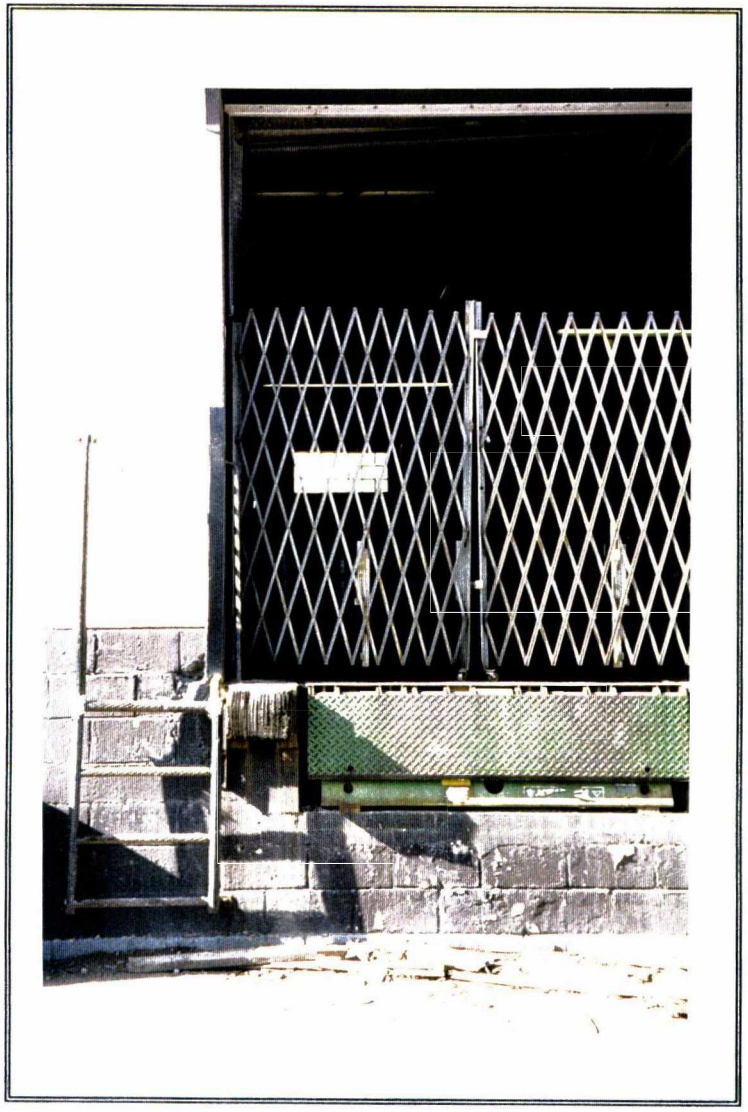
Flammable Waste Storage Area



Loading / Unloading Area

Hazardous Waste Container Storage
Area showing aisle

Hazardous Waste Containers with
markings facing aisle



Security Precautions for the
Loading / Unloading Dock

Entrance to office area of Facility with
signs noting no entrance

HAZARDOUS WASTE

STATE AND FEDERAL LAW PROHIBITS IMPROPER DISPOSAL

IF FOUND, CONTACT THE NEAREST POLICE, OR PUBLIC SAFETY AUTHORITY, OR THE U.S. ENVIRONMENTAL PROTECTION AGENCY OR THE CALIFORNIA DEPARTMENT OF HEALTH SERVICES

GENERATOR INFORMATION:

NAME _____

ADDRESS _____ PHONE _____

CITY _____ STATE _____ ZIP _____

EPA ID NO. / MANIFEST DOCUMENT NO. _____ / _____

EPA WASTE NO. _____ CA WASTE NO. _____ ACCUMULATION START DATE _____

CONTENTS, COMPOSITION: _____

PHYSICAL STATE: ☐ SOLID ☐ LIQUID

HAZARDOUS PROPERTIES: ☐ FLAMMABLE ☐ TOXIC ☐ CORROSIVE ☐ REACTIVITY ☐ OTHER _____

D.O.T. PROPER SHIPPING NAME AND UN OR NA NO. WITH PREFIX

HANDLE WITH CARE!

STYLE WMCA6

Printed by LABELMASTER, Div. of AMERICAN LABELMARK CO., CHICAGO, IL 60646

TYPICAL HAZARDOUS WASTE DRUM MARKING
PART B PERMIT APPLICATION

ATTACHMENT A-4

OPERATING PERMITS

S & H Environmental Consultants, Inc. 283 (I)(a)(ii)(II)

RECEIVED

APR 1 0 2000

Waste Management Division

February 24, 1997

Ms. Maria Majer 313-883-3520
Permit Engineer
Wayne County Department of Environment
Air Quality Management Division
640 Temple Street, Suite 700
Detroit, MI 48201

Subject: Opting-out from Title V Renewable Operation Permit Program, Detrex Corporation located at 12886 Eaton Avenue, Detroit, Michigan

Dear Ms. Majer:

This letter is in response to our conversation and your letter dated February 19, 1997 in regards to Detrex Corporation Opt-Out option B.

The facility has applied for partial closure plan with Michigan Department of Environmental Quality, Waste Management Division (MDEQ-WMD). This facility will no long operate the solvent reclamation stills and bulk waste solvent storage tanks.

In a letter dated September 6, 1996, MDEQ-WMD has granted approval for partial closure. This letter is enclosed for your review.

Detrex has completed the partial closure, they have removed the solvent distillation stills, steam cleaned all the waste storage bulk tanks.

Detrex will no longer reclaim waste solvent at this location. It will only receive waste solvent from the customers in 55 gallons drums. These drums will be sampled for the waste constituent (type and % solvent) and shipped to other Dexter facilities (out-of-state) for reclamation. At present and in the foreseeable future, Detrex will only be warehousing and drumming clean and reclaimed solvents. The solvents will be shipped in bulk and in 55 gallon drums to its customers.

The emissions from this facility will be from the drumming operation. The solvents that will be drummed are trichloroethylene and 1,1,1-trichloroethane. 1,1,1-trichlorethylene will be phased out by the end of this year. Currently, the total material throughput for the entire facility is 80,000 lbs per month, of which 30% are shipped in 55 gallon drums and

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Gerald Krawiec 313-883-3564

the remaining in bulk. As a worst case, assume that all the material is drummed. Based on the throughput, the solvent losses was calculated to be less than 2.0 tons per year.

The drumming operations at Detrex is considered a minor source. Therefore, will not trigger the Title V permitting requirements. An engineering calculation to estimate the emission loss from the drumming operation is enclosed for your review.

Please contact me if you have any questions or need additional information.

Thanking you.

Sincerely,

S & H Environmental Consultants, Inc.

Jai Singh
Vice President

cc Hani Hamawi, Detrex Corporation.

Drums Loading

Standard Conditions
One mole of gas occupies 387 ft3t at 1 atm and 70F

Constituents
Trichlorethylene (TCE) Molecular Weight 131.50
1,1,1, Trichloroethane Molecular Weight 131.60

Assume 55 gallon drums are saturated with vapor

Volume (gal)	Conversion	Volume (ft3)	Molecular Ft3	Moles
55	0.13368	7.35	387	0.02

Average total product throughput per month is 80,000 lbs, this includes virgin and reclaimed.
The two solvents that are drummed and stored in bulk are trichloroethylene and 1,1,1-trichloroethane
1,1,1-trichloroethane will be phased out by end of this year.
Approximately, 30% of the product are drummed and the remaining are shipped in bulk.
As a worst case, assume all the products are drummed in 55 gallons drums. This would represent the maximum emissions from the drumming operations.

Assume that trichloroethylene is the only product drummed.

Average total product drummed per month	80000 lbs
Density of trichloroethylene (TCE)	12.2 lbs/gallon

ACTUAL DRUM LOADING EMISSIONS

Sample Calculation
119 drums/month x 0.02 moles/drum x 131 40 lb/lbmoles = 313.32 PPM

Pollutant	Drums/Month	Moles	Formula Weight	PPM	PPY	TPY
TCE	119	0.02	131.40	313.32	3759.88	1.88

NOTE:
PPM = Pounds Per Month
PPY = Pounds Per Year
TPY = Tons Per Year
TCE = Trichloroethylene

S & H Environmental Consultants, Inc.

August 7, 1996

Ms. Rhonda Ross
Director
Wayne County Department of Environment
Air Quality Management Division
640 Temple Street, Suite 700
Detroit, MI 48201

Subject: Opting-out from Title V Renewable Operation Permit Program, Detrex Corporation located at 12886 Eaton Avenue, Detroit, Michigan

Dear Ms. Ross:

S&H Environmental Consultants, Inc. represents Detrex Corporation in the determination of Title V applicability for their Treatment Storage and Disposal Facility (TSDF), located at 12886 Eaton Avenue, Detroit, Michigan.

Detrex Corporation's TSDF at 12886 Eaton Avenue, Detroit is a minor source of Hazardous Air Pollutants (HAPs) emissions.

The Michigan Department of Environmental Quality-Air Quality Division (MDEQ-AQD) issued an Operational Memorandum No.4, dated August 15, 1995, to provide mechanism for limiting the applicability of the Michigan's renewable operating permit program. The mechanisms are:

- Option A - use of existing exemptions.
- Option B - consideration as a non-major source based on actual emissions less than 50% of major source threshold.
- Option C - opt-out permit.

The actual emissions from this facility are less than 12.5 tons for combined HAPs (50% of major source threshold) and therefore do not trigger the Title V permitting requirements.

Option B is applicable for this facility.

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Please contact me if you have any questions or need additional information.

Thanking you.

Sincerely,
S & H Environmental Consultants, Inc.

Jai Singh
Vice President

cc Hani Hamawi, Detrex Corporation.

City of Detroit
Water and Sewerage Department
Industrial Waste Control Division

303 S. Livernois Avenue
Detroit, Michigan 48209
Phone 313•297•5850
Fax 313•297•5860
www.ci.detroit.mi.us

Mr. Ronald Hritzkowin
Detrex Corp. Solvents Division
12886 Eaton
Detroit, MI 48227

Date: February 24, 2000
Seq. No.: 009474

Dear Mr. Hritzkowin:

Regarding: **CLASSIFICATION AS A MINOR USER**

The Detroit Water and Sewerage Department (DWSD) has classified your facility as a Minor User of the Detroit sewer system. This classification has been based upon one or more of the following criteria:

- Discharges less than 25,000 gallons per day of process (non-sanitary) wastewater.
- Discharge is not subject to a National Categorical Pretreatment Standard.
- Discharge is not expected to contain toxic pollutants in quantities which would subject you to regulation.

As a Minor User, you are not required to maintain a wastewater discharge permit from this agency. However, your facility may be subjected to regulation under the Surcharge Program and/or may be required to submit a Slug Control/Spill Prevention Plan (SC/SPP). We will refer, accordingly, your facility to the appropriate DWSD group, who will notify you separately of these requirements. Should the nature of your discharge, business, or address change, you are required to notify this office.

The DWSD accepts the wastewater discharge in accordance with the preceding basis, provided that you maintain compliance with the appropriate discharge requirements as defined by the local ordinance. Please retain this letter in the event of future inspections by a state or local agency.

Should you have any questions, please contact us at (313) 297-5842. Thank you for your efforts in pursuit of a cleaner environment.

Sincerely,

Jerry Spencer

Jerry Spencer
Survey Group
Industrial Waste Control

FAXED
MAR - 1 2000

JES/sl

INTER-COMPANY CORRESPONDENCE
EATON AVENUE

TO: I. Shamiyeh

FROM. R. C. Hritzkowin

CC: see below

DATE June 8, 1995

SUBJECT: City of Detroit Wastewater Permit

Attached is a copy of a letter I received informing me that based on the City of Detroit's last inspection, April 12, 1995, we will no longer have to test the discharged wastewater as was required by our Permit No. 905-001

The permit required us to sample the discharged wastewater on a monthly basis and submit an analysis every six months.

cc. D. Crandell
T. Porter
J. Brooks
H. Hamawi

DAVID CRAIG
12/6/96
9:30

CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT
LIVERNOIS CENTER

303 S. LIVERNOIS AVENUE
DETROIT, MICHIGAN 48209

CERTIFIED MAIL

Mr. Ronald Hritzkowin
Detrex Corporation
Solvent Division
12886 Eaton Avenue
Detroit, Michigan 48227

DATE: June 7, 1995

PERMIT NO.: 905-001

PERMIT CANCELLATION NOTICE

Effective immediately, Wastewater Discharge Permit No. 905-001, issued to Detrex Corporation, located at 12886 Eaton Avenue in Detroit, shall be cancelled; and said facility shall be classified as a Minor Discharger.

This action is based on findings that said facility is not discharging process wastewater into the Publicly Owned Treatment Works, and confirmed by a Comprehensive Inspection conducted April 12, 1995.

There shall be no further process discharge from this facility into the Detroit Sewerage System. Failure to comply with this notice can result in Enforcement action.

Should you decide to discharge process wastewater, you must notify IWC.

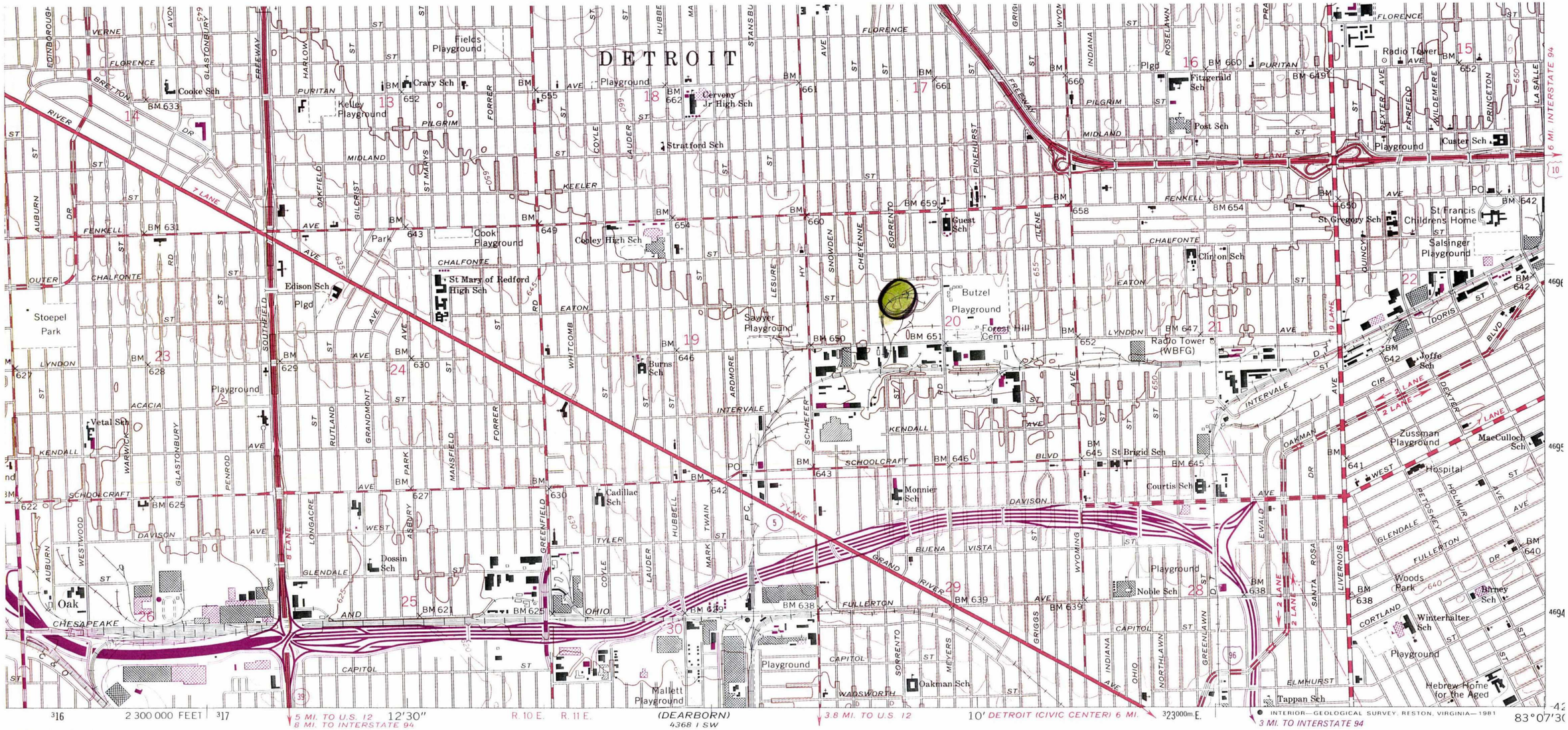
Stephen J. Kupiecki
Manager, IWC

SJK/WES/vb

ATTACHMENT A-5

TOPOGRAPHIC MAP

ATTACHMENT



ed by the Geological Survey
Michigan agencies

d City of Detroit

methods from aerial photographs
ys 1939. Revised from aerial
d checked 1968

MN
GN
5°
89 MILS
1°29'
26 MILS

SCALE 1:24 000

1 ½ 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

CONTOUR INTERVAL 5 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

ROAD CLASSIFICATION

Primary highway, all weather, hard surface

Light-duty road, all weather, improved surface

Secondary highway, all weather, hard surface

Unimproved road, fair or dry weather

Interstate Route

U. S. Route

State Route

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SECTION B

FACILITY DESCRIPTION

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SECTION B

FACILITY DESCRIPTION

This section of the license application provides a general description of the Detrex Corporation facility in Detroit, Michigan as required by Michigan Act 451 Rule 299.9504(1)(c) which incorporates 40 CFR 270.14(b) and (c) by reference. The applicable section(s) of the federal regulations (40 CFR) is referenced where appropriate

B-1 GENERAL DESCRIPTION [40 CFR 270.14(b)(1)]

Detrex Corporation is submitting this License Application for the storage of hazardous waste containers, at its Eaton Avenue Facility (Facility) in Detroit, Michigan The Facility is currently listed as a treatment, storage, and disposal facility (TSDF), by definition, for halogenated hydrocarbon solvents and spent solvents.

The Facility contact is:

Mr Hani Hamawi
Detrex Corporation
12886 Eaton Avenue
Detroit, Michigan 48227
Phone Number. 313-491-4550
EPA ID#: MID 091 605 972

The technical contact for the license application is:

Mr. David Craig, CHMM, CET
Detrex Corporation
PO Box 5111
Southfield, Michigan 48086-5111
Telephone. (248) 358-5800

Detrex Corporation specializes in the sale of various products, including cleaning fluids and related equipment, and the sale of recovered (recycled) of spent solvents. Spent solvent wastes are collected from operations such as: metal working operations that clean machined and stamped parts in vapor degreasing equipment, rubber molding operations where defective parts are removed from metal inserts, the electronic industry where circuit boards and other components are cleaned and defluxed in batch and continuous conveyor type solvent defluxing machines, industries that spray paint on an assembly line basis where the hangers and conveyor components are cleaned with solvents in on-line vapor degreasers and other similar type industries. The Facility operates under EPA Identification Number MID 091 605 972. The Standard Industrial Classification Code (SIC) for the Facility is 2869 & 5161

The Facility under the previous license operated a hazardous waste recovery system (recycling system). Detrex Corporation received from MDEQ a letter dated March 24, 1997, certifying closure for these units These storage tanks may be used to combine/commingle NON-RCRA or NON-hazardous wastes prior to transportation to another permitted disposal facility Hazardous wastes entering the Facility will be stored in one of the hazardous waste

container storage areas prior to shipment off site for processing/disposal. The entire operation operates within a single enclosed building, or within a secured dock where access is controlled by a fence and gate that is closed except when vehicles are being moved.

With the submission of this Operating License renewal application, Detrex Corporation is proposing to increase the list of potential waste types that may be accepted at the Facility for storage.

The operations at the facility will allow for a total of 13,750 gallons of Hazardous Waste to be stored in the container storage areas and staging area. Expanded hazardous waste operations at the Facility will consist of:

- Three separate internal waste container storage areas and one exterior container storage area with total container storage capacity of 13,750 gallons (e.g. 250 x 55-gallon drums);
- a primary loading/unloading area
- a secondary loading/unloading area (dock area where flammables are stored); and
- Staging area (capable of holding up to 10 containers of waste plus rejected containers of waste).

B-2 TOPOGRAPHIC MAP

A single topographic map meeting the requirements of this section has not been prepared. The topographic mapping and other location information requirements are listed in Table B-1 depicting the location in this license application where the appropriate map/information is located. The mapping requirements are further discussed below.

B-2A GENERAL REQUIREMENTS [40 CFR 270.14(B)(19)]

1) Topographic Map

A combination of several maps are provided to satisfy this requirement. Attachment B-1 is a copy of a portion of the United States Geological Survey (USGS) quadrangle map showing the Site location. The scale of this map is 1" = 2,000 feet.

Attachment B-2 provides a map surrounding the Facility with at least a 1,000-foot radius. The scale of this map is 1 inch = 200 feet

2) Land Use

Attachments B-3 provide maps of the zoning and existing land-use, respectively, in the vicinity of the Facility The zoning code for the industrial area in which the Detrex property is located is M4 while the surrounding area is R1. The M4 zoning code indicates an intensive industrial district while R1 indicates a single-family residential district The closest residential property is over 300 feet west of the Facility.

The figures were reproduced from figures supplied by the Planning Department of the City of Detroit

3) Wind Rose

A wind rose for the Detroit City Airport is presented in Attachment B-4 The airport is located approximately 25 miles east of the Facility.

4) Legal Boundaries

A copy of a legal survey indicating the legal boundaries and a legal description of the lands owned by Detrex Corporation is provided as Attachment B-5.

5) Access Control

Fencing surrounding active potions of the Facility and the building itself provide the necessary access control to prevent both animals and people from entering the active portions of the operations. The fences are 8-foot high chain linked fence that is topped by razor wire.

Attachment A-3 provides photos illustrating some of the access control devices at the Facility. Security doors and overhead doors to the office and active portions of the Facility remain locked when the Building is unattended. Access to warehouse areas is controlled via gates and passage doors, which can only be opened from the inside.

All flammables stored at the facility will occur on trailers located in the former transfer station area. The flammable storage area is surrounded by an 8-foot high chain link fence and gate. The gate will remain locked at all times except when moving vehicles into or out of this area. In addition, the trailers will be closed during hours when the facility is not attended. These measures will eliminate any access to this area except through the warehouse and then only during operating hours.

6) Injection and Withdrawal Wells

There are no available records of any groundwater injection or withdrawal wells within a one-mile radius of the Eaton Avenue Facility

7) Sewers

The location of sewers and other utilities is provided on the legal survey plan located in Attachment B-5. The drain in the boiler room is discharged to the Detroit Water and Sewerage Industrial Wastewater Department. Use of the boilers at this facility has been discontinued with the closure of the still recovery units.

8) Loading and Unloading Areas

The loading and unloading area associated with the hazardous waste areas at the Facility is shown in Attachment B-6 The internal access roads are also shown

9) Fire Control

There are two fire hydrants, serviced by an 8-inch diameter watermain, located near the Facility along Eaton Avenue. The nearest is only about 25 feet south of the south end of the Facility. These fire hydrants are shown on the legal plan located in Attachment B-5

10) Flood Control

As indicated in Section B-3b of this operating license application, the Detrex Facility is not located in an area designated as a 100-year floodplain. As such, flood control structure/devices are not required. A Flood map of the area is provided in Attachment B-7

The outdoor loading / unloading area secondary containment system (i.e., the perimeter curbing and drive-over access ramp has been designed to accommodate a 24-hour 100-year rainfall event

11) Hazardous Waste Management Units

Attachment B-6 is a Facility plan, which locates all existing and proposed hazardous waste management units.

12) Runoff Control

Most of the hazardous waste management units are located within a single enclosed building, which eliminates runoff The only area not enclosed by the building is the facility's flammable storage area and transfer station, which are located in the northeast corner of the Facility. Surface water runoff is directed away from the building structure in all areas except along the eastern wall.

A 12-inch square, 6-inch deep sump is located within the concrete loading/unloading area and the flammable storage / transfer station area to provide runoff control. The accumulated runoff collected is visually inspected for the presence of a sheen, color, odor, and clarity. If it passes these parameters it is discharged into the municipal combined sanitary/storm water sewer system If the water fails the parameters, it will be collected and tested Waters failing discharge criteria will be sent for off-Site disposal in accordance with Federal, State and Local regulations. A 12-inch diameter, 6-inch deep catch basin is located within the

B-2B ADDITIONAL REQUIREMENTS FOR LAND DISPOSAL FACILITIES [40 CFR 270.14(C)(3) AND (4)(I), 264.95, 264.97]

Detrex Corporation does not and has never operated a land disposal facility at the Facility located at the Detroit, Michigan Facility

TABLE B-1

LOCATION IN APPLICATION OF TOPOGRAPHIC MAP REQUIREMENTS

Items Required In Application For Topographic Maps	Location (Attachment Nos.)
1. Topographic map extending 2,000 feet beyond facility	B-1
2. Contour intervals	B-1, B-2
3. Map scale and date	B-1, B-2, B-5, B-6, B-7, B-8
4 100-year floodplain area	B-7
5. Surface water including intermittent streams	B-1, B-2, B-7
6 Surrounding land uses	B-2, B-3
7. Wind rose	B-4
8. Orientation of the map	B-1, B-2, B-3, B-5, B-6, B-7, B-8
9 Legal boundaries of the facility	B-2
10. Access control and internal roads	B-2, B-5
11 Injection and withdrawal wells	N/A
12 Buildings	B-2, B-5, B-8
13 Sewers	B-2
14 Loading and Unloading Areas	B-2, B-5, B-8
15. Fire Control Facilities	B-5
16 Barriers for drainage and flood control	N/A
17 Location of container and tank storage areas	D-2
18 Location of process equipment	D-2

B-3 LOCATION INFORMATION [40 CFR 270.14(B)(11)]

B-3A SEISMIC CONSIDERATIONS [40 CFR 270.14(B)(11)(I) AND (II), 264.18(A), PART 264 APPENDIX VI]

This section applies to new facilities only. Therefore, since this is an existing Facility, this section is not applicable.

B-3B FLOODPLAIN STANDARD [40 CFR 270.14(B)(11)(III), 264.18(B)]

The FIA map, found in Attachment B-7, indicates that the Facility is in neither the 100-year nor the 500-year floodplain This area is entirely within Zone C indicating it is not subject to flooding.

The Facility is located approximately 7.5 miles northwest of the Detroit River and 5 miles east of the River Rouge The 100-year flood elevation of the Detroit River is approximately 578 feet above National Geodetic Vertical Datum (NGVD). The Facility property elevation is approximately 655 feet above NGVD.

B-4 TRAFFIC INFORMATION [40 CFR 270.14(B)(10)]

Attachment B-8 illustrates the traffic patterns at the Eaton Avenue Facility. Vehicular access to the Facility is direct via Eaton Avenue from Schaefer Avenue to the west or Meyers Road to the east. Primarily Highway 10 and Interstate 96, both major freeways in the area, service the Facility. There are no traffic control devices on site. Visitors and employees park directly in front of the building or inside the fenced enclosure to the west of the building.

All traffic associated with the movement of hazardous waste occurs to the east of the building. All incoming hazardous wastes arrive by truck. Transport of the waste is made using one of four types of Detrex owned licensed hazardous waste transporter vehicles (stake trailer, box van, combination unit, or tank trailer), as required and according to Federal and State laws.

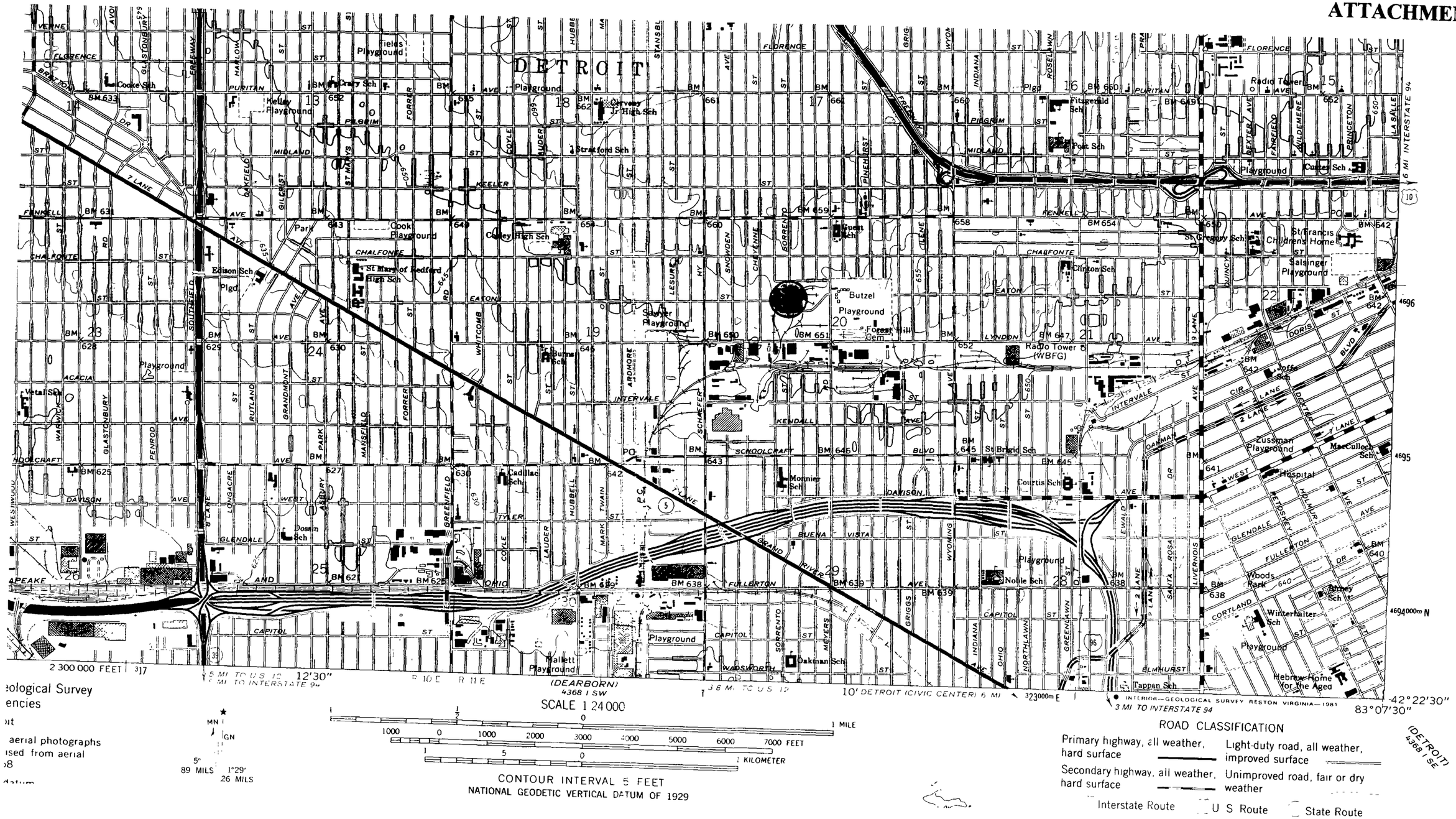
A forklift truck usually equipped with a special drum handling attachment is used to transfer drummed waste into and within the building. Wastes are received at the Facility on a daily basis and at the time of this application are expected to be transported off site at a frequency of at least two trucks per week.

All paved roads at the Facility are constructed of a minimum of six inches of concrete. Historical traffic flow at the Facility has not created any structural problems in the existing roads on site, indicating the bearing capacity of the roads is adequate.

ATTACHMENT B-1

SITE LOCATION

ATTACHMENT



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encies

aerial photographs
ised from aerial
8

datum

ATTACHMENT B-2

SUROUNDING AREA TOPOGRAPHIC MAP

ATTACHMENT B-2

SUROUNDING AREA TOPOGRAPHIC MAP

ATTACHMENT B-3

ZONING & LAND USE MAPS

City of Detroit
Planning and Development Department
2300 Cadillac Tower
Detroit, MI 48226

PLEASE DELIVER THE FOLLOWING PAGES TO:

Name(s): MR DAVID CRAIG

Firm Name:

Telecopier Number (810) 799-7194

Comments: ATTACHED HEREWITH, PLEASE FIND ONE COPY OF MYLAR MAP SHOWING CURRENT ZONING DESIGNATIONS FOR LAND BORDERED BY MEYERS, CHALFONTE, LYNDON, & CHEYENNE, AS REQUESTED.

City of Detroit Planning and Development Department

Sender: E. A. Weathersby Date: 10-16-96 Time: 12 55

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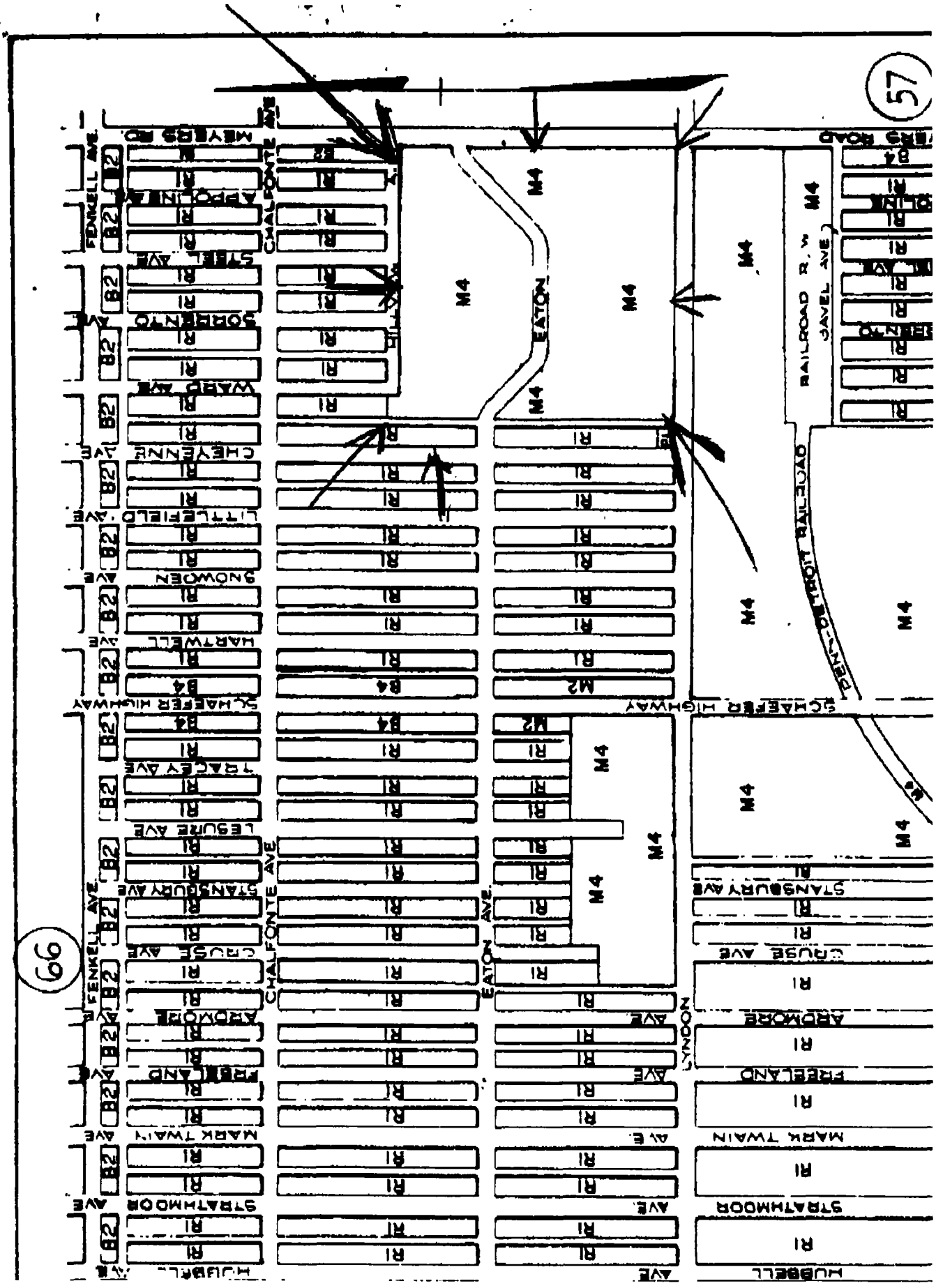
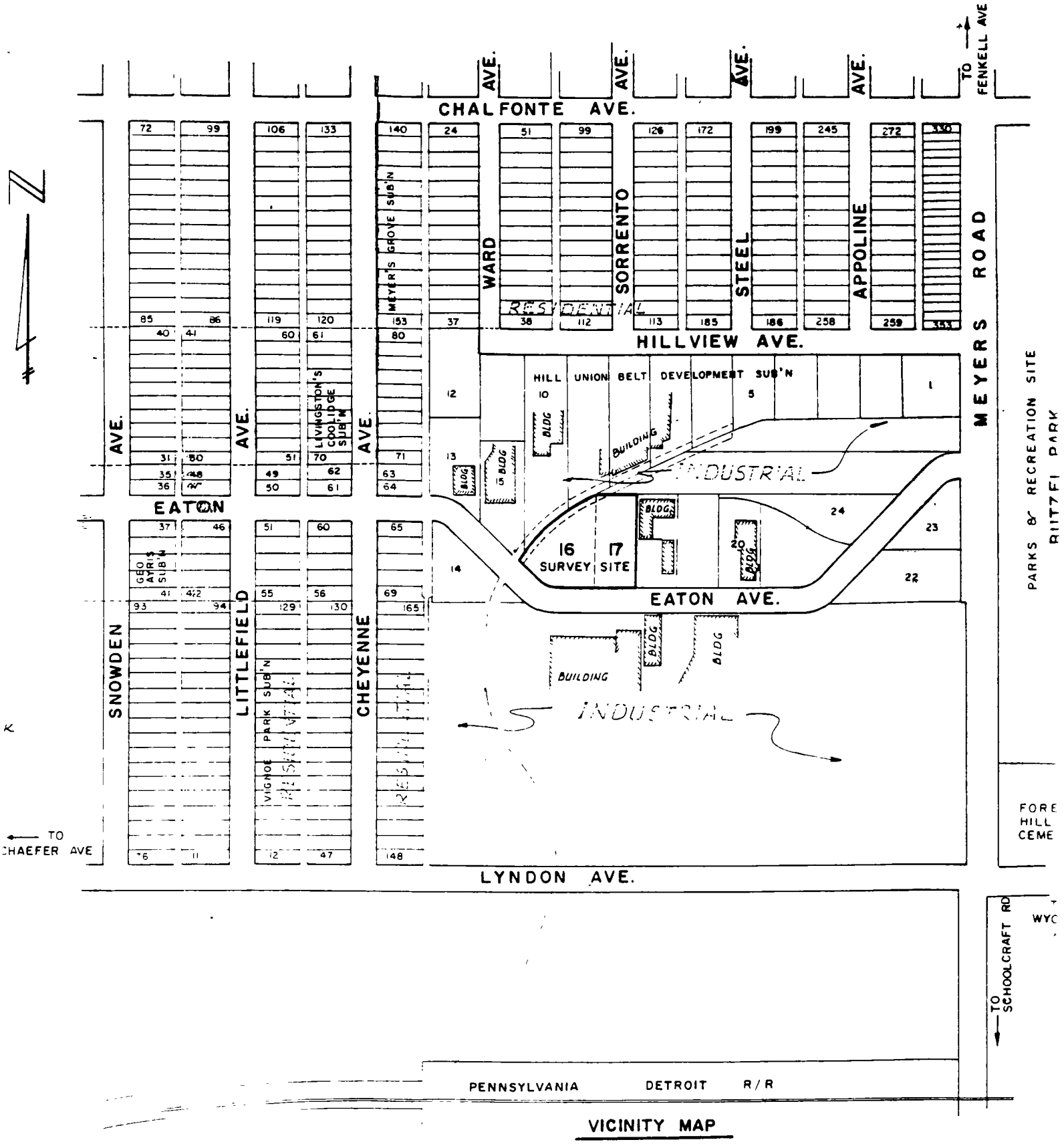

57
66
MEYERS RD.
APPOLINE AVE
STEEL AVE
SORRENTO AVE
WARD AVE
CHEYENNE AVE
LITTLEFIELD AVE
SNOWDEN AVE
HARTWELL AVE
SCHAEFER HIGHWAY
TRACEY AVE
LESURE AVE
STANSBURY AVE
CRUSE AVE
ARDMORE AVE
FREELAND AVE
MARK TWAIN AVE
STRATHMOOR AVE
HUBBELL AVE
FENKELL AVE
CHALFONTE AVE
EATON AVE
LYNDON
RAILROAD R.W.
GAVEL AVE
PENN-DETROIT RAILROAD
M4
M2
B2
B4
R1

ATTACHMENT B-3
EXISTING LAND USE MAP



ATTACHMENT B-4

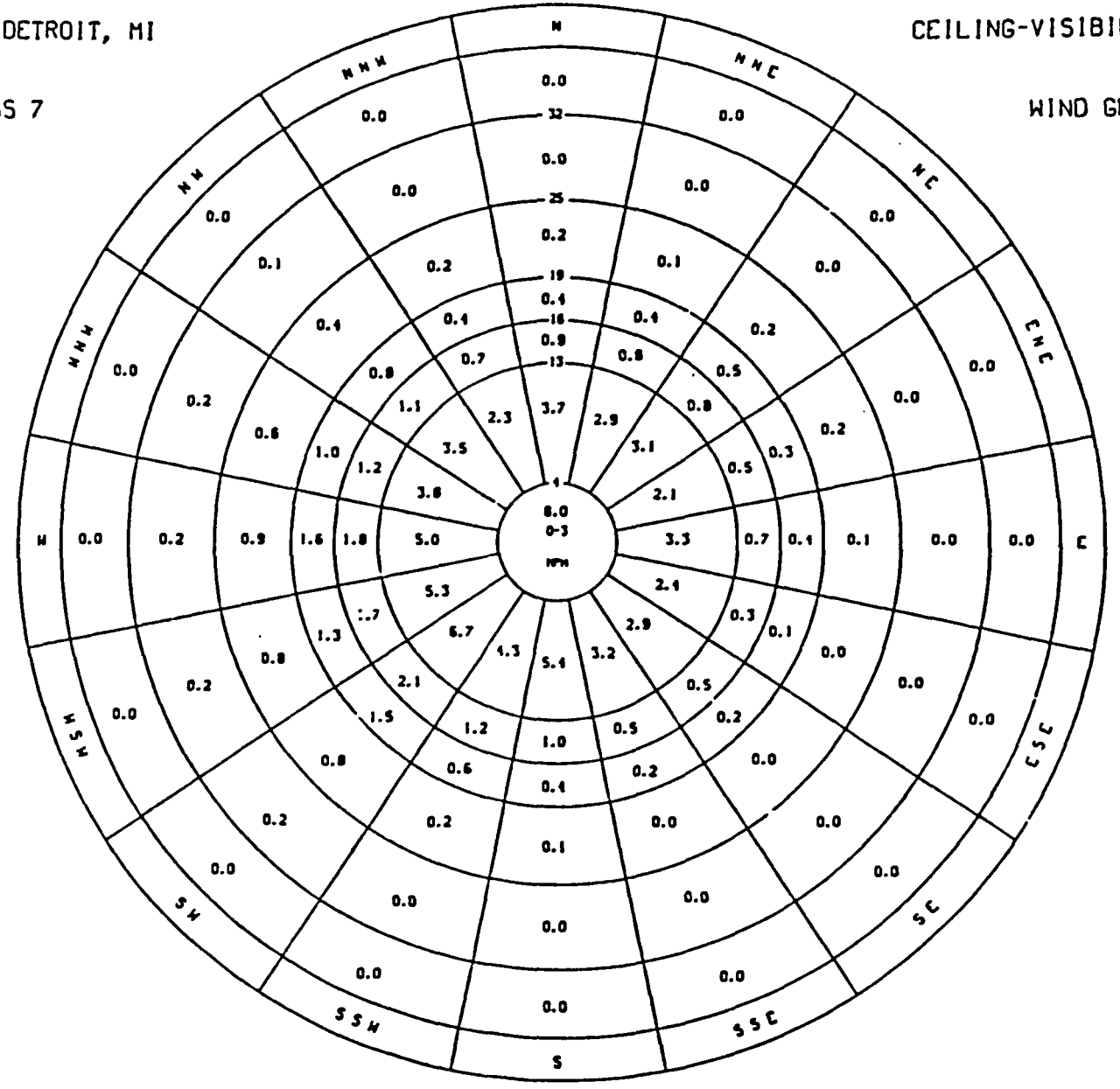
WIND ROSE

DTW DETROIT, MI

CLASS 7

CEILING-VISIBILITY

WIND GRAPH



ATTACHMENT B-4

ATTACHMENT B-5

LEGAL SURVEY

ATTACHMENT B-6

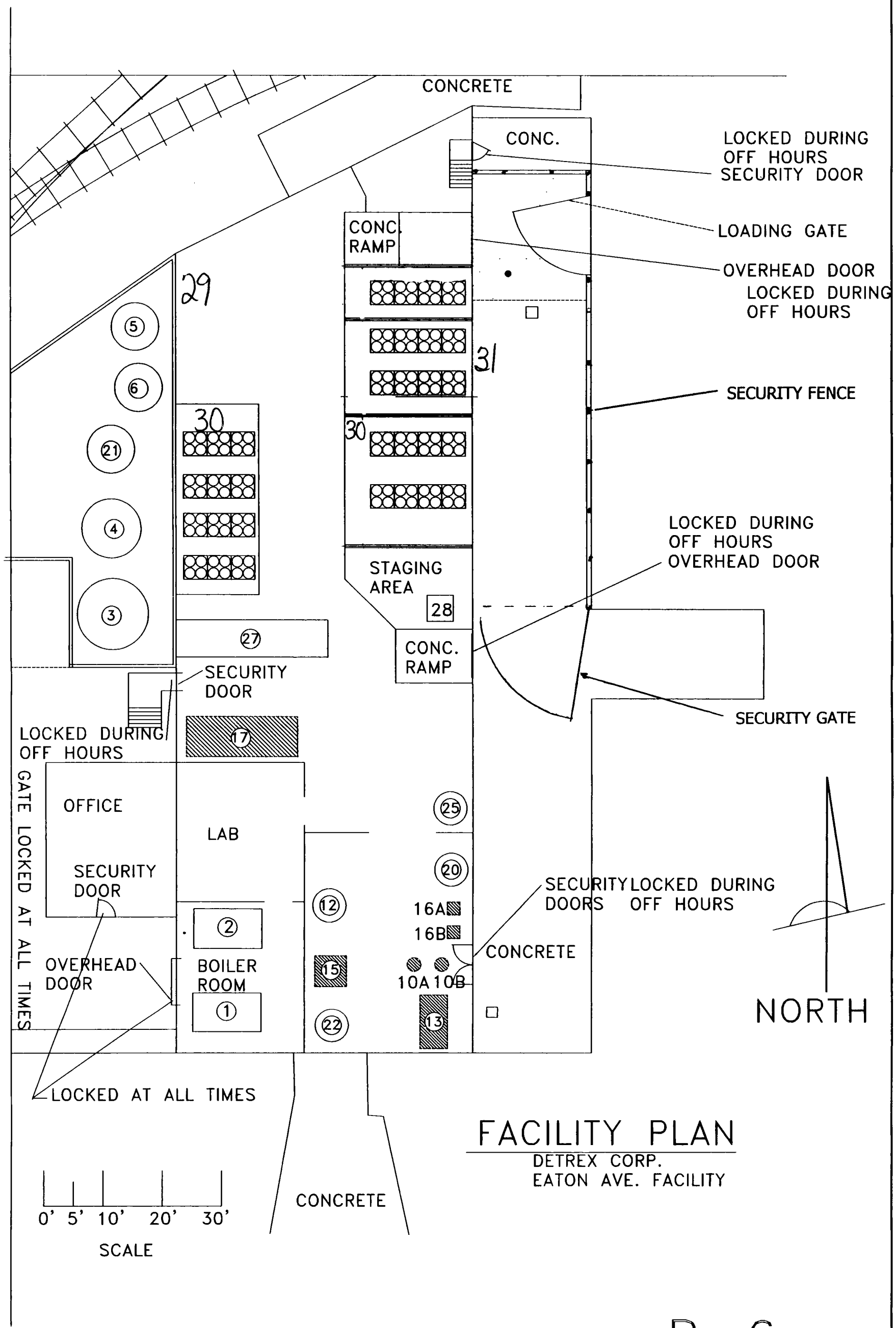
FACILITY PLAN

ATTACHMENT B-6
LIST OF PROCESS EQUIPMENT

I.D. No.	Equipment Name	Description
1.	Clayton Model E-100 Steam Generator	This unit is no longer in service
2.	Air Compressor	In use
3.	20,000 gal. Carbon steel Tank	Storage tank for reclaimed Trichloroethylene
4.	10,000 gal. Carbon Steel Tank	This tank is currently out of service
5.	4,500 gal. Carbon Steel Tank	This tank is currently out of service
6.	4,500 gal. Carbon Steel Tank	Storage tank for Trichloroethylene
10 A/B	2 – 600 gal. Receiver Tanks	These tanks are currently out of service
12.	2,300 gal. Carbon Steel Tank	Used for storage of Non-Hazardous Wastes.
13.	Detrex Model S-350 Still	This unit is currently out of service
14.	Detrex Model S-350 Still	Dismantled and removed
15.	DCI Model Dyna-1-100 Still	This unit is currently out of service
16 A/B	Drying Columns	These units are currently out of service
17	5,000 gal. Carbon Steel Tank	Used for storage of Non-Hazardous Wastes.
20	2,500 gal. 316 Stainless Steel Tank	Used for storage of reclaimed solvent
21	4,500 gal Carbon steel tank	Used for storage of Non-Hazardous Waste
22	4,500 gal. Carbon Steel Tank	Used for storage of Non-Hazardous Wastes.
24	DCI Model Dyna-1-500 Still	Dismantled
25	3,000 gal. 316 stainless steel Tank	Used for storage of Non-Hazardous Wastes.
26	SVRM - Carbon Absorption Unit	Dismantled
27	Drum Filling Station	Product Drumming Station. Used for filling 55- gallon drums with product. Unit can fill approximately 30 drums

ATTACHMENT B-6
LIST OF PROCESS EQUIPMENT

		per hour and is operated as necessary
28	Product Blending Vessel	550 gal. Carbon steel vessel utilized for product blending.
29	Temporary Storage Area	Roller conveyor used as temporary storage of up to 18 x 55 gallon drums.
30	Staging Area / Hazardous Waste Storage Area	Area used to store containerized waste (less than 500 gallon DOT approved containers) that has not yet received full waste screening.
31	Hazardous Waste Storage Area	Storage area for wastes that have full waste screening performed.
32	Transfer Facility	Active



FACILITY PLAN

DETREX CORP.
EATON AVE. FACILITY

B-6

DETREX CORPORATION
FACILITY
EATON AVE.
FACILITY
9601
1/8"=1'-0"
DEC. 10, 88
E.L.R.

ATTACHMENT B-7

FLOOD HAZARD BOUNDRY MAP

ATTACHMENT B-6

FACILITY PLAN

ATTACHMENT B-6
EXISTING FACILITY LAYOUT

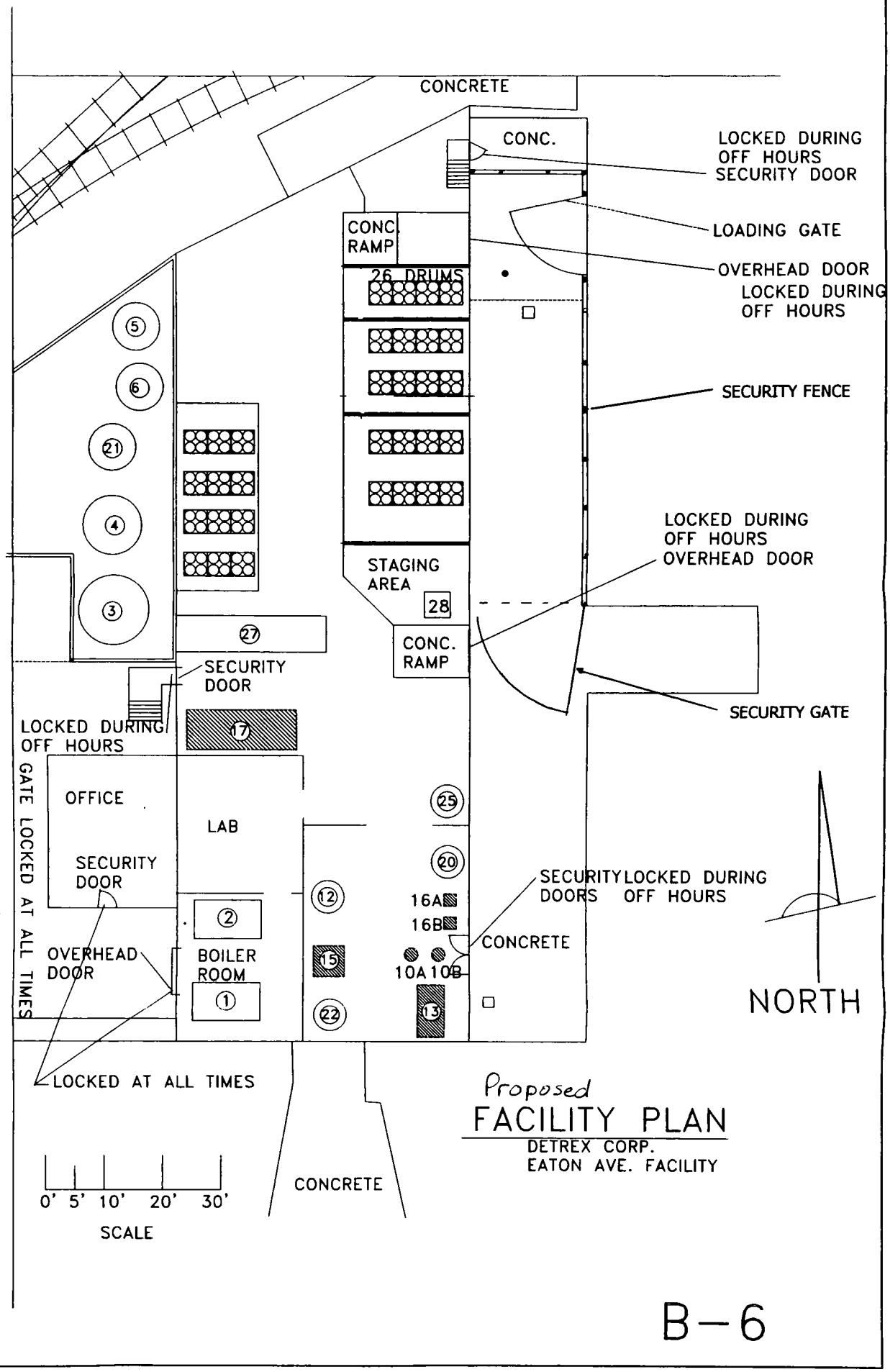
I.D. No.	Equipment Name	Description
1.	Clayton Model E-100 Steam Generator	This unit is no longer in service
2.	Air Compressor	In use
3.	20,000 gal. Carbon steel Tank	Storage tank for Trichloroethylene
4.	10,000 gal. Carbon Steel Tank	This tank is currently out of service
5.	4,500 gal. Carbon Steel Tank	This tank is currently out of service
6.	4,500 gal. Carbon Steel Tank	Storage tank for Trichloroethylene
10 A/B	2 – 600 gal. Receiver Tanks	Product Storage Tanks
12.	2,300 gal. Carbon Steel Tank	Used for storage of Non-Hazardous Wastes.
13.	Detrex Model S-350 Still	This unit is currently out of service
15.	DCI Model Dyna-1-100 Still	This unit is currently out of service
16 A/B	Drying Columns	These units are currently out of service
17	5,000 gal. Carbon Steel Tank	Used for storage of Non-Hazardous Wastes.
20	2,500 gal. 316 Stainless Steel Tank	Used for storage Product
21	4,500 gal Carbon steel tank	Used for storage of Non-Hazardous Waste
22	4,500 gal. Carbon Steel Tank	Used for storage of Non-Hazardous Wastes.
25	3,000 gal. 316 stainless steel Tank	Used for storage of Non-Hazardous Wastes.
27	Drum Filling Station	Product Drumming Station. Used for filling 55- gallon drums with product. Unit can fill approximately 30 drums per hour and is operated as necessary
28	Product Blending Vessel	550 gal. Carbon steel vessel utilized for product blending.
29	Roller conveyor	Used to weigh-in containers of waste.
30	Staging Area / Hazardous Waste Storage Area	Area used to store containerized waste that has not yet received full waste screening.
31	Hazardous Waste Storage Area	Storage area for wastes that have full waste screening performed
32	Transfer Facility	Active

ATTACHMENT B-6
PROPOSED FACILITY LAYOUT

ID #	Equipment Name	Description
1.	Clayton Model E-100 Steam Generator	Out of service, slated for eventual removal
2.	Air Compressor	In use
3.	20,000 gal. Carbon steel Tank	Storage tank for Trichloroethylene
4.	10,000 gal. Carbon Steel Tank	This tank is currently out of service
5.	4,500 gal. Carbon Steel Tank	This tank is currently out of service
6.	4,500 gal. Carbon Steel Tank	Storage tank for Trichloroethylene
7-9	Interior Hazardous Waste Storage	Active
10 A/B	2 – 600 gal. Receiver Tanks	Product storage
11	Exterior Hazardous Waste Storage	Storage of Flammables
12.	2,300 gal. Carbon Steel Tank	Storage of Non-Hazardous Wastes
13.	Detrex Model S-350 Still	Out of service, slated for eventual removal
15.	DCI Model Dyna-1-100 Still	Out of service, slated for eventual removal
16 A/B	Drying Columns	Out of service, slated for eventual removal
17	5,000 gal. Carbon Steel Tank	Storage of Non-Hazardous Wastes
20	2,500 gal. 316 Stainless Steel Tank	Storage of Non-Hazardous Wastes
21	4,500 gal Carbon steel tank	Storage of Non-Hazardous Wastes
22	4,500 gal. Carbon Steel Tank	Storage of Non-Hazardous Wastes
25	3,000 gal 316 stainless steel Tank	Storage of Non-Hazardous Wastes
27	Drum Filling Station	Product Drumming Station.
28	Product Blending Vessel	550 gal. Carbon steel vessel utilized for product blending.
29	Staging area	Sampling (containers weighed as needed)

ATTACHMENT B-6
PROPOSED FACILITY LAYOUT

ID #	Equipment Name	Description
1.	Clayton Model E-100 Steam Generator	This unit is no longer in service
2.	Air Compressor	In use
3.	20,000 gal. Carbon steel Tank	Storage tank for reclaimed Trichloroethylene
4.	10,000 gal. Carbon Steel Tank	This tank is currently out of service
5.	4,500 gal. Carbon Steel Tank	This tank is currently out of service
6.	4,500 gal. Carbon Steel Tank	Storage tank for reclaimed/ virgin Trichloroethylene
10 A/B	2 – 600 gal. Receiver Tanks	These tanks are currently out of service
12.	2,300 gal. Carbon Steel Tank	Used for storage of Non-Hazardous Wastes.
13.	Detrex Model S-350 Still	This unit is currently out of service
15.	DCI Model Dyna-1-100 Still	This unit is currently out of service
16 A/B	Drying Columns	These units are currently out of service
17	5,000 gal. Carbon Steel Tank	Used for storage of Non-Hazardous Wastes.
20	2,500 gal. 316 Stainless Steel Tank	Used for storage of reclaimed solvent
21	4,500 gal Carbon steel tank	Used for storage of Non-Hazardous Waste
22	4,500 gal. Carbon Steel Tank	Used for storage of Non-Hazardous Wastes.
25	3,000 gal. 316 stainless steel Tank	Used for storage of Non-Hazardous Wastes.
27	Drum Filling Station	Product Drumming Station.
28	Staging Area 1	One area where drums are staged for sampling
29	Product storage area	Active
30	Hazardous Waste Storage areas	Storage areas 1, 2, 3, and 4
31	Transfer Facility	Active


CONCRETE
CONC.
LOCKED DURING OFF HOURS SECURITY DOOR
LOADING GATE
CONC. RAMP
OVERHEAD DOOR LOCKED DURING OFF HOURS
26 DRUMS
SECURITY FENCE
LOCKED DURING OFF HOURS OVERHEAD DOOR
STAGING AREA
28
CONC. RAMP
SECURITY GATE
SECURITY DOOR
LOCKED DURING OFF HOURS
GATE LOCKED AT ALL TIMES
OFFICE
SECURITY DOOR
LAB
SECURITY DOORS
LOCKED DURING OFF HOURS
16A
16B
CONCRETE
OVERHEAD DOOR
BOILER ROOM
10A 10B
NORTH
LOCKED AT ALL TIMES
Proposed
FACILITY PLAN
DETREX CORP.
EATON AVE. FACILITY
0' 5' 10' 20' 30'
SCALE
CONCRETE
DETREX CORPORATION
FACILITY
EATON AVE.
FACILITY
9601

B-6

ATTACHMENT B-6
PROPOSED FACILITY LAYOUT

ID #	Equipment Name	Description
1.	Clayton Model E-100 Steam Generator	This unit is no longer in service
2.	Air Compressor	In use
3.	20,000 gal. Carbon steel Tank	Storage tank for reclaimed Trichloroethylene
4.	10,000 gal. Carbon Steel Tank	This tank is currently out of service
5.	4,500 gal. Carbon Steel Tank	This tank is currently out of service
6.	4,500 gal. Carbon Steel Tank	Storage tank for reclaimed/ virgin Trichloroethylene
10 A/B	2 – 600 gal. Receiver Tanks	These tanks are currently out of service
12.	2,300 gal. Carbon Steel Tank	Used for storage of Non-Hazardous Wastes.
13.	Detrex Model S-350 Still	This unit is currently out of service
15.	DCI Model Dyna-1-100 Still	This unit is currently out of service
16 A/B	Drying Columns	These units are currently out of service
17	5,000 gal. Carbon Steel Tank	Used for storage of Non-Hazardous Wastes.
20	2,500 gal. 316 Stainless Steel Tank	Used for storage of reclaimed solvent
21	4,500 gal Carbon steel tank	Used for storage of Non-Hazardous Waste
22	4,500 gal. Carbon Steel Tank	Used for storage of Non-Hazardous Wastes.
25	3,000 gal. 316 stainless steel Tank	Used for storage of Non-Hazardous Wastes.
27	Drum Filling Station	Product Drumming Station.
28	Staging Area	Area where drums are staged for sampling
29	Product storage area	Active
30	Hazardous Waste Storage areas	Storage areas 1, 2, 3, and 4
31	Flammable Storage area	Storage area 5 & Transfer Station

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SECTION C

WASTE CHARACTERISTICS

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SECTION C

WASTE CHARACTERISTICS

This Waste Analysis Plan (WAP) outlines the procedures utilized at the Detrex Corporation Facility (Facility) to ensure that the following objectives are met:

1) Only waste types/waste codes allowed in Detrex's Operating License are approved and accepted at the Facility.

2) Wastes that are potentially incompatible with each other are not stored in the same area.

3) Arriving waste shipments meet the description and characteristics as represented by the generator Any discrepancies must be resolved to ensure that the waste is from the pre-approved waste stream prior to waste acceptance

The following sections outline the WAP, and the specific chemical and physical waste analysis procedures that comprise it. The WAP is divided into two major sections: waste characterization, and waste screening. Waste characterization is a waste evaluation procedure that takes place before giving permission to a generator to ship waste to the Facility. Waste screening is conducted on the waste at the Facility to ensure that the waste actually received is representative of the information and samples presented for pre-approval.

The information is provided pursuant to Michigan ACT 451, Part 111 of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended and the administrative rules pursuant thereto

C-1 OVERVIEW OF WASTE ANALYSIS PLAN

Detrex Corporation (Detrex) has developed a Waste Analysis Plan (WAP) to ensure the Facility accepts only wastes for which the Facility is permitted to receive. The WAP has been prepared recognizing the nature of the wastes accepted by Detrex and based on extensive experience in the handling of hazardous wastes. A copy of the WAP is maintained at the Facility at all times. The WAP consists of two major sections, Waste Characterization and Waste Screening.

Provided in Attachment C-1 is a list of all hazardous wastes which may be stored at the facility. Attachment C-1 also provides for each waste constituent, its EPA hazardous wastes identification number(s) and hazard code(s).

The wastes to be accepted for storage at the facility may include solid, liquid and sludge material containing the constituents in Attachment C-1. Wastes accepted at the facility are stored prior to transportation to an off site permitted facility for treatment or disposal. The types of wastes, which may be received at the facility, consist of the following general waste groups:

1. amines, aliphatic and aromatic,
2. aromatic hydrocarbons;
3. halogenated organics;
4. ketones;
5. metals;
6. hydrocarbons, aliphatic-saturated and unsaturated, and
7. corrosive materials (i.e. acids, caustics).

The facility also handles Non-hazardous (i.e , non-RCRA) wastes that may be stored in bulk tanks, stored in DOT-approved containers within one of the hazardous waste storage areas, or stored elsewhere in the facility

Material Safety Data Sheets (MSDSs) and/or general reference materials for the primary constituents of waste streams are maintained at the Facility to describe the physical and chemical properties, and to assist personnel in proper handling. Attachment C-2 provides a tabular summary of typical chemical properties for the various wastes as well as a tabular summary of toxicological data for the various wastes

Section F-5 provides a discussion of waste compatibility for the different waste streams permitted under this license. A copy of the reactivity group number and the compatibility chart for the wastes to be accepted at the Facility can be found in Attachment C-3 In addition, chemistry reference texts, including items listed below, may also be on file at the Facility or at the Corporate Office to provide additional information

1) *Handbook of Chemistry*, 9th Edition, N A Lange, 1956,
2) *Concise Chemical and Technical Dictionary*, 2nd Edition, H. Bennett, 1962,
3) *A Method for Determining the Compatibility of Hazardous Waste*, EPA-600/2-80-076, 1980;

4) *Merck Index*, 10th Edition, 1985;
5) *Handbook of Chemistry and Physics* (CRC), 73rd Edition, D.R. Lide, 1992-1993; and
6) *Lange's Handbook of Chemistry*, 13th Edition, J.A. Dean, 1985;
7) SW846 - Volumes IA, IB, IC, II, 1986 Edition (Updated volumes have been ordered for Corporate Offices); and
8) NIOSH Pocket Guide

Hazardous Wastes will be stored in one of the approved storage areas or in either trailer within the dock area. Depending on the circumstances, the hazardous wastes may be either shipped in the original DOT containers or transferred from the containers to another approved DOT container, for shipment off-site. The issue of incompatibility with the different waste streams, hazardous and non-hazardous, acceptable under this license is addressed within the WAP

C-1a CONTAINERIZED WASTE
[40 CFR 264.172, 270 15(b)(1), 264.1086(c)(4)]

Once approved, hazardous wastes will be shipped to the Facility in DOT-approved containers that meet with the standards outlined in 49 CFR Parts 173, 174 and 178, and all applicable regulations. A copy of 49 CFR Parts 170 through 178 is either maintained at the Facility's office or at Detrex Corporate Offices in the Risk Management Department.

Although it is the Generator's responsibility to ensure that a DOT-approved container is compatible with the hazardous waste contents, Detrex will, when conditions indicate a need, verify that the container is compatible with the contents by utilizing DOT's regulations as set forth in 49 CFR Parts 172, 173 and 178.

Facility personnel inspect each container upon its arrival at the facility to insure its structural integrity In the event that the waste is accepted and the container is found to be in a condition that could allow hazardous wastes to be released from the container, Detrex will either transfer the contents to another compatible container or overpack the container. In addition, if it is determined that the waste and container are incompatible, then the material will either be repackaged in a DOT-approved container that is compatible or the container will not be accepted. Since the facility does not hold containers longer than one year there is no need for subsequent reverification.

Wastes containing free liquids will be stored in areas that have adequate secondary containment

C-2 WASTE ANALYSIS PLAN
[40 CFR 270.14(b)(3),_264.13(b) and (c), 266.102(a)(2)(ii), 266.104(a)(2), 268.7]

Detrex Corporation has developed a Waste Analysis Plan to ensure the Eaton Ave. Facility accepts only wastes for which it is permitted to accept. The Waste Analysis Plan is comprised of two components. The first component is a Waste Characterization to evaluate if a waste is permitted to be managed at the Facility. The second component is Waste Screening that is conducted on every shipment of waste received to ensure it meets the waste profile for the generator and to ensure it is properly managed within the Facility (i.e., compatibility with wastes already stored).

Prior to accepting wastes from a potentially new client, Detrex Corporation requires generators who want to ship waste to the Facility to complete a Waste Characterization process which includes the completion of a "Generator's Waste Material Profile Sheet" (Profile Sheet). A copy of a "typical" Profile Sheet can be seen in Attachment C-4 This procedure is designed to ensure that all hazardous wastes accepted by the Facility are acceptable within the scope of the Operating License and the Facility's hazardous waste storage capabilities. The Profile Sheet forms the basis of information that the Facility uses in determining if the waste can be accepted at the Facility. The process description, physical characteristics, and a representative sample of the waste may also be obtained to provide Facility personnel with adequate information to determine if the waste can be accepted or if additional data is required before a decision can be reached.

Typically, the Facility deals with hazardous wastes that contain greater than 500 parts per million by weight (ppmbw) Volatile Organic Concentration (VOC), which is documented in the Profile Sheet completed by the generator In the event that the generator denotes that a hazardous waste contains less than 500 ppm VOC (at the point of origin), or the generator states that they have treated the waste to below the 500 ppmbw level, Detrex will request the generator to provide information that they have properly treated the waste as required under 40 CFR 264 1083(b) Waste Determination Procedures For Treated Hazardous Waste.

A sample of the waste stream may either be obtained by Detrex personnel or the generator. All samples, whether supplied by the generator or obtained by Detrex personnel, will be handled in the same manner with regard to analysis In the event that the generator provides the sample Detrex personnel will review the profile provided by the generator to ascertain how the sample was obtained in order to ensure that a representative sample has been provided. If the generator does not provide sufficient information, the generator is contacted and requested to provide additional written information and possibly supporting laboratory analyses as necessary to determine the acceptability of the waste

Detrex may also conduct an analytical confirmation as a secondary check on the accuracy of the Profile Sheet. A Detrex Corporation employee would review the Profile Sheet, confirmation analysis report, and any additional information provided by the generator to perform a completeness review. This process review pays particular attention to the type of waste and the process that generates the waste.

As a final step in the approval process, Detrex reviews the waste stream for potential incompatibilities by determining its appropriate waste group and reactivity number in accordance with Attachment C-3 A similar review is performed on all non-hazardous wastes using the same methodology to determine what reactivity group number the material falls under. This information is then added to the Profile Sheet maintained on file at the Facility, or is subsequently recorded for the non-hazardous material for future reference.

When a sample is provided and during the review process the information provided by the generator does not match the sample, the generator will be requested to revise the profile to accurately represent the waste stream.

When it is determined that a waste stream can be safely handled at the Facility in accordance with the license requirements, the generator is notified that the waste may be shipped to and accepted by the Facility as long as the waste conforms to the original waste characteristics in the pre-shipment sample and profile sheet.

In addition to the above, the Facility requires as part of their acceptance program that the generator complete a new Profile Sheet, or a Recertification Sheet, on an annual basis. At any time, if the Facility is informed or has reason to believe that a waste stream has been altered, the generator is required to complete a new Profile Sheet reflecting these changes Each new Profile Sheet is reviewed as previously described If, upon evaluation of the information contained in the profile, it is determined that additional analytical data is required to properly characterize the waste stream, the necessary analytical testing will be performed, or the waste will be rejected

Wastes will be screened (fingerprinted) for parameters as specified in Section C-2 and Attachment C-5 for the appropriate waste codes. Section C-2 and Attachment C-5 define the parameters, flammability, pH, water reactivity, reactive cyanide, free liquids, and compatibility, under which testing must be performed for each type of waste to ensure that wastes received meet the generator's waste profile. During this process, Facility personnel will also record information on the color, unusual odors, appearance and any other parameter that may help with the screening process In lieu of screening the facility will reject the waste for good reason

C-2a PARAMETERS AND RATIONALE
[40 CFR 264.13(b)(1)]

The waste screening (i.e., fingerprinting) parameters for each waste type is presented in Attachment C-5. The parameters have been selected to fulfill the requirements of 40 CFR Part 261 with respect to the storage of the waste at this Facility. Figure C-1, found in Attachment C-5, provides a flow chart of the waste screening decision-making process. The rationale for each test is described in the following:

1. Flammability - provides verification that wastes which are not anticipated to be flammable, based on manifest information, are in fact non-flammable;

2. pH Testing - provides verification of corrosivity of wastes for storage purposes,

3. Water Reactivity - verifies that the waste stream in question does not react with water This is necessary in order to provide information for the emergency coordinator in the event of a fire;

4. Compatibility Test - provides compatibility verification for similar waste streams;

5 Paint Filter Test - determine if a waste stream that is received and identified as a solid waste contains free liquid. The necessity of this test will be decided during the screening process to determine the method of storage as well as the final method of disposal; and

6 Visual & Olfactory – characteristics of odor, color, appearance, and any other characteristic that Facility personnel help identify the waste

7. Cyanide Spot Test - provides an indication if waste contains reactive cyanide

C-2b TEST METHODS
[40 CFR 264 13(b)(2), 264 13(c)(1)]

Testing will be performed as detailed in the Quality Assurance Project Plan (QAPP) provided in Attachment C-6 as briefly described in the subsections below The QAPP provides the policies, objectives, and specific quality assurance (QA) and quality control (QC) procedures to achieve the data quality objectives of the testing. All analyses are conducted on composite or grab samples collected in

accordance with the procedures outlined in Section C-2c. The results of these tests are recorded and evaluated with respect to the pre-approved information.

C-2b(1) Flammability

A flammability potential screening analysis will be performed, on a discrete sample. At least 10% of the each hazardous waste stream received from each generator will be tested in accordance with the requirements of the QAPP and Attachment C-5. For shipments of less than 10 containers, the Facility will sample at least one container. If the test concludes the sample is non-flammable, then the waste stream represented by this discrete sample will have passed the flammability criteria. If the test concludes that the sample failed the flammability potential screening analysis, the sample may be retested to determine its flash point using the Pensky-Martens test (ASTM D93-90 found in Attachment C-6). If the material has a flash point above 140°F, the material will be accepted as non-flammable. If it is 140°F or less it will be classified as a flammable.

Any container received from the same line item on a manifest as the rejected container will be tested using the flammability potential screening analysis. Any additional container, which fails this test, may be either rejected or retested using the Pensky-Martens test as stated above. Material failing this test will be subject to the procedure specified in Section C-2d(5), Discrepancies & Waste Rejection Procedures

Since the Facility is also permitted to accept flammable materials the generator may be contacted to reprofile the material In such cases a new profile sheet will be generated along with the appropriate land ban form A discrepancy notation will be made on the manifest and the material will be transferred to the appropriate area for storage In the event that the Facility is unable to accept the waste, it will be rejected according to the rejection procedures in Section C-2d(5)

C-2b(2) Water Reactivity and pH Testing

A Water Reactivity and pH test will be performed, on a discrete sample. At least 10% of each waste stream received from each generator will be tested in accordance with the requirements of the QAPP and Attachment C-5 For shipments of less than 10 containers, which require these tests, the Facility will sample at least one container To determine if a waste is reactive with water, or exhibits an unexpected pH, Detrex will measure and record the pH on a sample when required as noted in Appendix C-5 using the method described in the QAPP and at our discretion as allowed under Section C-2d(4), Additional Testing. The

pH of the resultant mixture and observations on the formation of gases, vapors, or fumes are recorded.

These tests are conducted under a fume hood, using appropriate safety equipment, to protect the lab technician.

Water reactive material will be rejected. Wastes exhibiting an unexpected pH may be rejected unless it can be determined by contacting the generator why a higher or lower pH than expected is determined. If the characterization of the material is proper and the unexpected pH will not impact the processing/disposal of the waste at another licensed TSDF, the waste will be accepted. Waste rejection procedures are described in Section C-2d(5) .

C-2b(3) Compatibility Procedure

Waste compatibility is an important aspect of the Facility's waste management operation. Further details are presented in Section F-5, however a general discussion follows.

The initial step in evaluating waste compatibility is to determine the appropriate hazardous waste group (i.e. reactivity group number) for each waste stream in accordance with the USEPA guidance document *A Method for Determining the Compatibility of Hazardous Waste*, EPA-600/2-80-076, April 1980 The reactivity group number of a waste is used with the compatibility chart provided in Attachment C-3 to place potentially incompatible waste in separate container storage areas

It should also be noted that all transportation of hazardous wastes to the Facility is conducted in accordance with all appropriate DOT requirements including 49 CFR §177 848, which applies to segregation of hazardous materials during shipping. Section C-2d(3) and Section F-5b specifically outlines the actions taken by Facility personnel to address the issue of incompatibility If hazardous waste containers are in the staging area when a shipment of new waste arrives at the Facility, Facility personnel will determine the reactivity group number of each waste stream in the staging area Reactivity Group numbers and compatibility charts as found in Attachment C-3 would be used to evaluate if the transported wastes can be transferred into the staging area. If a compatibility problem exists then some, or all, of the hazardous wastes present in the staging area must be transferred to an appropriate container storage area prior to receiving the new waste based on potential incompatibilities

In the event that no container storage area is available that can manage the new wastes due to potential incompatibilities, despite the wastes being acceptable based on Detrex's license, the wastes will be rejected. The rejection procedures described in Section C-2d(5) will be followed; however, it is anticipated that the wastes would be returned to the generator until an appropriate container storage area is available.

C-2b(4) Visual & Olafactory

Samples for visual and olfactory screening are obtained from each container received at the Facility. These parameters are used to determine if the waste stream may contain materials other than what are listed in the profile. Visual examination for liquid hazardous wastes will consist of wet-ability, presence of solids, uniformity, pumpability, color, or any other parameter that may characterize a liquid waste stream. Visual examination for solid hazardous wastes will consist of presence of free liquids, layering, color, or any other parameter that may characterize a solid waste stream. Facility personnel would also denote any unusual odors. These parameters, in addition to physical testing, can also be used to help indicate the potential presence of another material that may require additional verification

The characteristics of color, odor, and physical state alone may not trigger the issue of rejection. For example, in the case of chlorinated compounds, color alone may not indicate the presence of other materials. Depending on the amount of oil in the solvent the color may range from light yellow to a dark brown to black. As such, good judgment and the other parameters listed above must be used to actually determine if other materials exist.

C-2b(5) Cyanide Spot Test

To determine if a waste contains reactive cyanide, Detrex will conduct a "Cyanide Spot Test for Sample Screening", as specified in Attachment C-5, according to the method outlined in Standard Methods 17th Edition, Method 4500-CN. A copy of this method is included in Attachment C-6

C-2c SAMPLING METHODS
[40 CFR 264 13(b)(3), Part 261 Appendix I, Part 266 Appendix IX]

The collection of representative waste samples for Screening is conducted by Facility personnel according to the sample collection procedures described in

the QAPP and in Attachment C-7. The sampling procedures are provided for both liquid and solid samples.

The screening process for waste consists of visual observation on every container received at the Facility. Up to 10 containers (550 gallons) are unloaded into the staging area (see section D-1c for more details), opened and visually checked. At least one container is then sampled and tested as required under Attachment C-5 for the required parameters (flammability, water reactivity, pH, cyanide, compatibility, and paint filter test). When containers need to be weighed in to determine the weight of material in the container, the scale at the drumming station may be used in addition to the scale in the staging area for obtaining weight; no sampling will occur here

In the event that containers are not representatively sampled or cannot be representatively sampled, the waste will not be accepted by the Facility. The facility may also use the scale

All containers shipped to the Facility will be given a container number for tracking purposes. Other markings will be used to indicate the need for rejecting containers or for those containers failing screening. The marking will be placed next to the Hazardous Waste Marking Containers passing the screening will only be marked with a container number. Rejected containers can remain in the container staging area (area 29) if no compatibility problems exist. These rejected containers do not count toward the 10-container allowance for this area.

The required screening on the 10 containers must be completed before additional drums may be brought into the screening area Unloading in this fashion is done to speed up release of the transporter and reduce container handling by allowing any additional testing of the containers prior to placing them into their storage area(s)

In the event that a container to be unloaded is found to be incompatible with materials already unloaded, the containers presenting the incompatibility problem will be moved to an appropriate storage area as detailed in Section F The movement of waste from one storage area to another is only for wastes previously accepted by Detrex. This is in no way being construed to allow Detrex the ability to directly offload material without completion of screening and meeting the compatibility requirements, while formally accepting the hazardous wastes

All screening will be complete prior to signing the manifest and releasing the transport vehicle

The screening process for wastes consists of sampling, visual observation and testing. Specifically, every container of waste received at the Facility is opened. Visual observations of unexpected sample characteristics such as color, consistency, odor, and physical state are recorded.

Several problems can occur during container sampling that may compromise the integrity of the sample collected. Among these are: obstructions in the containers that inhibit the full depth of the container from being sampled; layering of liquids with different viscosities which makes sampling difficult (more viscous liquids will tend to adhere to the outside of the sampling device); and extremely hard solids that are difficult to sample. Possible solutions to these problems include: angling the sampling device to avoid the obstruction; allowing the viscous liquid to drip off the sampling device back into the container prior to transferring the sample to a container; or using alternate sampling equipment such as a non-sparking chisel and mallet.

To minimize drippage during sampling of liquids, a funnel system or absorbent pad may be placed on the container prior to sampling. The exterior of the sampling device will be allowed to thoroughly drain back into the container prior to transferring the sample into the sample container. Absorbent pads will be managed in the same manner as the waste, should the waste drip on the pad.

Sampling equipment will be dedicated to wastes of a specific reactivity group number or decontaminated after use. Sampling equipment will not be decontaminated between screening samples of the same reactivity group because the nature of the wastes and the testing procedures are such that minor cross-contamination between wastes will not affect the analyses. Utilizing dedicated equipment for various reactivity groups will prevent undesired reactions due to potential incompatibilities. On occasion, disposable-sampling equipment may also be used, which when disposed, will be managed in the same manner as the waste it was used to sample

Decontamination will be accomplished by using a solvent (such as IPA) that will solubalize the contaminants followed by a detergent wash. The sampling device will then be triple rinsed with water to remove any residual detergent

C-2d FREQUENCY OF ANALYSIS
[40 CFR 264.13 (a)(3), 264.13(b)(4)]

C-2d(1) Waste Characterization

Waste characterization/profiling is completed for every waste stream that may be received at the Facility. The waste characterization will be completed using defensible generator knowledge, previous analytical, laboratory analysis, or a waste category for a particular industry (based on analytical data collected by either Detrex or the generator) to provide the necessary information. Waste characterization may, or may not, require additional laboratory testing depending on the generator's knowledge of the waste and the waste generation process. A Profile Sheet or a re-certification letter/sheet must be renewed at least annually.

C-2d(2) Waste Screening

Screening, using parameters described in Section C-2a, are conducted on each shipment of waste received at the Facility.

It should be noted that this Facility may also accept wastes from other Detrex facilities These facilities, like Eaton Ave., are also required to profile and test the materials prior to acceptance in accordance with their specific waste analysis plan. Consequently, when this Facility accepts wastes manifested from other Detrex facilities, the wastes have already been profiled and tested in accordance with a waste analysis plan. Other Detrex facilities are required to screen waste coming in according to parameters similar to the Analytical Testing Parameters found in Appendix C-5 Since performing a second screening at this point will not provide any additional information, the Facility may meet the testing requirement by obtaining a copy of the test results from the other Detrex Facility prior to acceptance of the particular waste shipment. If the parameters and methodology for both facilities are the same, then the analysis will be accepted. If the analysis lacks any parameter or the methodology differs, the facility will analyze for that parameter prior to accepting the waste The analysis for wastes accepted in this manner will include both the initial analysis, performed by another Detrex facility, and any additional analysis performed by personnel at this Facility These results will be filed at this Facility such that they can be cross-referenced back to the other Detrex facility that shipped the material The results will become part of this Facility's operating record.

For wastes not originating from another Detrex facility, containers of waste are removed from the transport vehicle, up to a volumetric capacity of 550 gallons, and are placed in the Staging Area in the Facility near the Hazardous Waste Container Storage Area. Each container at this time is marked with an identification number for the purposes of tracking. Shipping documents (manifest and land ban forms when required) are reviewed. The transporter will remain on-site until the analysis is complete and a signed copy of the manifest is provided to the transporter.

Discrete samples are obtained to perform the required analytical tests. The type of sample utilized for each test is specified in the testing procedure.

Attachment C-5 provides the parameters for screening each type of waste Results of the analysis are recorded on forms similar to those found in Attachment C-8. Waste Screening is performed in two stages. The first stage of screening will consist of: visual and olfactory observation (C-2b(4)) and ignitability. The second stage will include any required testing for compatibility (C-2b(3)), paint filter, water reactivity, pH, or reactive cyanide, as outlined in attachment C-5. Additional testing, as noted in C-2d(4), will be performed if deemed necessary by Detrex. Since any additional testing performed by Detrex is non-mandatory, such testing will not preclude the ability of Detrex to accept the waste and place it into the storage area.

The Profile sheet is compared to information obtained from: lab results, sample observations, Manifest, and the Land Ban Forms. A complete record of all-sampling, unusual observations, and analytical work is placed in the operating files at the Facility

Analytical testing may be done in the on-site laboratory or at another laboratory The testing procedures described in the following sections are followed by either laboratory. A laboratory Quality Assurance Project Plan (QAPP) has also been developed to ensure the reliability and accuracy of analytical results.

Containers that fail analysis will have a rejection marking placed on the container near the hazardous waste marking. Rejected drums will be segregated from other containers and grouped in areas within the staging areas shown in Attachment D-1 These containers will either be rejected, returned to the generator, sent to another TSDF under the consent of the generator, or reprofiled to allow acceptance.

In the event a waste stream is unacceptable, the manifest is not signed and the original waste generator is contacted to determine appropriate handling of the rejected waste The waste would be handled as outlined in Waste Rejection Procedure under Section C-2d(5). In the event that an entire waste

stream indicates the wastes are unacceptable as profiled and manifested, but the waste can be accepted by the Facility, the generator would be contacted and the procedure under C-2a(5) followed. Rejection of partial loads of waste also follows the procedures under C-2a(5).

C-2d(3) Waste Compatibility

Another important aspect in the management of hazardous wastes is waste compatibility.

To prevent the possible mixing of incompatible wastes in the event of release Detrex will follow the following procedure:

1. Upon acceptance, mark the reactivity group number(s) (RGNs) of the material on each DOT container near the hazardous waste marking;

2. Post the chart contained in Attachment F-2 as a reference guide to determine compatibility of different waste streams Use the chart prior to placing any new RGN into the storage area.

3 Post each RGNs present within a given storage area or use a computer tracking system to record and generate a list of RGNs in each containment area. .

4. If this system indicates a potential incompatibility problem between the wastes already in a given storage area and newly accepted wastes to be placed into the storage area, then an alternate storage area will be sought or incompatible waste(s) within a given storage area will be moved to another area.

If the materials already in the containment areas, or staging area are incompatible with the incoming waste, then the waste will not be off-loaded. In this case the waste in the storage area will be shipped out to make room for the incoming waste, or the incoming waste will either be shipped back to the generator or to another facility licensed to accept the waste

C-2d(4) Additional Testing

There may be cases when Detrex feels that additional testing may need to be performed. All results of additional testing will be recorded on the lab sheet and become part of the facility records for that load of waste.

Examples of the need for additional testing is needed is when the waste is: multi-layered and the profile indicates a homogeneous material, or if the material is listed as solid but contains free liquids. Another example of when additional testing may be need is when Facility Personnel notice unusual odors associated with a waste stream.

The presence of unusual visual indicators or odors may not in and of themselves be enough to require additional testing of a material. One example of such an occasion when additional testing would not be needed is when the odor indicates a waste is a mixture of chlorinated solvents. While this would not necessitate the need to reject the material, it may create the need for better characterization Under such conditions the Facility may perform additional testing, which could include the use of a GC. The testing will be performed on individual samples. When a number of containers have the same physical characteristics, an individual sample will be taken and tested from at least 10% of the containers The generator will be contacted to complete the necessary paperwork which may include the generation of a new profile sheet.

C-2d(5) Discrepencies & Waste Rejection Procedure

The facility will compare all screening results to the parameters and information provided from the generator in the profile sheet. In the event the screening indicates that the waste does not match the profile/characterization, the waste may be rejected. The following procedure will be followed to determine if the Facility can accept the waste. Detrex will follow the rejection procedures for containers of hazardous waste based on MDEQ's requirements. When more stringent requirements exist, Detrex will follow the more stringent procedures. The following outlines the basic steps taken in determining whether or not a load is rejected In all cases the transporter remains on site until the load is accepted, by signing the manifest, or rejected

In the event that screening indicates that a particular waste stream is potentially unacceptable, the Facility may reload this material after initial screening onto the truck to allow for additional material to be brought into the staging area. Facility personnel will temporary isolate these containers in the staging area as long as there are no compatibility issues and total facility

capacity of 13,750 gallons is not exceeded, such as the use of a container number.

LOAD ACCEPTANCE

1) The generator/broker is contacted to discuss the discrepancies identified during the screening and/or testing process.

2) If it is determined that the discrepancies can be resolved, and the Facility has previously approved the waste stream, they are noted on the manifest and the waste is transferred to an appropriate storage area.

3) If a new Profile Sheet is required to accept the waste, for a new waste stream or for an existing waste stream, the generator will be requested to fax a copy of the Profile Sheet to expedite the process of waste acceptance. Discrepancies would be noted on the manifest.

4) If it is determined that the discrepancies cannot be resolved, and that the waste stream differs from the pre-approved waste, but is acceptable under the Facility's license, approval will be obtained from the generator to modify the manifest to accurately describe the waste shipped to the Facility. A discrepancy will be noted in the discrepancy box of the manifest The generator will also be required to complete a Profile Sheet for the new waste stream

   To expedite this process, the generator will be required to authorize Detrex to modify the manifest to correctly reflect the waste stream(s) While waiting for this authorization the waste will either be held in the staging area or be placed back onto the truck until the required approval is received. The transporter will remain on site until the manifest is signed

REJECTED LOADS

In the event that all or part of the waste is determined not to be acceptable through the screening process or other conditions noted by the Facility, the generator will be contacted . Detrex will follow the MDEQ requirements for partial rejection of a shipment of Hazardous Waste. However, should the sending state have more stringent rules, the more stringent rules will be followed. .

In the event of a total load rejection, the generator would be contacted. MDEQ's procedure for a rejected load, for wastes originating in Michigan, would be followed This may include modifying the manifest to allow the waste to be

transferred to another TSDF, as requested by the generator, or to return the waste to the generator. In either case, the Facility would retain the TSDF portion of the manifest, or a Xerox copy of the manifest, for their records.

C-2e ADDITIONAL REQUIREMENTS FOR WASTES GENERATED OFF-SITE [40 CFR 264.13(b)(5) and (c), 264.73(b)]

As noted in Section C-2, the following requirements are in place for off-site waste generators.

The Facility requires, as part of their acceptance program, that the generator complete a Profile Sheet. If the Facility is informed, or has reason to believe that a waste stream has been altered, the generator is requested to complete a new Profile Sheet reflecting these changes. Each new Profile Sheet is reviewed to characterize the waste stream and to determine if the waste stream can continue to be accepted. If, upon evaluation of the Profile Sheet, it is determined that analytical testing data is required to determine acceptability, the necessary analytical tests are performed by the generator, a Detrex Laboratory, or an outside laboratory.

Additionally, as an on-going acceptance assessment, the generator is required to submit a new Profile Sheet, or sign a waste recertification statement/letter on an annual basis.

C-2f ADDITIONAL REQUIREMENTS FOR IGNITABLE REACTIVE/OR INCOMPATIBLE WASTES [40 CFR 264 13(b)(6), 264 17]

C-2f(1) Ignitable Wastes

Precautions taken by the Facility to prevent ignition of ignitable wastes include separation and protection of ignitable waste from ignition sources and the use of non-sparking tools when handling or sampling. Warning signs with the legend 'No Smoking' are also posted conspicuously in the area designated for handling and storage of ignitable waste.

C-2f(2) Reactive Wastes

The Facility does not handle reactive wastes As detailed in Section C-2b, tests are performed as necessary on incoming wastes to ensure that reactive wastes are not inadvertently accepted

C-2f(3) Incompatible Wastes

The Facility handles all permitted waste types such that incompatible waste types are segregated from the moment they are received at the Facility. Incompatible wastes are subsequently handled and stored separately. Incompatible waste types have been determined for all proposed and current waste codes handled at the Facility in accordance with the USEPA guidance document *A Method for Determining the Compatibility of Hazardous Waste*, EPA-600/2-80-076, April 1980 An explanation of compatibility determinations is included in Section F-5.

Secondary containment areas will separate potentially incompatible wastes and prevent contact should one or more containers fail. Prior to acceptance of a waste stream, the compatibility of that waste with other currently stored waste types will be evaluated as noted above. Special attention will be given to those waste types that have been determined to be incompatible with a substantial number of other waste types. Waste groups will not be accepted until a secondary containment area, containing only wastes that are compatible with the subject waste group, is available

In addition to the systems noted above, the Facility will institute the following to help insure that potentially incompatible wastes are not inadvertently stored in the same storage area:

1. Follow the requirements listed in Section F-5b and F-5e,
2. Upon acceptance, mark the reactivity group number of the material on each DOT container;
3. Post the chart contained in Attachment C-3 to serve as a reference guide,
4. Determine that only compatible materials are placed in the same hazardous waste storage area, and
5. Verify prior to placing any waste in the storage area that there is no potential for incompatibility

C-3 WASTE ANALYSIS REQUIREMENTS PERTAINING TO LAND DISPOSAL RESTRICTIONS [40 CFR 262.10, 262.11, 264.13, 264.73, 266.102(a)(2)(ii), Part 268, 270.14(b)(3)]

C-3a WASTE ANALYSIS [40 CFR 261 21 through 261.24, 264.13(a)(1), 268.1, 268.7, 268.9, 268.32 through 268.37, 268 41 through 268.43]

Detrex Corporation is familiar with the Land Disposal Restrictions (LDRs). Many of the waste streams to be managed at the Facility are prohibited from land disposal. This is known from the waste profile report, generator knowledge, or from analytical testing.

All shipments of wastes regulated by the LDRs that are received by the Facility are accompanied by a completed land ban form until at such time that the State will allow for a one time annual LDR form. When annual LDR forms are allowed, Detrex will consider the form current if the generator signed it within 365 days. To insure that forms are current, facility personnel each year will notify the generator of the need to complete and return a form for each waste stream in question Each time a LDR form is received it will be reviewed by Facility personnel to verify that the information on the form is consistent with the current profile sheet.

Detrex will maintain as part of its records for the required time frame the appropriate generator notification and certifications (i.e. land ban form) When annual LDR forms are permitted, Detrex intends to accept LDRs with each shipment or to obtain updated LDR forms within 365 days of the previous submission as part of the profile recertification process This allows the generator to supply forms with every shipment if required under other state law or other facilities. Detrex will review land ban forms prior to acceptance to ensure the forms have been completed Detrex will confirm that the waste categorization on the land ban form, as a wastewater or a non-wastewater, matches the information on the Profile sheet

In the event that Detrex receives a load of waste without the LDRFs, or with obvious incorrect/incomplete information, the following actions will be taken.

1 Contact the generator to discuss the discrepancies or errors found on the LDRF Obtain the generators approval to physically alter the LDRF to correct the discrepancies or errors found Facility personnel will denote the individual providing permission to change the LDRF. A copy will be sent to the generator,

2. Correct the LDR form with the generators consent, for example by adding waste streams to the LDRF based on information listed in the profile sheet; or

3. Have the generator send a copy of the form via facsimile to the Facility with the complete and correct information on the form. The facsimile copy will be held as would an original in the files.

A copy of each LDRF is retained at the Facility for the retention period required under 40 CFR 268.

Should Detrex Corporation ship LDR wastes from the Facility it will complete the necessary notification and certifications (i.e. LDRFs) to accompany the waste shipment off site. In many cases, these LDRFs will be generated based on the original generator's knowledge of the waste, and the testing and profiling information used in the initial characterization of the waste. In the cases where there may be a question regarding the level of a constituent, or if one is present, analytical testing may be conducted.

C-3a(1) Spent Solvent And Dioxin Wastes
[40 CFR 264.13(a)(1), 268.2(f)(1), 268 7, 268.30, 268.31]

Analytical, generator process knowledge, or categorical streams will be used to determine the presence of spent solvent wastes (F001, F002, F003, & F005). Generator process knowledge will be documented on the Waste Material Profile Report and LDRF. The LDRF will provide additional information regarding the appropriate treatment standards for the waste and whether it has already been treated to the appropriate standards.

Dioxin wastes (F020-F023, F026-F028) are not accepted at the Facility

C-3a(2) Listed Wastes
[40 CFR 264 13(a)(1), 268 7, 268 33, 268 34, 268 35, 268 36, 268.41, 268.42, 268 43]

There are three methods that a generator can use to provide documentation regarding the constituents present in the waste stream.

1. Perform a one-time analysis of the waste stream including total metals or TCLP testing for underlying constituents,
2. Accept a categorical analysis and add waste codes that have shown up in similar operating processes, or
3. Use generator knowledge of the waste stream providing raw materials used and information on the process generating the waste

C-3a(3) Characteristic Wastes
[40 CFR 261.3(d)(1), 264.13(a)(1), 268 7, 268.9, 268.37, Part 268 Appendix I, Part 268 Appendix IX]

Analysis, generator process knowledge, or one of the other methods noted above, will be used to determine whether characteristic wastes meet the applicable treatment standards, or to demonstrate that the waste has been treated by the appropriate specified treatment technology. In addition, the generator's process knowledge or analytical data, if available, will be used to identify the underlying hazardous constituents that are expected to be present in wastes. The generator's process knowledge and analytical data will be documented on the Profile Sheet and LDRF.

C-3a(4) Waste Mixtures and Wastes with Overlapping Requirements
[40 CFR 264.13(a), 268.7, 268 41(b), 268.43(b), 268.45(a)]

Generator process knowledge and analytical data, whenever deemed necessary or available, will be used to demonstrate that waste mixtures and wastes carrying multiple waste codes are properly characterized. Waste that carry more than one characteristic or listed Reactivity Group Numbers (RGNs) will be identified with a number for each characteristic.

C-3b NOTIFICATION, CERTIFICATION, AND RECORDKEEPING REQUIREMENTS
[40 CFR 264 73, 268 7,268 9(d)]

C-3b(1) Retention of Generator Notices and Certifications
[40 CFR 268 7(a)]

Detrex Corporation will retain a copy of all notices, certifications, demonstrations, data, and other documentation regarding land disposal restrictions as required by Act 451 Part 111.

C-3b(2) Notification and Certification Requirements for Treatment Facilities
[40 CFR 268.7(b)]

No chemical or physical treatment of wastes is conducted at this site. All wastes are eventually transported off site to a properly permitted facility Land Disposal Restrictions Forms are prepared as appropriate

C-3b(3) Notification and Certification Requirements for Land Disposal Facilities [40 CFR 268.7(c)(1)]

Not applicable to this Facility.

C-3b(4) Waste Shipped to Subtitle C Facilities [40 CFR 268.7(a), 268.7(b)(6)]

All waste shipments from the Facility to a permitted TSDF have the appropriate notifications and certifications. As described in Section C-3b(2), the notifications/certifications will be prepared by Detrex Corporation from the information provided by the original generator.

C-3b(5) Recordkeeping [40 CFR 264.73, 268.7(a)(5), 268.7(a)(6), 268.7(a)(7), 268.7(d); ACT 64-299.9608(4) & 299.9610(3)]

Detrex maintains a Facility Operating Log in accordance with 40 CFR 264.73 The operating log primarily consists of a waste tracking system (i.e., computerized) which is updated daily to accurately reflect the inventory of wastes received, processed and/or transported off-site

Copies of all necessary notifications and certifications as well as relevant inspection forms and monitoring data are also maintained on file at the Facility. Files will be maintained for a minimum 3 years (i.e , inspection records), 3 years (i.e., LDRFs), or until closure (i.e., shipments of waste to the facility).

Since this Facility no longer processes hazardous wastes, there is no need to provide monthly reports to the director In the event that a significant manifest discrepancy is discovered (i e , variation in one piece count or misrepresentation of the type of waste - corrosive rather than flammable), which cannot be resolved with the generator or transporter within 15 days of receipt, Facility personnel will submit to the director and regional administrator a letter describing the discrepancy and all attempts to reconcile the discrepancy The letter will include a copy of the manifest or shipping document.

C-3c REQUIREMENTS PERTAINING TO THE STORAGE OF RESTRICTED WASTES [40 CFR 268.50]

C-3c(1) Restricted Wastes Stored in Containers [40 CFR 268.5(a)(2)(i)]

Section D-1 of this license application describes the procedures followed by Detrex to manage containerized hazardous wastes at the Facility. Many of the wastes managed at the Facility are restricted wastes. In particular, all containers are clearly marked to identify their contents and date of receipt at the Facility.

ATTACHMENT C-1

LIST OF HAZARDOUS WASTES

ATTACHMENT C-1

LIST OF HAZARDOUS WASTES

Waste	*EPA Hazardous Waste Number and Hazard Code*
Ignitable Wastes	D001 (I)
Corrosive Waste	D002 (C)
Arsenic	D004 (T)
Barium	D005 (T)
Cadmium*	D006 (T)
Chromium	D007 (T)
Lead	D008 (T)
Mercury	D009 (T)
Selenium*	D010 (T)
Silver	D011 (T)
Endrin	D012 (T)
Benzene	D018 (T, I)
Carbon Tetrachloride	D019 (T), U211(T)
Chlorobenzene	F002 (T, I), D021(T, I), U037(T, I)
Chloroform	D022 (T), U044(T)
1,4-Dichlorobenzene	D027 (T), U072(T)
1,2-Dichloroethane	D028 (T, I), U077(T, I)
1,1-Dichloroethylene	D029 (T, I), U078(T, I)
2,4-Dinitrotoluene	D030 (T)
Heptachlor*	D031 (T)
Hexachlorobenzene	D032 (T), U127(T)
Hexachloroethane	D034 (T), U131(T)
Methyl Ethyl Ketone	D035 (T, I), F003 (I)
Nitrobenzene	D036 (T)
Tetrachloroethylene	F001 (T), F002(T), D039 (T), U210(T)
Trichloroethylene	F001(T), F002(T), D040 (T), U228(T)
Vinyl Chloride	D043 (T, I)
Ortho-Dichlorobenzene	F002 (T)
1,1,2,2-Tetrachloroethane	U209(T)
1,1,1,2-Tetrachloroethane	U208(T)
Dichlorodifluoromethane	U075(T)
1,1-Dichloroethane	U076(T, I)
1,1,1-Trichloroethane	F001(T), F002(T), U226(T)
Dichloromethane (Methylene Chloride)	F001 (T), F002 (T), U080(T)

Note: Hazard Code based on 40 CFR 261. Wastes may be liquid or solid

I - Ignitable Waste
H - Acute Hazardous Waste
* - Extremely Hazardous Waste
T - Toxic Waste
C - Corrosive Waste

ATTACHMENT C-1

LIST OF HAZARDOUS WASTES

Waste	*EPA Hazardous Waste Number and Hazard Code*
Monofluoromethane	F001 (T), F002 (T)
Trichlorofluoromethane	F001(T), F002(T), U121(T)
Trichloromonofluoromethane	F001 (T), F002 (T)
1,1,2-trichloro-1,2,2-trifluoroethane	F002 (T)
Xylene	F003 (I)
Acetone	F003 (I)
Ethyl Acetate	F003 (I)
Ethyl Benzene	F003 (I)
Ethyl Ether	F003 (I)
n-Butyl Alcohol	F003 (I)
Cyclohexanone	F003 (I)
Methyl Isobutyl Ketone	F003 (I), U161 (I)
Methanol	F005 (I)
Toluene	F005 (T, I)
Methyl Ethyl Ketone	F005 (I,T)
Carbon Disulfide	F005 (H, I)
Isobutanol	F005 (I,T)
Pyridine	F005 (T, I)

Wastewater treatment sludges from electroplating operations except from the following processes: F006

1 sulfuric acid anodizing of aluminum,
2 tin plating on carbon steel;
3. zinc plating (segragated basis) on carbon steel,
4 aluminum or zinc-aluminum plating on carbon steel;
5 cleaning/stripping associated with tin, zinc and
6. aluminum plating on carbon steel; and
7 chemical etching and milling of aluminum.

Waste water treatment sludges from the chemical conversion coating of aluminum except from zirconium phosphating in aluminum can washing when such phosphating is an exclusive conversion coating process F019

Note: Hazard Code based on 40 CFR 261 Wastes may be liquid or solid

I - Ignitable Waste
H - Acute Hazardous Waste
* - Extremely Hazardous Waste
T - Toxic Waste
C - Corrosive Waste

ATTACHMENT C-2A

CHEMICAL PROPERTIES OF SITE-RELATED CHEMICALS DETREX CORPORATION DETROIT MICHIGAN

Chemical	*Molecular Weight (g/mol)*	*Aqueous Solubility At 20°C – 25°C (mg/l)*	*Vapor Pressure At 20°C – 25°C Mm Hg*	*Henry's Law Constant at 20°C – 25°C (atm-m³/mol)*	*Octanol-Carbon Partition Coefficient Koc (mg/g)*	*Flashpoint °C*	*Ignitable Chemicals*
1.1.1.2-Tetrachloroethane	167 84						
1.1.1-Trichloroethane	133 4	3 47E+02	124	8 0E-03	1.05E+02	none	
1.1.2.2-Tetrachloroethane	167.84						
1.1.2-Trichloro-1.2.2-trifluoroethane	187.38	1.70E+02	362 5	5.26E-01	3 89E+02	--	
1.1-Dichloroethane	98.97	5 06E+03	22 7	5.87E-03	3.00E+01	-6	
1.1-Dichloroethylene	96.95	2 73E+02	591	1.90E-01	6.46E+01	-15	
1.2-Dichloroethane	98.96	8 52E+03	78.7	9.77E-04	1.9E+01	13	
1.4-Dichlorobenzene	147.01	8.7E+01	1.76	1.50E-03	1.58E+02	65.6	
2.4-Dinitrotoluene	182 15					225.5	
Acetone	58 08	Soluble	400 mm @ 39 5°C			- 17.8	*
Arsenic	74 92	Insol in Water	1 mm @ 372° C	--	--	--	
Barium	137.34	Insol. in Water	10 mm @ 1049° C	--	--	--	* Solid
Benzene	78 11	1 79E+03	95 2	5.43E-03	7.08E+01	-11	*
Cadmium	112.4	--	1 mm (@ 394a°C)	NA	NA	--	
Carbon Disulfide	76 13		400 mm @ 28°C			- 30	
Carbon tetrachloride	153 8	8 05E+02	113 8	3.04E-02	2.24E+02	nonflammable	
Chlorobenzene	112.56	4 72E+02	11.9	3 45E-03	3.31E+02	28	
Chloroform	119 39	7 95E+03	246	4.35E-03	4.37E+01	none	
Chromium	51 996	insoluble	1 mm (@ 1616°C)	NA	NA	--	
Cyclohexanone	96.12		4			33.89	
Dichlorodifluoromethane	134.94	--	--	--	--	--	

ATTACHMENT C-2A

CHEMICAL PROPERTIES OF SITE-RELATED CHEMICALS DETREX CORPORATION DETROIT MICHIGAN

Chemical	*Molecular Weight (g/mol)*	*Aqueous Solubility At 20°C – 25°C (mg/l)*	*Vapor Pressure At 20°C – 25°C Mm Hg*	*Henry's Law Constant at 20°C – 25°C (atm-m³/mol)*	*Octanol-Carbon Partition Coefficient Koc (mg/g)*	*Flashpoint °C*	*Ignitable Chemicals*
Dichloromethane	84 93	1 30E+04	434 9	2.68E-03	8.71	--	
o-Dichlorobenzene	147.01	insoluable				66	
Endrin	380.9	2 40E-02	2.00E-07	5 00E-07	8 32E+03	27	
Ethyl Acetate	88.12		100			- 4.4	*
Ethyl Benzene	106.18		10			15	*
Ethyl Ether	74 14		442			- 45	*
Heptachlor	373 35	5 6E-02	3 00E-04	2 3E-03	2.19E+04	--	
Hexachlorobenzene	284 79	6 20E-03	1 90E-05	1 3E-03	3 9E+03	242	
Hexachloroethane	236.76	5 00E+01	0.21	2 80E-03	2 19E+03	--	
Isobutanol	74 14		10			27.78	*
Lead	207 2	insoluble	10 mm (@ 1162°C)	NA	NA	--	
Mercury	200 59	5.60E-02	2.00E-03	--	--	not flammable	
Methanol	32.05		100				*
Methyl ethyl ketone	72 11	2 39E+05	90.6	1.05E-05	1.23E-00	-9	*
Methyl Isobutyl Ketone	100 16	2 gm / 100 ml	16 mm			17	*
n-Butyl Alcohol	74 14		5 5			35	*
Nitrobenzene	123 12		1 mm @ 44.4°C			87.78	
Pyridine	79 11		10 mm @ 13 2			20	*
Selenium	78 96	insoluble	1 mm (@ 356°C)	NA	NA	--	
Silver	107 868	soluble	100 mm (@ 1865°C - liquid)	NA	NA	--	
Tetrachloroethylene	165.82	1.50E+03	18.47	1.49E-02	2.09E+02	none	

ATTACHMENT C-2A

CHEMICAL PROPERTIES OF SITE-RELATED CHEMICALS DETREX CORPORATION DETROIT MICHIGAN

Chemical	*Molecular Weight (g/mol)*	*Aqueous Solubility At 20°C – 25°C (mg/l)*	*Vapor Pressure At 20°C – 25°C Mm Hg*	*Henry's Law Constant at 20°C – 25°C (atm-m³/mol)*	*Octanol-Carbon Partition Coefficient Koc (mg/g)*	*Flashpoint °C*	*Ignitable Chemicals*
Toluene	92.15						*
Trichloroethylene	131 4	1 10E+03	69	1 03E-02	1.26E+02		
Trichloromonofluoromethane	137 36						
Vinyl Chloride	62 5		2,600			- 8	
Xylene	106 18		6 72			25	*

ATTACHMENT C-2

CHEMICAL PROPERTIES OF SITE-RELATED CHEMICALS
DETREX CORPORATION
DETROIT, MICHIGAN

Chemical	*Molecular Weight (g/mol)*	*Aqueous Solubility at 20°C - 25°C (mg/L)*	*Vapor Pressure at 20°C - 25°C (mm Hg)*	*Henry's Law Constant at 20°C - 25°C (atm-m3/mol)*	*Octanol-Carbon Partition Coefficient Koc (mL/g)*	*Flashpoint (°C)*	*Ignitable Chemicals*
Arsenic							
Barium							
Cadmium	112.4	--	1 mm (@ 394°C)	NA	NA	--	
Carbon tetrachloride	153.8	8.05E+02	113.8	3.04E-02	2.24E+02	nonflammable	
Chlorobenzene	112.56	4.72E+02	11.9	3.45E-03	3.31E+02	28	
Chloroform	119.39	7.95E+03	246	4.35E-03	4.37E+01	none	
Chromium	51.996	insoluble	1 mm (@ 1616°C)	NA	NA	--	
1,4-Dichlorobenzene	147 01	8 7E+01	1.76	1 50E-03	1.58E+02	65.6	
Dichlorodifluoromethane	134.94	--	--	--	--	--	
1,1-Dichloroethane	98.97	5.06E+03	22.7	5.87E-03	3.00E+01	-6	
1,2-Dichloroethane	98.96	8.52E+03	78.7	9.77E-04	1.9E+01	13	
1,1-Dichloroethylene	96.95	2.73E+02	591	1.90E-01	6.46E+01	-15	
Dichloromethane	84.93	1 30E+04	434.9	2.68E-03	8.71	--	
2,4-Dinitorotoluene							
Heptachlor	373.35	5.6E-02	3.00E-04	2.3E-03	2.19E+04	--	
Hexachlorobenzene	284.79	6.20E-03	1.90E-05	1.3E-03	3.9E+03	242	
Hexachloroethane	236.76	5.00E+01	0.21	2.80E-03	2.19E+03	--	
Lead	207.2	insoluble	10 mm (@ 1162°C)	NA	NA	--	

ATTACHMENT C-2

CHEMICAL PROPERTIES
&
TOXILOGICAL DATA

RECEIVED
JAN 05 2000
Waste Management
Division

ATTACHMENT C-2

CHEMICAL PROPERTIES OF SITE-RELATED CHEMICALS
DETREX CORPORATION
DETROIT, MICHIGAN

Chemical	*Molecular Weight (g/mol)*	*Aqueous Solubility at 20°C - 25°C (mg/L)*	*Vapor Pressure at 20°C - 25°C (mm Hg)*	*Henry's Law Constant at 20°C - 25°C (atm-m3/mol)*	*Octanol-Carbon Partition Coefficient Koc (mL/g)*	*Flashpoint (°C)*	*Ignitable Chemicals*
Mercury	200.59	5.60E-02	2.00E-03	--	--	not flammable	
Methyl ethyl ketone	72 11	2.39E+05	90.6	1.05E-05	1.23E+00	-9	
Selenium	78.96	insoluble	1 mm (@ 356°C)	NA	NA	--	
Silver	107.868	soluble	00 mm (@ 1865°C - liquid	NA	NA	--	
Tetrachloroethylene	165.82	1.50E+03	18.47	1.49E-02	2.09E+02	none	
1,1,1-Trichloroethane	133 4	3.47E+02	124	8.0E-03	1.05E+02	none	
Trichloroethylene	131.4	1.10E+03	69	1.03E-02	1.26E+02	32.2	
1,1,2-Trichloro-1,2,2-trifluoromethane	187.38	1.70E+02	362.5	5.26E-01	3.89E+02	--	

ATTACHMENT C-2b
TOXICOLOGICAL DATA FOR SITE-RELATED CHEMICALS
DETREX CORPORATION
DETROIT, MICHIGAN

	Toxicological Classification [1]	*RfD Oral Chronic (mg/kg-day)*	*RfD Inhalation Chronic (mg/kg-day)*	*CSF Oral Chronic [1/(mg/kg-day)]*	*CSF Inhalation Chronic [1/(mg/kg-day)]*
Arsenic					
Barium					
Benzene	A	under review	under review	2.90E-02	2.90E-02
Cadmium	B1	5.00E-04 (water)	--	--	6.30E+00
Carbon tetrachloride	B2	7.00E-04	--	1.30E-01	5.25E-02
Chlorobenzene	D	2.00E-02	5.70E-03	--	--
Chloroform	B2	1.00E-02	--	6.10E-03	8.10E-02
Chromium III	--	1.00E+00	--	--	--
Chromium VI	A	5.00E-03	--	--	4.20E+01
1,4-Dichlorobenzene	B2	--	2.29E-01	2.40E-02	--
Dichlorodifluoromethane	--	--	--	--	--
1,1-Dichloroethane	C	1.00E-01	1.40E-01	--	--
1,2-Dichloroethane	B2	--	--	9.10E-02	9.10E-02
1,1-Dichloroethylene	C	9.00E-03	--	6.00E-01	1.75E-01
Dichloromethane	B2	6.00E-02	8.75E-01	7.50E-03	1.65E-03
2,4 Dinitrotoluene					
Heptachlor	B2	5.00E-04	--	4.50E+00	4.50E+00
Hexachlorobenzene	B2	8.00E-04	--	1.60E+00	1.60E+00
Hexachloroethane	C	1.00E-03	--	1.40E-02	1.40E-02
Lead	B2	--	--	--	--

ATTACHMENT C-2b
TOXICOLOGICAL DATA FOR SITE-RELATED CHEMICALS
DETREX CORPORATION
DETROIT, MICHIGAN

	Toxicological Classification [1]	*RfD Oral Chronic (mg/kg-day)*	*RfD Inhalation Chronic (mg/kg-day)*	*CSF Oral Chronic [1/(mg/kg-day)]*	*CSF Inhalation Chronic [1/(mg/kg-day)]*
Mercury	D	under review	under review	--	--
Methyl ethyl ketone	D	6.00E-01	2 86E-01	--	--
4-Methyl-2-pentanone	--	--	--	--	--
Nitrobenzene					
Selenium	D	5.00E-03	--	--	--
Silver	D	5.00E-03	--	--	--
Tetrachloroethylene	B2	1.00E-02	--	--	--
1,1,1-Trichloroethane	D	9.00E-02	3.00E-01	--	--
Trichloroethylene	B2	under review	under review	--	under review
1,1,2-Trichloro-1,2,2-trifluoroethane	--	3.00E+00	8.60E+00	--	--
Vinyl Chloride					

1 EPA Weight of Evidence Ranking:

A - Known human carcinogen

B1- Probable human carcinogen (limited evidence in humans)

B2 - Probable human carcinogen (sufficient evidence in animal studies)

C - Probable human carcinogen (limited evidence in animal studies)

D - Not classified (inadequate evidence of carcinogenicity in animal studies)

ATTACHMENT C-2b
TOXICOLOGICAL DATA FOR SITE-RELATED CHEMICALS
DETREX CORPORATION
DETROIT, MICHIGAN

Chemical	*Toxicological Classification*	*RfD Oral-Chronic (mg/kg-day)*	*RfD Inhalation-Chronic (mg/kg-day)*	*CSF Oral- Chronic [1/(mg/kg-day)]*	*CSF Inhalation-Chronic [1(mg/kg-day)]*
Arsenic	--	--	--	--	--
Acetone	A4				
Barium	C	1.00E-01	1.40E-01	--	--
Benzene	B2	--	--	9.10E-02	9.10E-02
Cadmium	C	9 00E-03	--	6.00E-01	1.75E-01
Carbon Disulfide	--				
Carbon tetrachloride	B2	6 00E-02	8.75E-01	7.50E-03	1.65E-03
Chlorobenzene					
Chloroform	D	3 00E-04	--	--	--
Chromium III	B2	5 00E-04	--	4.50E-00	4.50E-00
Chromium VI	B2	8 00E-04	--	1.60E-00	1.60E-00
Cyclohexanone	A4				
1,1-Dichloroethane	D	2.00E-02	5.70E-03	--	--
1,1-Dichloroethylene	B2	1 00E-02	--	6.10E-03	8 10E-02
1,2-Dichloroethane	--	1 00E-00	--	--	--
1,4-Dichlorobenzene	A	5.00E-03	--	--	4 20E+01
2,4 Dinitrotoluene	B2	--	2.29E-01	2.40E-02	--
o-Dichlorobenzene	A4				

EPA Weight of Evidence Ranking & TLV Values:
A / A1 - Known human carcinogen
B1 / A2- Probable human carcinogen (limited evidence in humans)
B2 - Probable human carcinogen (sufficient evidence in animal studies)
A3 – confirmed animal carcinogen with unknown relevance to humans
C - Probable human carcinogen (limited evidence in animal studies)
D / A4 - Not classified (inadequate evidence of carcinogenicity in animal studies)
A5 – Not Suspected as a Human Carcinogen

Date: 08/24/00

ATTACHMENT C-2b
TOXICOLOGICAL DATA FOR SITE-RELATED CHEMICALS
DETREX CORPORATION
DETROIT, MICHIGAN

Chemical	*Toxicological Classification*	*RfD Oral-Chronic (mg/kg-day)*	*RfD Inhalation-Chronic (mg/kg-day)*	*CSF Oral- Chronic [1/(mg/kg-day)]*	*CSF Inhalation-Chronic [1(mg/kg-day)]*
Dichlorodifluoromethane	C	1 00E-03	--	1.40E-02	1 40E-02
Dichloromethane	B2	--	--	--	--
Endrin	D	under review	under review	--	--
Ethyl Acetate	--				
Ethyl Benzene	--				
Ethyl Ether					
Heptachlor	D	6.00E-01	2 86E-01	--	--
Hexachlorobenzene	--	--	--	--	--
Hexachloroethane	--	--	--	--	--
Isobutanol	--				
Lead	D	5.00E-03	--	--	--
Mercury	D	5 00E-03	--	--	--
Methanol	--				
Methyl ethyl ketone	B2	1 00E-02	--	--	--
n-Butyl Alcohol	D				
Nitrobenzene	D	9 00E-02	3.00E-01	--	--
4-Methyl-2-pentanone (MIBK)	--	--	--	--	--
Pyridine	--				

EPA Weight of Evidence Ranking & TLV Values:
A / A1 - Known human carcinogen
B1 / A2- Probable human carcinogen (limited evidence in humans)
B2 - Probable human carcinogen (sufficient evidence in animal studies)
A3 – confirmed animal carcinogen with unknown relevance to humans
C - Probable human carcinogen (limited evidence in animal studies)
D / Not classified (inadequate evidence of carcinogenicity in animal studi
A5 Suspected as a Human Carcinogen

Date: 08/24/00

ATTACHMENT C-2b
TOXICOLOGICAL DATA FOR SITE-RELATED CHEMICALS
DETREX CORPORATION
DETROIT, MICHIGAN

Chemical	*Toxicological Classification*	*RfD Oral-Chronic (mg/kg-day)*	*RfD Inhalation-Chronic (mg/kg-day)*	*CSF Oral- Chronic [1/(mg/kg-day)]*	*CSF Inhalation-Chronic [1(mg/kg-day)]*
Selenium	B2	under review	under review	--	under review
Silver	--	3.00E-00	8.60E-00	--	--
1,1,1,2-Tetrachloroethane	--	--	--	--	--
1,1,1-Trichloroethane	A	under review	under review	2.90E-02	2.90E-02
1,1,2,2-Tetrachloroethane	B1	5 00E-04 (water)	--	--	6.30E-00
1,1,2-Trichloro-1,2,2-trifluoroethane	B2	7.00E-04	--	1.30E-01	5.25E-02
Tetrachloroethylene	A3				
Toluene	D / A4				
Trichloroethylene	A5				
Trichloromonofluoromethane	A4				
Vinyl Chloride	A1				
Xylene	A4				

EPA Weight of Evidence Ranking & TLV Values.
A / A1 - Known human carcinogen
B1 / A2- Probable human carcinogen (limited evidence in humans)
B2 - Probable human carcinogen (sufficient evidence in animal studies)
A3 – confirmed animal carcinogen with unknown relevance to humans
C - Probable human carcinogen (limited evidence in animal studies)
D / A4 - Not classified (inadequate evidence of carcinogenicity in animal studies)
A5 – Not Suspected as a Human Carcinogen

Attachment C-2C
WASTE CHARACTERISTICS AND SPECIFIC GRAVITIES

Waste Code	Parameter	Characteristic	SpG
F001	Tetrachloroethylene (PCE)	T	1.64
	Trichloroethylene (TCE)	T	1.465[1]
	Methylene Chloride (MC)	T	1.32[1]
	1,1,1 Trichloroethane (TCA)	T	1.338[1]
	Carbon Tetrachloride	T	1.594[2]
	Trichlorotrifluoroethane (FC113)	T	1.570[1]
	Trichloromonofluoromethane (MF)	T	1.6[E]
	Chlorinated Fluorocarbons	T	1 6[E]
	+10% F001, F004, F005		
F002	PCE	T	1.64
	MC	T	1.32
	TCE	T	1.465
	TCA	T	1.338
	Chlorobenzene	T	1.1058[2]
	FC 113	T	1.570
	Ortho-Dichlorobenzene	T	1.3048[2]
	Monofluoromethane	T	
	1,1,2 Trichloroethane	T	1 5635[2]
	+ >10% F001, F004, F005	T	1 64
F003	Xylene	I	
	Acetone	I	
	Ethyl Acetate	I	
	Ethyl Benzene	I	
	Ethyl Ether	I	
	n-Butyl Alcohol	I	
	Cyclohexanone	I	
	Methyl Isobutyl Ketone	I	
	Methanol	I	
F005			

Notes

[1]Material Safety Data Sheet (from Section C, Part B)

[2]CRC Handbook, 55th Edition

[3]Perry's Chemical Engineer's Handbook, 5th Edition

[4]Akzo Nobel Product Information Package

5 Sax's Dangerous Properties of Industrial Materials (8th Edition)

[E]Estimated Maximum Specific Gravity

Attachment C-2C
WASTE CHARACTERISTICS AND SPECIFIC GRAVITIES

Waste Code	Parameter	Characteristic	SpG
	Toluene	T,I	
	Methyl Ethyl Ketone	I,T	
	Carbon Disulfide	H, I	
	Isobutanol	I,T	
	Pyridine	T, I	
F006	Wastewater treatment sludges from electorplate operations		
F019	Waste water treat\ment sludges from the chemical conversion coating of aluminum except fromzirconium phosphating in aluminum can washing when such phosphating is an exclusive conversion coating process		
U037	Chlorobenzene	I	1.1058[2]
U044	Chloroform	T	1.4832
U072	1,4-Dichlorobenzene	T	1.5459[2]
U075	Dichlorodifluoromethane	T	1.75[2]
U076	1,1 dichloroethane	T, I	1.1757[2]
U077	1,2 dichloroethane	T, I	1.2351[2]
U078	1,1 dichloroethylene	T, I	1.218[2]
U080	Methylene Chloride	T	1.3266[2]
U121	Trichloromonofluoromethane	T	
U127	Hexachlorobenzene	T	1.5691[2]
U131	Hexachloroethane	T	2.091[2]
U208	1,1,2,2-Tetrachloroethane	T	
U209	1,1,1,2-Tetrachloroethane	T	
U210	Tetrachloroethylene	T	1.64[1]
U211	Carbon Tetrachloride	T	1.594
U226	1,1,1 Trichloroethane	T	1.338
U228	Trichloroethylene	T	1.465[1]
D001	Ignitable Wastes	I	

Notes

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[5] Sax's Dangerous Properties of Industrial Materials (8th Edition)

[E]Estimated Maximum Specific Gravity

Attachment C-2C
WASTE CHARACTERISTICS AND SPECIFIC GRAVITIES

Waste Code	Parameter	Characteristic	SpG
D002	Liquids with 2 ≤pH ≥ 12.5	C	1.8337
D004	Arsenic	T	5.724[5]
D005	Barium	T	3.5[5]
D006	Cadmium	T	8.642[5]
D007	Chromium	T	
D008	Lead	T	1.3972[2]
D009	Mercury	T	13.534[5]
D010	Selenium	T	4.8[5]
D011	Silver	T	1.4769[2]
D012	Endrin	T	
D018	Benzene	I, T	87865
D019	Carbon Tetrachloride	T	1.597[5]
D021	Chlorobenzene	T, I	1.1058
D022	Chloroform	T	1.4832
D027	1,4 Dichlorobenzene	T	1.5459
D028	1,2 Dichloroethane	T, I	1.3048
D029	1,1 Dichloroethylene	T, I	1.218
D030	2,4-Dinitrotoluene	T	
D031	Heptachlor	T	
D032	Hexachlorobenzene	T	1.5691
D034	Hexachloroethane	T	2.091
D035	Methyl Ethyl Ketone	I, T	0 81
D036	Nitrobenzene	T	1 205[5]
D039	Tetrachloroethylene	T	1 64
D040	Trichloroethylene	T	1.465
D043	Vinyl Chloride	T, I	

Notes
[1]Material Safety Data Sheet (from Section C, Part B)
[2]CRC Handbook, 55th Edition
[3]Perry's Chemical Engineer's Handbook, 5th Edition
[4]Akzo Nobel Product Information Package
[5] Sax's Dangerous Properties of Industrial Materials (8th Edition)
[E]Estimated Maximum Specific Gravity

ATTACHMENT C-3

REACTIVITY GROUP NUMBERS
&
WASTE COMPATABILITY CHART

ATTACHMENT C-3

HAZARDOUS WASTES GROUPS

Reactivity Group Number	*Group Name and Constituents*
	Corrosive Materials
1, 2, 3	**Acids**
10	**Caustics**
4	**Alcohols and Glycols**
	1-Butanol
	iso-Butyl alcohol
	Methanol
	n-Butyl Alcohol
7	**Amines, Aliphatic and Aromatic**
	Pyridine
13	**Esters**
	Ethyl Acetate
14	**Ethers (All Isomers)**
	Ethyl Ether
16	**Aromatic Hydrocarbons**
	Benzene
	Toluene
	Xylene
	Ethyl Benzene
17	**Halogenated Organics**
	Freons
	Hexachloroethane
	Endrin
	Carbon tetrachloride
	Chlorobenzene (distillation or fractionation column bottoms)
	Chloroform
	1,4-Dichlorobenzene
	1,2-Dichloroethene
	1,1-Dichloroethylene
	Hexachlorobenzene
	Heptachlor
	Tetrachloroethylene
	Trichloroethylene
	1,1,1-Trichloroethane
	Dichloromethane
	Trichlorofluoromethane
	Chlorinated Fluorocarbons
	Vinyl Chloride
	1,1,2,2-Tetrachloroethane
	1,1,1,2-Tetrachloroethane

ATTACHMENT C-3

HAZARDOUS WASTES GROUPS

Reactivity Group Number	*Group Name and Constituents*
17	**Halogenated Organics** **Dichlorodifluoromethane** **1,1-Dichloroethane**
19	**Ketones** **Methyl Ethyl Ketone** **Acetone** **Cyclohexanone** **4-Methyl-2-pentanone**
20	**Mercaptans and Other Organic Sulfides (All Isomers)** **Carbon Disulfide**
21-24	**Metals** **Arsenic (24)** **Barium (21, 24)** **Cadmium (23, 24)** **Chromium (23, 24)** **Lead (23, 24)** **Mercury (24)** **Selenium (22, 24)**
27	**Nitro Compounds** **2,4-Dinitrotoluene** **Nitrobenzene**
28	**Hydrocarbons, Aliphatic, Unsaturated (All Isomers)** **Xylene**
29	**Hydrocarbons, Aliphatic, Saturated**
31	**Phenols** **Phenol**
101	**Combustible and Flammable Materials** **Ignitable Waste**

Attachment: C-3
DETREX HAZARDOUS WASTE COMPATABILITY CHART

REACTIVITY CODE	CONSEQUENCES
H	HEAT
F	FIRE
G	INNOCUOUS AND NON FLAMMABLE GAS GENERATION
GT	TOXIC GAS GENERATION
GF	FLAMMABLE GAS GENERATION
S	SOLUBILIZATION OF TOXIC SUBSTANCES
E	EXPLOSTION

REACTIVITY GROUP NUMBER	1	2	3	4	7	10	13	14	16	17	19	20	21	22	23	24	27	28	29	31	101
1																					
2																					
3		H,G																			
4	H	H, F	H, P																		
7	H	H, GT	H																		
10	H	H	H																		
13	H	H, F																			
14	H	H, F																			
16		H, F																			
17	H, GT	H, F, GT			H, GT	H, GT															
19	H	H, F				H															
20	GT, GF	H, F, GT								H	H										
21	GF, H, F	GF, H, F	GF, H, F	GF, H, F	GF, H	GF, H	GF, H			GF, H	GF, H	GF, H									
22	GT, H, F	GF, H, F	GT							H, E	GF, H	GF, H, F									
23	GF, H, F	GF, H, F				GF, H				H, E		GF, H, F									
24	S	S	S		S	S															
27		H, F, GT				H, F															
28	H	H, F												H, E							
29		H, F																			
31	H	H, F																			
101	H, G	H, F, GT																			

ATTACHMENT C-4

SAMPLE GENERATOR'S WASTE MATERIAL APROFILE SHEET & ANNUAL RECERTIFICATION LETTER

GENERATOR WASTE MATERIAL PROFILE SHEET
DETREX CORPORATION
Solvents and Environmental Services Division

Waste Stream approval number: _____ **Date:** _____

SECTION I GENERATOR INFORMATION

Generator Name: _____ S.I.C. Code(s): _____ EPA ID#: _____
Facility Address: _____ City, ST, Zip: _____
Contact(s): _____ Telephone & Fax: _____

SECTION II SAMPLING INFORMATION

Date Sampled: _____ Time of Day & Temperature: _____
Type of Container (Bulk / Non-bulk): ☐ Drum ☐ Tote ☐ Tank ☐ Other: _____
Location of Container: ☐ inside ☐ heated ☐ unheated ☐ outside w/o covered roof ☐ outside w/ roof
Type of Sampling Device: _____ Was Sampling device clean: ☐ yes ☐ no
Method of sampling: _____ Sampled by* (PRINT CLEARLY): _____
Is label properly attached to sample?: ☐ yes ☐ no

SECTION III SHIPPING AND HANDLING INFORMATION

1. Check off the physical properties listed below that are NOT exhibited by the waste (NOTE: if waste exhibits any of the characteristics listed, contact a Detrex Representative before completing this form):
   a. Reactive ☐ b. Pyrophoric (4.2) ☐ c. Shock Sensitive ☐ d. Oxidizer (5) ☐ e. Explosive (1) ☐ f. Radioactive (7) ☐
2. Container waste will be shipped in: ☐ Drum ☐ Tote ☐ Tank ☐ Other: (DM / DF / CF)_____
3. Shipment frequency: ☐ single shipment ☐ monthly ☐ annual anticipated volume: _____
4. USDOT information: Proper shipping name:
   _____ HC ____ UN/NA# _____ PG ____
5. EPA Reactivity Group number(s) _____

SECTION IV WASTE FINGERPRINT

1. Physical Characteristic of Waste at 70°F: ☐ Solid ☐ Liquid ☐ Layers ☐ pumpable ☐ free liquids (method 9095)
2. Characteristic odor of waste: ☐ none ☐ Description of odor _____
3. Color of Waste (USEPA method SW-846): _____
4. Density (include units): _____ Specific Gravity: _____
5. pH range (method 9040 or 9045): ☐ ≤2 ☐ >2-4.9 ☐ 5-9.9 ☐ 10-12.5 ☐ ≥12.5
6. Flash Pt.: ☐ <73°F ☐ 73°F – 140°F ☐ >140°F - < 200°F ☐ ≥200°F (if <140°F provide TOC and VOC analytical results)
7. Initial Boiling Point (°F/C): _____ (method 1010 – attach lab results)

SECTION V
HAZARDOUS WASTE CHARACTERISTICS & PROCESS GENERATING WASTE

1. Facility Common Waste Name: _____
2. Provide a DETAILED DESCRIPTION of the process generating the waste. Provide a flow diagram if necessary to provide additional details on process: _____
   _____
   _____
   _____ Source Code: A
3. Based on lab analysis and/or 'generator knowledge' of the process(es) generating the wastes, describe composition:

Constituent	*minimum%*	*to*	*maximum%*

4. List any and all hazardous waste codes (FKDUP), including applicable state hazardous or special waste codes:
   _____ Form Code: B

SECTION VI FUEL BLENDING

Estimate the following characteristics of waste:
Water (%): _____ Solids (%): _____ **PCBs (total ppm):** _____ Heat value (BTU/lb.): _____
Sulfur (%): _____ Chlorine (%): _____ Ash (%): _____

GENERATOR WASTE MATERIAL PROFILE SHEET

DETREX CORPORATION

Solvents and Environmental Services Division

Waste Stream approval number: _____ **Date:** _____

SECTION VII CERTIFICATIONS

☐ yes ☐ no Does the waste contain amenable to chlorination above 250 ppm?:
☐ yes ☐ no Does the waste contain reactive sulfide above 500 ppm?:
☐ yes ☐ no Is this waste a dioxin/furan waste as specified in 40 CFR 261.31
☐ yes ☐ no This waste contained VOCs at the point of generation of less than 500-ppmw
☐ yes ☐ no This waste has been treated such that the VOC concentration is currently below 500-ppmw

Check off the yes box listed below if TCLP testing has been conducted on the waste stream (attach lab results) For those constituents that the waste stream has come in contact with, it is reasonable to consider that the constituent may be present in the waste stream. ALL MATERIALS WITH WHICH THE WASTE STREAM COMES INTO CONTACT WITH HAVE BEEN CHECKED OR AN ANALYSIS WILL BE PROVIDED TO SHOW THE MATERIAL IS NOT IN THE WASTE STREAM.

Constituent		TCLP Regulatory Action Level (mg/l)	YES	NO
ACID EXTRACTABLES				
D023	0-Cresol*	200.0	☐	☐
D024	m-Cresol*	200.0	☐	☐
D025	p-Cresol*	200.0	☐	☐
D026	Cresol	200.0	☐	☐
D037	Pentachlorophenol	100.0	☐	☐
D041	2,4,5-Trichlorophenol	400.0	☐	☐
D042	2,4,6-Trichlorophenol	2.0	☐	☐
METALS				
D004	Arsenic	5.0	☐	☐
D005	Barium	100.0	☐	☐
D006	Cadmium	1.0	☐	☐
D007	Chromium	5.0	☐	☐
D008	Lead	5.0	☐	☐
D009	Mercury	0.2	☐	☐
D010	Selenium	1.0	☐	☐
D011	Silver	5.0	☐	☐
ORGANICS				
D018	Benzene	0.5	☐	☐
D019	Carbon Tetrachloride	0.5	☐	☐
D021	Chlorobenzene	100	☐	☐
D022	Chloroform	6.0	☐	☐
D028	1,2-Dichloroethane	0.5	☐	☐
D029	1,1-Dichloroethylene	0.7	☐	☐
D035	Methyl Ethyl Ketone	200.0	☐	☐
D039	Tetrachloroethylene	0.7	☐	☐
D040	Trichloroethylene	0.5	☐	☐
D043	Vinyl Chloride	0.2	☐	☐

Constituent		TCLP Regulatory Action Level (mg/l)	YES	NO
BASE NEUTRAL EXTRACTABLES				
D027	1,4-Dichlorobenzene	7.5	☐	☐
D030	2,4-Dinitrotoluene	0.13	☐	☐
D032	Hexachlorobenzene	0.13	☐	☐
D033	Hexachlorobutadiene	0.5	☐	☐
D034	Hexachloroethane	3.0	☐	☐
D036	Nitrobenzene	2.0	☐	☐
D038	Pyridine	5.0	☐	☐
PESTICIDES				
D020	Chlordane	0.03	☐	☐
D012	Endrin	0.02	☐	☐
D031	Heptachlor (&its Epoxide)	0.008	☐	☐
D013	Lindane	0.4	☐	☐
D014	Methoxychlor	10.0	☐	☐
D015	Toxaphene	0.5	☐	☐
HERBICIDES				
D016	2,4-D	10.0	☐	☐
D017	2,4,5-TP (Silvex)	1.0	☐	☐

CERTIFICATION

'Based upon my knowledge of the waste and the process generating the waste, these constituents are not present in the waste above hazardous classification levels'.

_____

_____
Print and Sign

I hereby authorize Detrex personnel to add supplemental information to their waste approval file provided I am contacted to give 'verbal' permission. I authorize Detrex to obtain a sample from any waste shipment for purposes of verification and confirmation. I further certify that all information (including attached information is complete and factual and is accurate representation of the known and suspected hazards, and waste generator regulations, pertaining to the waste described herein denoted by the certification signature.

Generator's Signature: _____ Date. _____

Print Name: _____ Company: _____

Title: _____

Facility Approval Signature: _____ Date: _____

950 28th st Building A Suite 105 Grand Rapids, Mi. 49508 Phone 616-454-9269 Fax 616-454-9529

Re-evaluation of approval 30 Day Notice

June 9, 2000
Jerry Slagter
950 28TH ST
BUILDING A SUITE 105
GRAND RAPIDS MI 49508

FOR INFORMATION ONLY

Dear: Jerry Slagter

As required under our permit, Detrex Corporation is required to perform an annual review of all waste streams we accept for processing; therefore, in order for us to continue to process your waste without interruption we are requesting that you review the information as shown below and return this signed document to us.

If there have been any changes to the waste stream, our permit requires you to complete a new 'Generator Waste Material Profile Sheet'. Please contact customer service for a new form, if one is needed.

Approval #	D0000000
EPA #	MID 000 000 000
Waste Common Name:	RQ, WASTE FLAMMABLE LIQUID N.O.S.
Proper D.O.T. Description:	(ACETONE,TOLUENE)
EPA/State Waste Codes:	D001,D018
Waste Process:	PAINT BOOTH COATING
Would you like to continue this waste stream?:	☐ YES ☐ NO
Expiration Date	6/1/00

Detrex has the appropriate permits to accept and process F001 and F002 hazardous waste streams. We can also process any of the following underlying constituents: (D004 - D011, D018 - D019, D021 - D022, D027 - D030, D034 - D036, D038 - D040, D043).

Upon completion of this form promptly return to Detrex Corporation, Attn. Environmental Administrator This will help to save on any disruption or delay of service.

I certify that the information contained above is an accurate representation of the waste stream on file with Detrex Corporation and that the process generating the hazardous or non-hazardous waste has not changed since completion and submission of the original 'Generator Waste Material Profile Report'.

Generator's Signature Printed Name

Title Date D-202-O

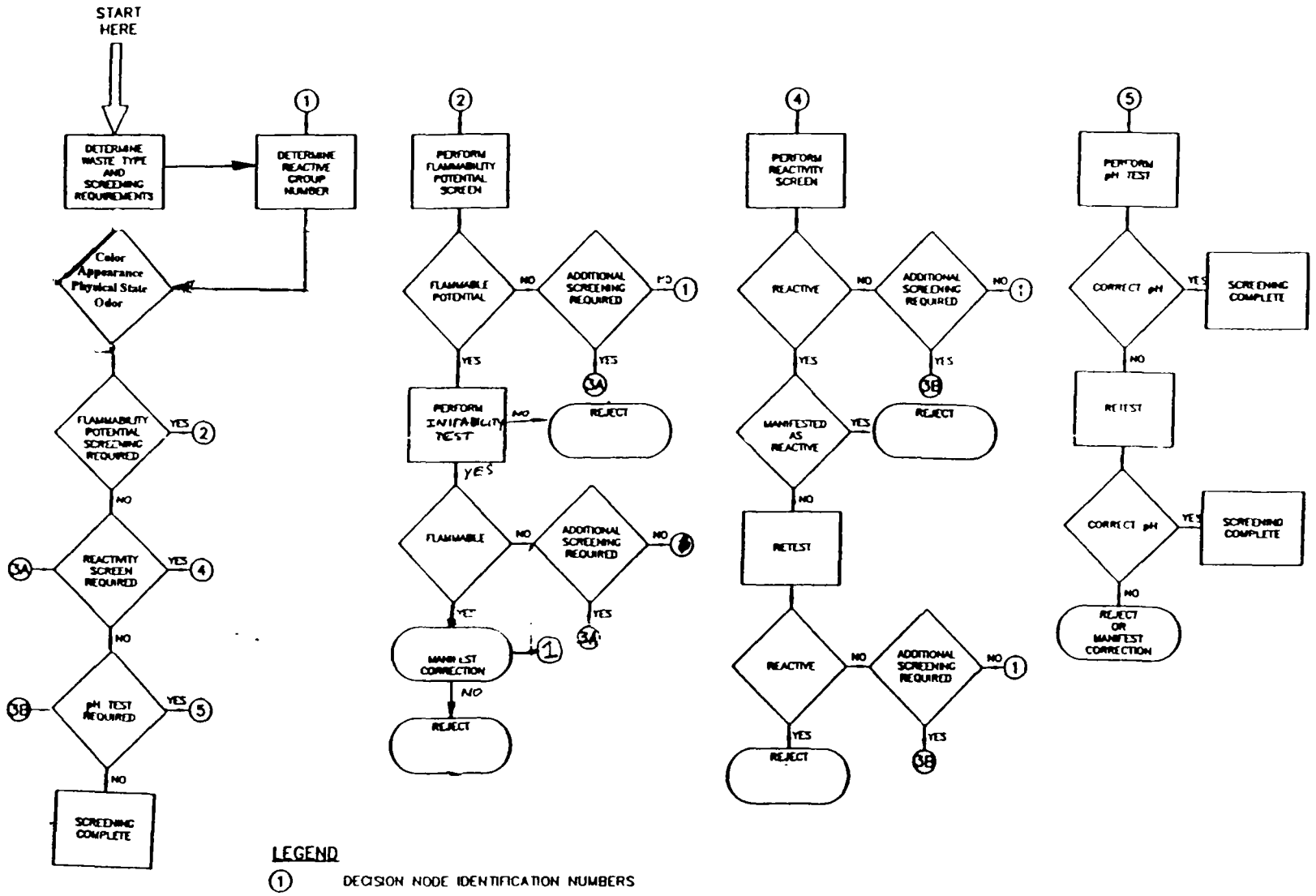
ATTACHMENT C-5

ANALYTICAL TESTING PARAMETERS

Date: 8/24/00
Revision. 00-1

ATTACHMENT C-5

WASTE SCREENING FLOW CHART



LEGEND

(1) DECISION NODE IDENTIFICATION NUMBERS

ATTACHMENT C-5
ANALYTICAL PARAMETERS FOR WASTE SCREENING

Type of Waste	*Color*	*Odor*	*Appearance*	*Physical State*	*Flammability*	*pH Testing*	*Water Reactivity*	*Cyanide*	*Paint Filter Test*	*Compatibility Test*
F001 & F002	•	•	•	•	•				as necessary	as necessary
F003	•	•	•	•					as necessary	as necessary
F005	•	•	•	•					as necessary	as necessary
F006	•	•	•	•	•			•	as necessary	as necessary
F019	•	•	•	•	•				as necessary	as necessary
U037	•	•	•	•	•				as necessary	as necessary
U044	•	•	•	•	•				as necessary	as necessary
U072	•	•	•	•	•				as necessary	as necessary
U075	•	•	•	•	•				as necessary	as necessary
U076-U078	•	•	•	•	•				as necessary	as necessary
U080	•	•	•	•	•				as necessary	as necessary
U121	•	•	•	•	•				as necessary	as necessary
U127, U131	•	•	•	•	•				as necessary	as necessary
U161	•	•	•	•					as necessary	as necessary
U208, U209	•	•	•	•	•				as necessary	as necessary
U210, U211	•	•	•	•	•				as necessary	as necessary
U226	•	•	•	•	•				as necessary	as necessary
U228	•	•	•	•	•				as necessary	as necessary
D001	•	•	•	•					as necessary	as necessary
D002	•	•	•	•	•	•	•		as necessary	as necessary
D004 through D011	•	•	•	•	•	•	•		as necessary	as necessary
D012	•	•	•	•	•				as necessary	as necessary
D018	•	•	•	•					as necessary	as necessary

ATTACHMENT C-5
ANALYTICAL PARAMETERS FOR WASTE SCREENING

Type of Waste	*Color*	*Odor*	*Appearance*	*Physical State*	*Flammability*	*pH Testing*	*Water Reactivity*	*Cyanide*	*Paint Filter Test*	*Compatibility Test*
D019	•	•	•	•	•				as necessary	as necessary
D021	•	•	•	•					as necessary	as necessary
D022	•	•	•	•	•				as necessary	as necessary
D027	•	•	•	•	•				as necessary	as necessary
D028	•	•	•	•					as necessary	as necessary
D029	•	•	•	•					as necessary	as necessary
D030	•	•	•	•	•				as necessary	as necessary
D031, D032, D034	•	•	•	•	•				as necessary	as necessary
D035	•	•	•	•					as necessary	as necessary
D036	•	•	•	•	•				as necessary	as necessary
D039	•	•	•	•	•				as necessary	as necessary
D040		•	•	•	•				as necessary	as necessary
D043	•	•	•	•					as necessary	as necessary

ATTACHMENT C-6

QUALITY ASSURANCE PROJECT PLAN

QUALITY ASSURANCE PROJECT PLAN

Detrex Corporation Facility
Waste Analysis Plan
Detroit Michigan

LIST OF ACRONYMS AND SHORT FORMS

ASTM	-"Annual Book of ASTM Standards", American Society for Testing Materials, 19 ·4
DQO	-Data Quality Objective
Facility	-Detrex Corporation - Detroit MI
MDEQ	-Michigan Department of Environmental Quality
PE	-Performance Evaluation
QA	-Quality Assurance
QA/QC	-Quality Assurance/Quality Control
QAO	-Quality Assurance Officer
QAPP	-Quality Assurance Project Plan
QC	-Quality Control
SM	-"Standard Methods for the Examination of Water and Wastewater", 19th Edition, 1995
SOPs	-Standard Operating Procedures
SW-846	-"Test Methods for Evaluating Solid Waste Physical/Chemical Methods", EPA SW-846, 3rd Edition, November 1986 with promulgated updates
USEPA	-United States Environmental Protection Agency

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APPENDIX QAPP-I SUMMARY OF ANALYTICAL METHODS
APPENDIX QAPP-II TEST METHODS

1.0 INTRODUCTION

This Quality Assurance Project Plan (QAPP) presents the organization, objectives, functional activities, and specific quality assurance (QA) and quality control (QC) activities associated with waste sampling and screening at the Detrex Corporation Facility (Facility), Detroit Michigan. This QAPP also describes the specific protocols which will be followed for sampling, sample handling and storage, chain-of-custody, and screening analyses.

All critical QA/QC procedures will be in accordance with applicable professional technical standards, USEPA requirements, government regulations and guidelines, and specific project goals and requirements.

2.0 PROJECT DESCRIPTION

This QAPP has been developed for the evaluation of hazardous wastes (wastes) received at the Facility in Detroit, Michigan. The QAPP has been prepared to establish the QA/QC procedures necessary for the screening wastes for storage and or combining/comingling at the Facility

2.1 DATA QUALITY OBJECTIVES

Data quality objectives (DQOs) are qualitative and quantitative statements which specify the quality of the data required to support decisions made during Site activities and are based on the end uses of the data to be collected.

The screening process is summarized in the Waste Analysis Plan (WAP) and consists of screening waste, as required under the WAP, for the following parameters:

i) specific gravity;
ii) flammability;
iii) pH, water reactivity; and
v) free liquids.

In addition, compatibility testing will be performed on wastes in accordance with the requirements of the Waste Analysis Plan

Since the screening analyses are intended to confirm waste characteristics or determine the acceptability of the waste relative to the Facility's permits, and are

supplemental to information provided by the generator, the QA/QC procedures performed are minimal. The laboratory QA/QC procedures include verifying the tests will elicit a positive result using standard materials, where applicable, to ensure that false negative results do not occur and verifying that false positive results do not occur by testing blank materials for the same/similar parameters.

2.2 PROJECT OBJECTIVES

The objectives of the waste sampling and screening are to determine whether the wastes received at the facility are:

i) consistent with the generator's information and/or generator's waste material profile sheet (Profile Sheet),

ii) acceptable within the scope of the Facility's RCRA Part B Permit; and

iii) acceptable within the scope of the Facility's waste storage capabilities regarding the issue of compatability; and

iv) when combining two materials together for the purpose of shipment.

3.0 PROJECT ORGANIZATION AND RESPONSIBILITY

The Detrex Facility Manager has overall responsibility for the wastes accepted at the Facility. All waste sampling and any testing performed at the Facility will be under the direction of the Facility Manager The President/General Manager of Detrex's Solvent Division will provide corporate QA oversight of the Facility's operations.

The facility laboratory, another Detrex Corporation laboratory, or a Detrex-approved subcontract laboratory may perform the screening tests. The organization and responsibility of the laboratories will be consistent with each laboratory's QA Plan

4.0 QUALITY ASSURANCE OBJECTIVES FOR MEASUREMENT DATA

The overall QA objective is to develop and implement procedures for waste sampling, chain-of-custody, screening analyses and reporting that will provide data of sufficient quality to determine if wastes are acceptable within the scope of the Facility's

permits. Specific procedures for sampling, chain-of-custody, laboratory instrument calibration, laboratory analysis, reporting of data, internal quality control, audits, preventive maintenance of laboratory equipment and corrective action are described in other sections of this QAPP. The purpose of this section is to address the specific objectives for accuracy, precision, completeness, representativeness and comparability.

4.1 LEVEL OF QC EFFORT

The level of QC effort will consist of testing blank and standard materials, where appropriate, to determine the presence of false positive and false negative results, respectively.

4.2 ACCURACY, PRECISION AND SENSITIVITY OF ANALYSES

The fundamental QA objective with respect to accuracy and precision of the screening data is to achieve the QC acceptance criteria of the analytical protocols referenced in Section 8.0.

4 3 COMPLETENESS, REPRESENTATIVENESS AND COMPARABILITY

Completeness is a measure of the amount of valid data obtained from a measurement system compared to the amount that was expected to be obtained under normal conditions. It is expected that the laboratory will provide data meeting QC acceptance criteria for 80 percent or more for all samples tested using the referenced methods.

Representativeness expresses the degree to which data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, a process condition or an environmental condition. Representativeness is a qualitative parameter which is dependent upon the proper design of the sampling program and proper laboratory protocol. Representativeness will be satisfied by insuring that proper sampling techniques are used and proper testing procedures are followed.

Comparability expresses the confidence with which one data set can be compared with another The extent to which existing and planned testing data will be comparable depends on the similarity of sampling and analytical methods The procedures used to obtain the planned analytical data, as documented in the QAPP, are expected to provide

comparable data. These new analytical data, however, may not be directly comparable to existing data because of difference in procedures and QA objectives.

5.0 SAMPLING PROCEDURES

The following subsections presents the procedures for sampling wastes received by the facility.

5.1 WASTE SAMPLING

5.1.1 Sample Labeling

Each sample will be labeled with a unique sample number that will facilitate tracking and cross-referencing of sample information The sample numbering system used will allow Facility personnel to identify the generator and assign a sequential number for each container.

5.1.2 Sample Containers and Handling

Samples that are to be stored at the Facility or shipped off-site will be placed in properly labeled and sealed sample containers. The sample labels will include the information specified in Section 5 1.1 Samples sent off site for testing will be cushioned within shipping containers as required under applicable DOT regulations for the shipment of hazardous materails.

Upon receipt of the shipping container at the laboratory, the shipping container will be inspected by the laboratory technician The condition of the shipping container will be noted by the sample custodian in the event it is damaged The laboratory's technician will check the contents of the shipping container with those samples listed on the packing list Any damage to the samples or discrepancies in the accompanying documentation will be recorded by the laboratory. Any damage or discrepancies will be reported to Detrex.

5.2 SAMPLING PROTOCOLS

5.2.1 Safety Considerations

1 Proper ventilation is provided for the sampling operation
2. Personnel must wear appropriate protective gear

3. Any built-up pressure within a container is slowly released by gently cracking the bung.

5.2.2 Sampling Equipment

Materials and equipment required for sampling are as follows:

1. A suitable sized container/bottle appropriate for the waste
2. Sample label
3. Four-foot by 3/8-inch ID sampling thief.
4. Bung wrench (non-sparking if required)
5. Packing slip (for off-site analyses).
6. Four-foot sampling auger (trier).

5.2.3 Container Sampling

5.2.3.1 Discrete Liquid Concentrated Waste Samples

The following procedure shall be adhered to during the sampling of individual containers.

1. Remove bung using bung wrench (non-sparking if necessary)
2. Slowly insert thief to the bottom of the container or until a solid layer is encountered.
3. Allow the waste in the container to reach its natural level in the thief.
4. Cap the thief.
5. Carefully remove the thief from the container and insert the uncapped end in a beaker or other suitable collection container
6. Gently pour appropriate sample volume into sample jar
7. Label sample

5.2.3 2 Discrete Solid Waste Samples

The following procedures shall be adhered to during the sampling of individual containers.

1. Remove bung or container lid, as applicable
2. Advance sample auger through entire container
3. Carefully remove sampler
4. Place composite solid waste sample into sample jar
5. Label sample.

5.2.4 Limitations

1. Extremely hard solid wastes may require alternate sampling method.
2. Viscous liquids may adhere to exterior of sample thief.

6.0 SAMPLE CUSTODY AND DOCUMENT CONTROL

6.1 FACILITY CHAIN-OF-CUSTODY PROCEDURES

The sample packaging and shipment procedures summarized below will insure that samples shipped off site will arrive at the laboratory with the chain-of-custody intact. The protocol for specific sample numbering and other sample designations are included in Section 5.0.

The following chain-of-custody procedures will be used by the facility:

1. The sampler is personally responsible for the care and custody of the samples until they are transferred. As few people as possible should handle the samples.

2. All bottles will be labeled with unique sample numbers.

3. Sample labels will be completed for each sample

6.1 1 Transfer of Custody and Shipment Procedures

The following custody and shipping procedures will be followed:

1 Samples are accompanied by a properly completed packing list or chain-of-custody form. The sample numbers will be listed on the packing list or chain-of-custody form

2. Samples will be properly packaged for shipment and dispatched to the appropriate laboratory for analysis with a separate signed packing list or custody form enclosed in each sample box or cooler.

3. Whenever samples are split with another party or government agency, a separate packing list or chain-of-custody record is prepared for those samples and marked to indicate with whom the samples are being split

The person relinquishing the samples to the other party should request the representative's signature acknowledging sample receipt.

4. All shipments will be accompanied by the packing list or chain-of-custody record identifying the contents The original will accompany the shipment and copies will be retained by the Facility.

5. If the samples are sent by common carrier, a bill of lading will be used.

6.2 LABORATORY CHAIN-OF-CUSTODY PROCEDURES

The laboratory technician will use a unique number for each incoming sample to use in the laboratory The unique number will allow Facility Personnel to retrieve the analysis in the future. The analysis will note the date of sample receipt and what facility submitted the sample if analized at the Facility laboratory

Laboratory custody procedures and document control for those samples analyzed by the laboratory will be consistent with their standard laboratory protocols.

6 3 STORAGE OF SAMPLES

After the technician has prepared the sample log, the samples will be stored in the appropriate locations. All samples will be maintained under the proper preservation requirements until completion of all analytical work. When a duplicate/split sample has been retained for samples sent off-site for analysis, the duplicate/split sample will be maintained until after receipt of the analytical report from the outside lab

6 4 FINAL EVIDENCE FILES CUSTODY PROCEDURES

THE LABORATORY WILL BE RESPONSIBLE FOR MAINTAINING AND STORING ANALYTICAL LOG BOOKS AND LABORATORY DATA. WHEN OUTSIDE LABORATORIES ARE USED, RAW DATA FILES WILL BE INVENTORIED AND MAINTAINED BY THE LABORATORY FOR A PERIOD OF FIVE YEARS UNLESS THE NEED FOR LONGER STORAGE IS REQUIRED BY DETREX.

7.0 CALIBRATION PROCEDURES AND FREQUENCY

This section describes procedures for maintaining the accuracy for all the instruments and measuring equipment which are used for conducting testing. These instruments and equipment should be calibrated prior to each use or on a scheduled periodic basis.

7 1 LABORATORY INSTRUMENTS

Calibration of laboratory equipment will be based on the approved laboratory's standard operating procedures (SOPs). Records of calibration, repairs, or replacement will be filed and maintained by the designated laboratory personnel performing QA/QC activities. These records will be filed at the location where the work is performed and will be subject to QA audit. For all instruments, the laboratory will maintain a properly trained staff Major repairs will be performed by someone who is trained to repair a particular piece of equipment.

The records of calibration will be kept as follows·

1. The facility will keep a record of calibration on each instrument will have.

2. A log will be kept for each instrument showing description, manufacturer, model numbers, date of last calibration and by whom calibrated (signature), due date of next calibration and compensation or correction figures, as appropriate

3 A written stepwise calibration procedure will be available for each piece of test and measurement equipment

4 Any instrument that is not calibrated to within the manufacturer's original specification will display an appropriate warning tag

Specific calibration procedures are detailed in the respective methods.

8.0 ANALYTICAL PROCEDURES

The samples collected for laboratory testing will be analyzed using the methods detailed in Appendix QAPP-I and reproduced in Appendix QAPP-II

9.0 INTERNAL QUALITY CONTROL CHECKS AND FREQUENCY

The internal QC checks for the methods of analyses will be consistent with the procedures specified in the methods in Appendix QAPP-II.

10.0 DATA REDUCTION, VALIDATION AND REPORTING

The laboratory will perform analytical data reduction as required (i.e. calculations, interpretation) and review in-house under the direction of the laboratory QA Officer Specific data reduction procedures will be consistent with the laboratory's standard procedures. Data reduction, review and reporting by the laboratory will be conducted following the laboratory's QA Plan.

Laboratory data packages (i.e. analytical reports) will consist of the following deliverables:

i) a case narrative that includes a summary of analytical methods used, or a reference to the test method number,
ii) dates of sample receipt and analysis,
iii) laboratory and Facility sample identification numbers;
iv) samples results of all analyses; and
v) copies of packing lists or executed chain-of-custody forms for samples received from off-site.

11.0 PERFORMANCE AND SYSTEM AUDITS

Performance and system audits of both Facility and laboratory activities may be conducted to verify that sampling and analysis are performed in accordance with the procedures established in the QAPP The audits of Facility and laboratory activities include two separate independent parts; internal and external audits.

11.1 SAMPLING PROCEDURE AUDITS

Internal audits of sampling activities will be conducted by the Detrex Facility Manager The audits will include examination of sampling records, sample collection, handling and packaging in compliance with the established procedures. These audits will be conducted to correct deficiencies, and to verify that QA procedures are maintained. The audits will involve review of sample documentation procedures.

Any external audits will be conducted by MDEQ or USEPA.

11.2 LABORATORY AUDITS

The internal performance and system audits of the laboratory will be conducted by the laboratory's QA Officer The system audits will include examination of laboratory sample receiving documentation, sample log-in, sample storage, chain-of-custody procedure, sample preparation and analysis, instrument operating records, etc. Performance audits may be conducted on a quarterly basis through the auspices of USEPA's water pollution and water supply performance evaluation studies. The QA officer will evaluate the analytical results of these performance evaluation samples to ensure the laboratory maintains acceptable performance.

Any external audits of the laboratories will be conducted by MDEQ or USEPA.

12.0 PREVENTIVE MAINTENANCE

All analytical instruments to be used in this project for the screening of waste will be checked by the laboratory personnel at least quarterly Instruments may also be serviced at other times due to failure Requisite servicing beyond the abilities of the laboratory personnel will be performed by the equipment manufacturer or a qualified representative.

Each instrument will be checked on the days they are operated by the analyst who has been assigned responsibility for that instrument. Manufacturer's recommended procedures will be followed in every case

13.0 SPECIFIC ROUTINE PROCEDURES USED TO ASSESS DATA PRECISION, ACCURACY AND COMPLETENESS

The following sections include the procedures utilized to assess the levels of precision, accuracy and completeness achieved during the associated sample analyses.

13.1 LABORATORY DATA

Laboratory results will be assessed for compliance with required precision, accuracy and completeness as follows:

13.1 1 Precision

Precision of laboratory analysis will be assessed for compliance with the established QC criteria that are described in the referenced methods.

13.1.2 Accuracy

Accuracy of laboratory results will be assessed for compliance with the established QC criteria that are described in the referenced methods.

13.1 3 Completeness

Completeness will be assessed by comparing the number of valid results to the total possible number of results The required level of completeness for laboratory analyses will be 80 percent.

14.0 CORRECTIVE ACTION

The need for corrective action may be identified by system or performance audits or by standard QC procedures. The essential steps in the corrective action system will be

i) checking the predetermined limits for data acceptability beyond which corrective action is required,
ii) identifying and defining problems,
iii) assigning responsibility for investigating the problem;
iv) investigating and determining the cause of the problem,

v) determination of a corrective action to eliminate the problem (this may include reanalyses or resampling and analyses);
vi) assigning and accepting responsibility for implementing the corrective action;
vii) implementing the corrective action and evaluating the effectiveness;
viii) verifying that the corrective action has eliminated the problem; and
ix) documenting the corrective action taken.

For each measurement system, the Laboratory's QA Officer or the analyst will be responsible for initiating the corrective action and the laboratory supervisor will be responsible for implementing the corrective action. The corrective action taken will be consistent with the laboratory's standard procedures.

15.0 QUALITY ASSURANCE REPORT TO MANAGEMENT

Management will receive reports on data quality with each analytical report in the form of QC summaries appended to the laboratory reports. The laboratory's QA Officer will be responsible within the organizational structure for preparing these reports and Detrex's Facility Manager will be responsible for maintaining the analytical reports

APPENDIX QAPP-I

SUMMARY OF TEST METHODS

APPENDIX QAPP-1

SUMMARY OF TEST METHHODS
DETREX CORPORATION FACILITY
DETROIT, MICHIGAN

MATRIX	PARAMETER	METHODS OF ANALYSIS
WASTE LIQUIDS AND SOLIDS	SPECIFIC GRAVITY	DETREX TEST METHOD
WASTE LIQUIDS AND SOLIDS	FLAMMABILITY	ASTM D4982-89
WASTE LIQUIDS AND SOLIDS	WATER REACTIVITY	Physical Test / Sample Inspectino
WASTE LIQUIDS AND SOLIDS	pH	ASTM D4980-89
WASTE LIQUIDS AND SOLIDS	PAINT FILTER TEST	SW-846 9095
WASTE LIQUIDS AND SOLIDS	IGNITABILITY	ASTM D3278

NOTES:

ASTM	Annual Book Of ASTM Standards", American Society For Testing And Materials, 1994
SW-846	Test Methods For Evaluating Solid Wastes, Physical/Chemical Methods", SW-846
EPA	"A Method For Determining The Compatibility Of Hazardous Wastes", EPA 600/2-80-076

APPENDIX QAPP-II

TEST METHODS

RECEIVED

APR 10 2000

Waste Management
Division

DETERMINATION OF SOLVENT CONTENT IN SPENT SOLVENTS FROM DEGREASING OPERATIONS USING SPECIFIC GRAVITY METHOD

PROCEDURE

Collect sample using the Sample Thief.

1. Transfer sample to a container of sufficient size to allow for mixing.

2. Shake container for at least 30 seconds.

3. Place the thermometer and a hydrometer in the hydrometer jar.

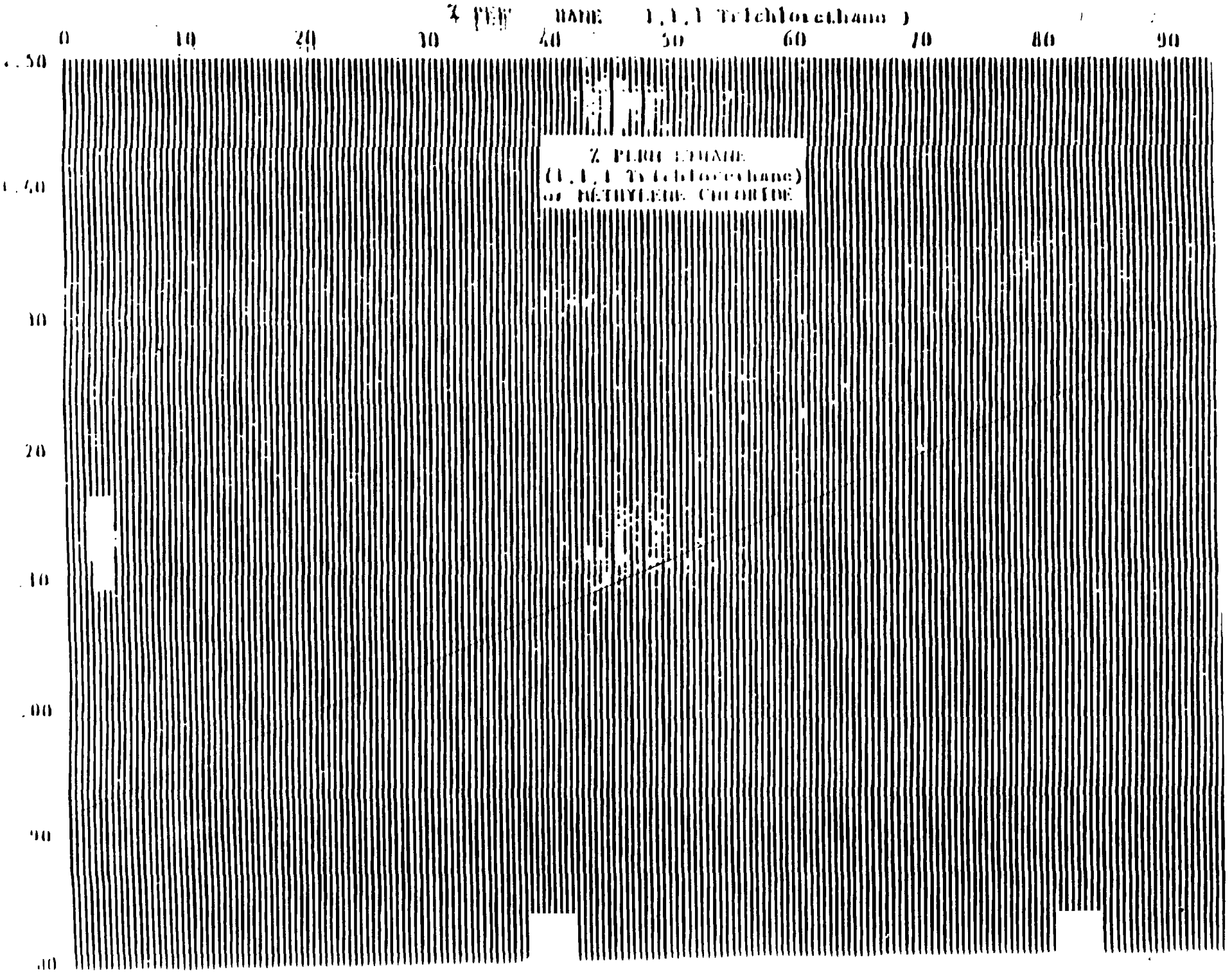
4. Fill the hydrometer jar to within one inch of the top with the mixture to be tested.

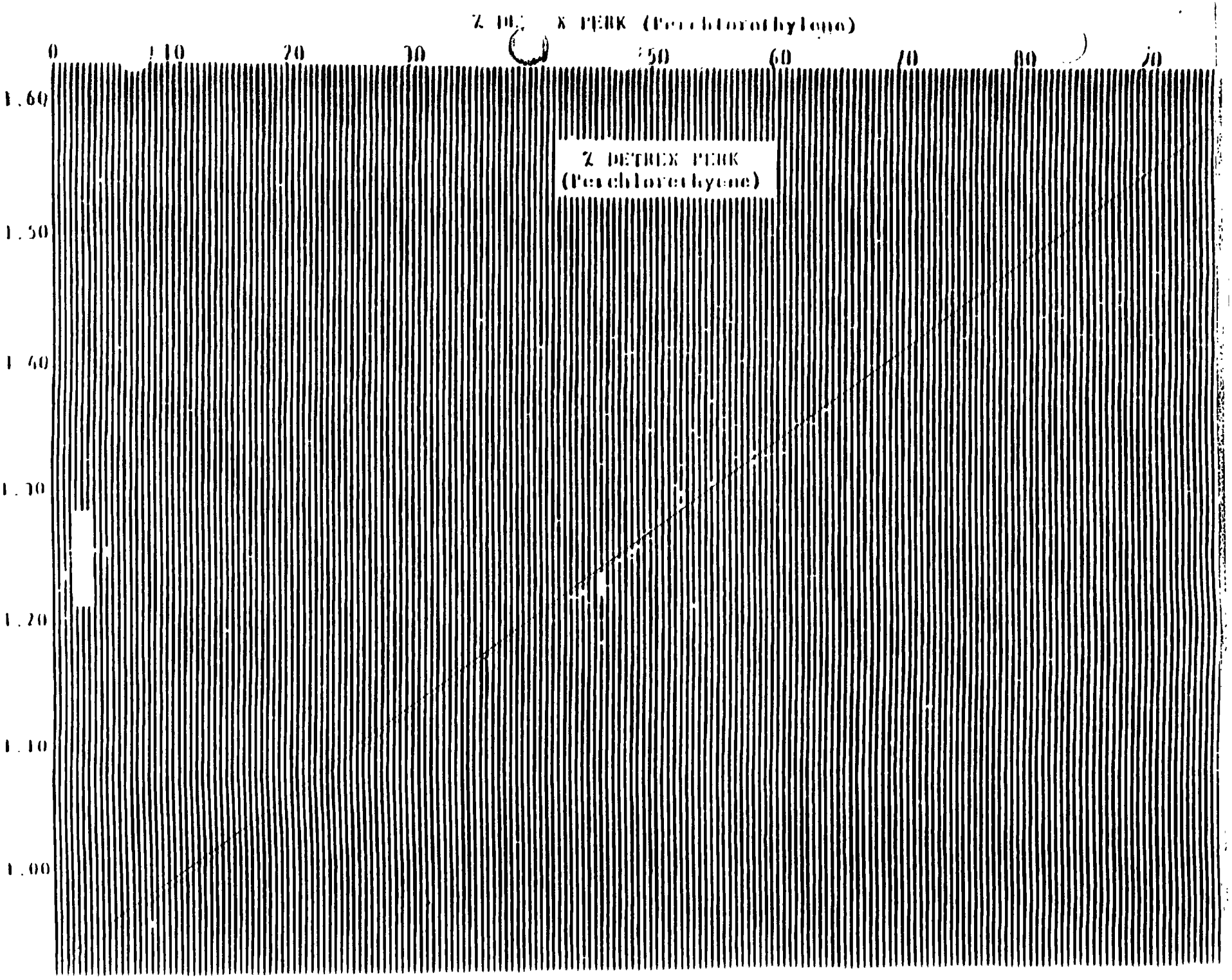
5. If the hydrometer reads off-scale, replace it with a higher or lower range hydrometer as required.

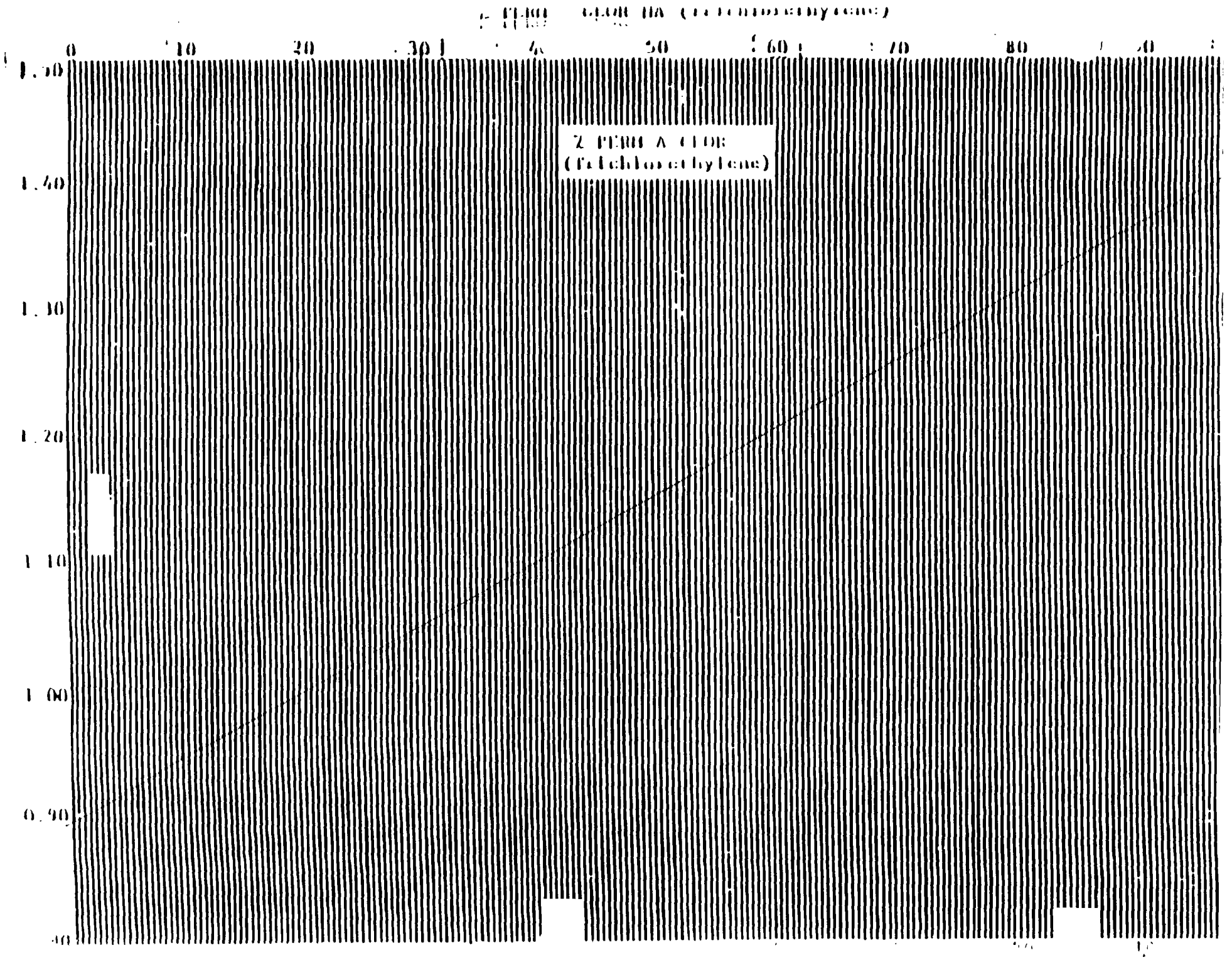
6. Read the hydrometer to the nearest 0.01 SpG Unit.

7. Using the attached Solvent-Oil Mixture vs. Gravity Graph or Chart, for the appropriate solvent type, determine the weight percent oil.

8. The solvent concentration is read directly from the graph.


% PERC (NAME 1,1,1 Trichloroethane)
0
10
20
30
40
50
60
70
80
90
.50
.40
.30
.20
.10
.00
.90
.80
% PERC ETHANE
(1,1,1 Trichloroethane)
IN METHYLENE CHLORIDE


% PERK (Perchlorethylene)
0
10
20
30
50
60
70
80
1.60
1.50
1.40
1.30
1.20
1.10
1.00
% DETREX PERK
(Perchlorethylene)



0
10
20
30
50
60
70
80
1.40
1.30
1.20
1.10
1.00
0.90

Standard Test Methods for Flammability Potential Screening Analysis of Waste[1]

This standard is issued under the fixed designation D 4982; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 These test methods are used to indicate the fire-producing potential of wastes. The following test methods can be applied to waste liquids, sludges, semisolids, or solids:

	Sections
Test Method A—Test Sample Exposed to Heat and Flame	11 to 13
Test Method B—Test Sample Exposed to Spark Source	14 to 15

1.2 These test methods should be used to measure and describe the properties of materials, in response to heat and flame under controlled laboratory conditions and should not be used to describe or appraise the fire hazard or fire risk of materials under actual fire conditions. However, results of these tests may be used as elements of a fire risk assessment that takes into account all of the factors that are pertinent to an assessment of the fire hazard of a particular end use.

1.3 These test methods are designed and intended as preliminary tests to complement the more sophisticated quantitative analytical techniques that may be used to determine flammability. These test methods offer, to the option and the ability to screen waste for potentially as flammability potential when the more sophisticated techniques are not available and the total waste composition is unknown.

1.4 *This standard may involve hazardous materials, operations, and equipment. This standard does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.* Specific hazard information is given in Section 6 and 13.4.3.1.

2. Referenced Documents

2.1 *ASTM Standard*

D93 Test Methods for Flash Point by Pensky-Martens Closed Tester[2]

2.2 *Other Standard*

Prudent Practices for Handling Hazardous Chemicals in Laboratories[3]

3. Terminology

3.1 *Description of Term Specific to This Standard:*

3.1.1 *screening analysis*—a *preliminary* qualitative or semiquantitative test developed from classical qualitative and quantitative techniques that is designed to efficiently give the user specific information about a waste that will aid in determining waste identification, process compatibility, and safety in handling.

4. Summary of Test Methods

4.1 *Method A*—A test sample is exposed to heat and flame. The sample is reported as having a positive or negative flammability potential as described in the test procedure.

4.2 *Method B*—Sparks from a flint lighter are introduced to the vapor space immediately above a representative sample of a waste, and observation is made for a flash in the vapor space or ignition of the sample. A flash in the vapor space or ignition and burning of the waste indicates a positive flammability potential at ambient temperature.

5. Significance and Use

5.1 These test methods are intended for use by those in the waste management industries to aid in identifying the flammability potential or waste materials.

6. Hazards

6.1 Avoid inhalation and skin or eye contact, or both, of any hazardous materials.

6.2 Standard laboratory hygiene practices should be followed when conducting these tests.

6.3 All tests must be performed in a laboratory hood equipped with an exhaust intake along the front edge of the work area to collect any heavier-than-air vapors generated.

6.4 The analyst must wear flame resistant oven gloves.

6.5 Waste containing or suspected of containing highly volatile organics or peroxides should be tested using a much smaller sample than that used in 13.2.

7. Sampling

7.1 Sample containers must be kept tightly sealed until tested.

7.2 Samples should be analyzed as soon as possible after collection.

7.3 If necessary, allow the sample to come to room temperature in a tightly sealed container. For example, frozen material should be allowed to thaw completely.

8. Report

8.1 Report the following information:

8.1.1 Sample identification.

8.1.2 Date of test.

8.1.3 Sample classification: positive or negative, and

8.1.4 Reference to the procedure applied.

---

[1] These test methods are under the jurisdiction of ASTM Committee D-34 on Waste Management and is the direct responsibility of Subcommittee D34.02 on Physical Chemical Characterization.

[2] Current edition approved Nov. 10, 1989. Published December 1989.

[3] *Annual Book of ASTM Standards*, Vol 05.01.

[3] National Research Council, National Academy Press, Washington, DC, 1981.

9. Quality Control

9.1 Quality control check samples and duplications should be performed at an action level specified by the laboratory and at an appropriate frequency.

9.2 Flammability standards should be maintained for analyst training and as reference guides. Examples are given in the following table.

Flammability Potential Screening Analysis

Methyl alcohol (methanol)	Difficult-to-see flame; flammable at or below room temperature.
Glacial acetic acid	Flammable at temperatures above normal room temperature.
Hendecane (n-undecane)	Flammable at temperatures higher than glacial acetic acid.
Kerosene (Fuel Oil No. 1)	Flammable over a range of temperatures higher than normal room temperature.
p-Xylene	Flammable at or above room temperature; freezes at 13°C. A spiked soil sample frozen at 0°C demonstrates interference
Chlorofluorocarbon 113 (1,1,2-trichloro-1,2,2-trifluoroethane)	**Warning:** phosgene formation likely; see 13.4.3.1.

10. Precision and Bias

10.1 No statement is made about either the precision or bias of these test methods since the result merely states whether there is conformance to the criteria for success specified in the procedure.

TEST METHOD A—EXPOSURE TO HEAT AND FLAME

11. Interferences

11.1 Drafts in the laboratory fume hood where the test is performed could cause excessive cooling and false negative results. A properly operating fume hood with a face velocity of 150 ft/min should provide consistent, usable results.

11.2 Ignition sources that provide excessive heating rates alone or combined with a very small test portion may obscure results. That is, the sample may be decomposed, sintered, fused, evaporated, or otherwise consumed before positive or negative evidence of flammability is observed. The use of sufficiently large test portions and of heating rates typical of a bunsen burner should resolve this problem.

11.3 An inadequate source of heating could limit the volatilization of flammable components and provide false negative results.

11.4 Difficult-to-observe flames resulting from the burning of certain compounds (for example, methanol) could provide false negative results. If the presence of these compounds is suspected, the presence of flammability might be confirmed by the insertion of a watchglass just above the test material. The watchglass is then examined for products of combustion (for example, moisture and soot).

NOTE 1—The watchglass method cannot distinguish between vaporized water or water produced by combustion.

11.5 An improperly adjusted gas burner (for example, with an insufficiently aerated flame) could introduce raw gas into or immediately above the sample. This raw gas could briefly support a flame after the source of ignition is removed, providing the appearance of a flammable sample and a false positive result.

12. Apparatus

12.1 *Gas Burner*, (for example, a bunsen burn adjustable air shutter and an adjustable gas orifice is n The gas burner and fuel supply line must be appropr the gas supplied: natural gas, artificial gas (including pr and butane), or liquified petroleum gas (LP gas Where a gas supply line cannot be provided, a propane may be substituted.

12.2 *Lighter*, (for example, piezo lighter) for bur required.

12.3 *Aluminum Weighing Boats* or other non-flam containers are needed.

12.3.1 **Caution**—Weighing boats of material other aluminum should be used if the testing materials reac aluminum, for example, caustics.

12.4 *Watchglass.*

12.5 *Large Beaker, Tongs, Asbestos-Free High-T ature Gloves or Mittens*, or other apparatus as nee extinguish burning materials.

13. Procedure

13.1 Light a gas burner and adjust to a typically flame that is not readily blown out. A yellow flame affected by drafts indicates insufficient air (the air:fuel r too low). A sharp, blue flame is good. (If the flame above the burner head, is very difficult to light, or ter extinguish itself, indicates that too much air or too mu and fuel are being supplied to the burner.)

13.2 Place a sufficient amount (approximate test sample in an aluminum weighing boat or other non mable container.

13.3 Using a gas burner, hold the flame immed above the test sample for 2 to 3 s without touching the flame to the sample.

13.3.1 If ignition (a flash or burning) is observed bef after the source of ignition (the flame of the burn removed, the sample is said to have a positive flamma potential. A positive result may require further investig (see 13.4.1).

13.3.2 The confirmation of flammability may requi use of a watchglass (see 11.4).

13.3.3 If there is no ignition, proceed to 13.4.

13.4 Using a gas burner, briefly (for at least 15 s) app flame to the sample in an attempt to ignite the sample

13.4.1 If the sample ignites, the sample is said to h positive flammability potential.

13.4.1.1 When more accurate waste characterizati necessary, liquid samples may be quantified using a cl cup flash point tester.

13.4.1.2 Solids with a positive flammability pote should be further investigated.

13.4.2 If the sample decomposes, boils (if a liquic otherwise fails to ignite after at least 15 s of contin sample heating by the burner flame, the flamma potential is reported as negative.

13.4.3 Halogenated solvents typically give o pors that may result in a false positive flammabi... tial.

NOTE 2. **Warning**—Phosgene, an extremely toxic gas, is a co tion product of halogenated compounds burned in air.

13.5 Shut off the gas burner when not in use. Extingu

ıple by setting an aluminum weighing boat or ıss atop the one containing the burning sample, (or ert a spoutless beaker over the sample container and all). se of tongs or high temperature gloves or mittens may be cessary to handle the equipment.

TEST METHOD B—EXPOSURE TO SPARK SOURCE

. Apparatus

14.1 *Oven Gloves.*

14.2 *Flint Lighter*, the type typically used to light an /acetylene torch is required.

14.3 *Disposable 250-mL Beaker*, of plastic is required.

14.4 *Watchglass*, 100 mm.

14.5 *Metal Vessel* (with lid), of adequate depth and ımeter to contain beaker and watchglass is needed.

14.6 *Thermometer.*

15. Procedure

15.1 Place approximately 100 mL of the representative sample of the material to be tested into the plastic beaker (see 7.3).

15.2 Place the plastic beaker in the steel vessel, cover the beaker with the watchglass, and allow to stand at ambient conditions for 5 min.

15.3 Record the ambient temperature.

15.4 Remove the watchglass, place the igniter immediately above the waste and strike it several times to produce sparks.

15.5 If the material does catch fire and burn, extinguish the flames by immediately placing the lid on the steel vessel, thus smothering the fire and report as positive flammability potential.

The American Society for Testing and Materials takes no position respecting the validity of any patent rights asserted in connection with any item mentioned in this standard. Users of this standard are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, are entirely their own responsibility.

This standard is subject to revision at any time by the responsible technical committee and must be reviewed every five years and if not revised, either reapproved or withdrawn. Your comments are invited either for revision of this standard or for additional standards and should be addressed to ASTM Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee, which you may attend. If you feel that your comments have not received a fair hearing you should make your views known to the ASTM Committee on Standards, 1916 Race St., Philadelphia, PA 19103.

Standard Test Methods for Screening of pH in Waste[1]

This standard is issued under the fixed designation D 4980; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 These test methods are used to determine the pH of a hazardous waste liquid, sludge, semisolid and solid.

	Sections
Test Method A—pH Screening by pH Paper	9 to 14
Test Method B—pH Screening by Electrometric Measurement	15 to 22

1.2 Test Method A uses a wide-range pH paper for a rapid indication of pH to within about 1 pH unit.

1.3 Test Method B uses a pH meter to measure within about 0.1 pH unit.

1.4 These test methods are designed and intended as a preliminary test to complement the more sophisticated quantitative analytical techniques that may be used to determine pH. These test methods offer, to the user, the option and the ability to screen waste for potentially hazardous levels of acidity and alkalinity when the more sophisticated techniques are not available and the total waste composition is unknown.

1.5 *This standard may involve hazardous materials, operations, and equipment. This standard does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.* Specific hazard information is given in Section 6.

2. Referenced Documents

2.1 *ASTM Standards*

D 1193 Specification for Reagent Water[2]

D 1293 Test Methods for pH of Water[2]

3. Terminology

3.1 *Description of Term Specific to This Standard.*

3.1.1 *screening analysis*—a preliminary qualitative or semi quantitative test developed from classical qualitative and quantitative techniques that is designed to efficiently give the user specific information about a waste that will aid in determining waste identification, process compatibility and safety in handling.

4. Significance and Use

4.1 These test methods are intended for use by those in the waste management industries to characterize waste streams by pH. These methods will identify those materials that may dictate a specific waste manag procedure due to high acidity or alkalinity.

5. Reagents

5.1 *Purity of Reagents*—Reagent grade chemicals sh used in all tests. Unless otherwise indicated, it is int that all reagents conform to the specifications of the mittee on Analytical Reagents of the American Che Society where such specifications are available.[3] Other may be used, provided it is first ascertained that the r is of sufficiently high purity to permit its use w lessening the accuracy of the determination.

5.2 *Purity of Water*—Unless otherwise indicated, ences to water shall be understood to mean reagent wa defined by Type III of ASTM Specification D 1193.

6. Hazards

6.1 Avoid inhalation and skin and eye contact hazardous materials.

6.2 All measurements shall be done in a labo hood.

7. Sampling

7.1 Collect a representative sample of the waste.

7.2 Samples should be analyzed as soon as possible collection.

8. Report

8.1 The report shall include at a minimum:

8.1.1 Sample identification,

8.1.2 Date of test,

8.1.3 Reference to the procedure applied, that is, method and if applicable, dilution ratio,

8.1.4 Analytical results, and

8.1.5 Identification of the analyst.

TEST METHOD A—pH SCREENING BY pH PAPER

9. Summary of Test Method A

9.1 *pH Paper*—A small portion of the sample is in duced onto full range pH paper. The results are visu compared to the appropriate color chart and reported to pH unit.

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[1] These test methods are under the jurisdiction of ASTM Committee D-34 on Waste Management and is the direct responsibility of Subcommittee D34.02 on Physical and Chemical Characterization.

Current edition approved Nov. 10, 1989. Published December 1989.

[2] *Annual Book of ASTM Standards*, Vol 11.01.

[3] "Reagent Chemicals, American Chemical Society Specifi Chemical Soc., Washington, DC. For suggestions on the testing listed by the American Chemical Society see "Reagent Chemicals an by Joseph Rosin, D. Van Nostrand Co., Inc., New York, NY, and the U States Pharmacopeia."

10. Interferences

10.1 Materials that mask the pH paper, for example, oils, syrups, paint, etc. cause the visual detection of color on the paper difficult.

10.2 Strong dyes and solutions of deep colors can give false results.

10.3 Oxidizers can bleach the pH paper.

11. Apparatus

11.1 *Stirring Rod, Spatula, and Disposable Pipet or Eye Dropper*, for transferring sample to test paper.

11.2 *Disposable Beaker, Test Tube*, etc.

11.3 *Vortex Mixer* (optional).

11.4 *Separatory Funnel.*

12. Reagents and Materials

12.1 Full range pH paper with a stated precision of 1 pH unit and with a corresponding color chart.

12.2 Standard Buffer Solutions.

13. Procedure

13.1 *Aqueous Liquids*—Introduce a representative portion of the sample onto a strip of pH paper.

13.2 *Solids, Sludges, and Non-Aqueous Liquids:*

13.2.1 Place approximately 10 mL of water in a disposable beaker or test tube.

13.2.2 Add approximately 1 mL of waste sample and agitate for 10 s or until well mixed.

13.2.3 Let suspension settle and measure the pH of the supernatant as described in 13.1.

13.3 Visually compare the pH paper to the color chart and the pH to the nearest whole unit. See 8.1.4.

14. Quality Control

14.1 Standard buffer solutions are used to check each new lot or shipment of pH paper.

15. Precision and Bias

15.1 Precision and Bias statements shall be supplied at a later date.

METHOD B—pH SCREENING BY ELECTROMETRIC MEASUREMENT

16. Summary of Test Method B

16.1 *pH Meter*—The pH of a sample is determined electrometrically using a pH meter with a combination pH electrode. Prior to the analysis of a sample, the instrument must be calibrated by using at least two standard buffer solutions. The results should be reported to the nearest 0.1 pH unit.

17. Interferences

17.1 The glass electrode, in general, is not subject to solution interferences from color, turbidity, colloidal matter, oxidants, reductants, or high salinity.

17.2 Sodium error at pH levels >10 can be reduced or eliminated by using a low sodium error electrode.

17.3 Coatings of oily material or particulate matter can alter electrode response. These coatings can usually be removed by gentle wiping or detergent washing, followed by dilute water rinsing. An additional treatment with hydrochloric acid 1+9, (1 volume HCl added to 9 volumes of H_2O) may be necessary to remove any remaining film.

17.4 Temperature effects on the electrometric determination of pH arise from two sources. The first is caused by the change in electrode output at various temperatures. This interference can be controlled with instruments having temperature compensation or by calibrating the electrode instrument system at the temperature of the samples. The second source of temperature effects is the change of pH due to changes in the sample as the temperature changes. This error is sample dependent and cannot be controlled. It should, therefore, be noted by reporting both the pH and temperature at the time of analysis.

18. Apparatus

18.1 *pH Meter, Laboratory of Field Model*—A wide variety of instruments are commercially available with various specifications and optional equipment.

18.2 *Glass Electrode.*

18.3 *Reference Electrode*—A silver-silver chloride or other reference electrode of constant potential may be used.

NOTE 1—Combination electrodes incorporating both measuring and reference functions are convenient to use and are available with solid, gel type filling materials that require minimal maintenance.

18.4 *Magnetic Stirrer and TFE-Fluorocarbon-Coated Stirring Bar.*

18.5 *Thermometer or Temperature Sensor*, for automatic compensation.

19. Reagents and Materials

19.1 *Primary Standard Buffer Salts*, are available from NIST and should be used in situations where extreme accuracy is necessary. Preparation of reference solutions from these salts requires some special precautions and handling such as low conductivity dilution water, drying ovens, and carbon-dioxide-free purge gas. These solutions should be replaced at least once each month.

19.2 *Secondary Standard Buffers*, may be prepared from NIST salts or purchased as solutions from commercial vendors. These commercially available solutions have been validated by comparison to NIST standards and are recommended for routine use.

20. Calibration and Standardization

20.1 Each instrument/electrode system must be calibrated at two points that bracket the expected pH of the samples and are approximately three pH units or more apart. Various instrument designs may involve use of a balance or standardize dial or slope adjustment as outlined in the manufacturer's instructions. Repeat adjustments on successive portions of the two buffer solutions until readings are within 0.05 pH units of the buffer solution values.

NOTE 2—Wide variation in the stirring speed may cause fluctuations in pH measurements, but the variations will not affect test accuracy.

20.2 Place the liquid sample or buffer solution in a glass beaker using a sufficient volume to cover the sensing elements or the electrodes and to give adequate clearance for the magnetic stirring bar. If field measurements are being made, the electrodes may be immersed directly in the sample

stream to an adequate depth and moved in a manner to ensure sufficient sample movement across the electrode-sensing element as indicated by drift free (less than 0.1 pH) readings during the analysis.

20.3 If the sample temperature differs by more than 2°C from the buffer solution, the measured pH values must be corrected. Instruments are equipped with automatic or manual compensators that electronically adjust for temperature differences. Refer to manufacturer's instructions.

21. Procedure

21.1 Because of the wide variety of pH meters and accessories, detailed operation procedures cannot be incorporated into this test method. Each analyst must be acquainted with the operation of each system and familiar with all instrument functions. Special attention to care of the electrodes is recommended.

21.2 Thoroughly rinse and gently wipe the electrodes prior to measuring pH of each sample. Immerse the electrodes into the sample beaker or sample stream and gently stir at a constant rate to provide homogeneity and suspension of solids (see Note 3). Note and record sample pH and temperature. Repeat measurement on successive volumes of sample until values differ by less than 0.1 pH unit. Two c three volume changes are usually sufficient.

NOTE 3—Wide variation in stirring speed may cause fluctua pH measurements but the variations will not adversely affect ie applicability.

21.3 *Aqueous Liquid*—Insert the electrode into th aqueous portion of the waste and report the instrumer reading.

21.4 *Solids, sludges, and non-aqueous liquids:*

21.4.1 Mix approximately a 10 % slurry of waste in wate and take measurement on the aqueous portion. (See 8.1.4.

21.4.2 For pH determination, refer to 21.2.

22. Quality Control

22.1 Instrument performance standards (where appl cable), quality control check samples of appropriat matricies, and duplications, should be performed at a action level specified by the laboratory at an appropriat frequency.

23. Precision and Bias

23.1 The data are being accumulated and will be added t the test method when completed.

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METHOD 9095

PAINT FILTER LIQUIDS TEST

1.0 SCOPE AND APPLICATION

1.1 This method is used to determine the presence of free liquids in a representative sample of waste.

1.2 The method is used to determine compliance with 40 CFR 264.314 and 265.314.

2.0 SUMMARY OF METHOD

2.1 A predetermined amount of material is placed in a paint filter. If any portion of the material passes through and drops from the filter within the 5-min test period, the material is deemed to contain free liquids.

3.0 INTERFERENCES

3.1 Filter media were observed to separate from the filter cone on exposure to alkaline materials. This development causes no problem if the sample is not disturbed.

4.0 APPARATUS AND MATERIALS

4.1 Conical paint filter: Mesh number 60 (fine meshed size). Available at local paint stores such as Sherwin-Williams and Glidden for an approximate cost of $0.07 each.

4.2 Glass funnel: If the paint filter, with the waste, cannot sustain its weight on the ring stand, then a fluted glass funnel or glass funnel with a mouth large enough to allow at least 1 in. of the filter mesh to protrude should be used to support the filter. The funnel is to be fluted or have a large open mouth in order to support the paint filter yet not interfere with the movement, to the graduated cylinder, of the liquid that passes through the filter mesh.

4.3 Ring stand and ring, or tripod.

4.4 Graduated cylinder or beaker: 100-mL.

5.0 REAGENTS

5.1 None.

6.0 SAMPLE COLLECTION, PRESERVATION, AND HANDLING

6.1 All samples must be collected according to the directions in Chapter Nine of this manual.

6.2 A 100-mL or 100-g representative sample is required for the test. If it is not possible to obtain a sample of 100 mL or 100 g that is sufficiently representative of the waste, the analyst may use larger size samples in multiples of 100 mL or 100 g, i.e., 200, 300, 400 mL or g. However, when larger samples are used, analysts shall divide the sample into 100-mL or 100-g portions and test each portion separately. If any portion contains free liquids, the entire sample is considered to have free liquids.

7.0 PROCEDURE

7.1 Assemble test apparatus as shown in Figure 1.

7.2 Place sample in the filter. A funnel may be used to provide support for the paint filter.

7.3 Allow sample to drain for 5 min into the graduated cylinder.

7.4 If any portion of the test material collects in the graduated cylinder in the 5-min period, then the material is deemed to contain free liquids for purposes of 40 CFR 264.314 and 265.314.

8.0 QUALITY CONTROL

8.1 Duplicate samples should be analyzed on a routine basis.

9.0 METHOD PERFORMANCE

9.1 No data provided.

10.0 REFERENCES

10.1 None required.

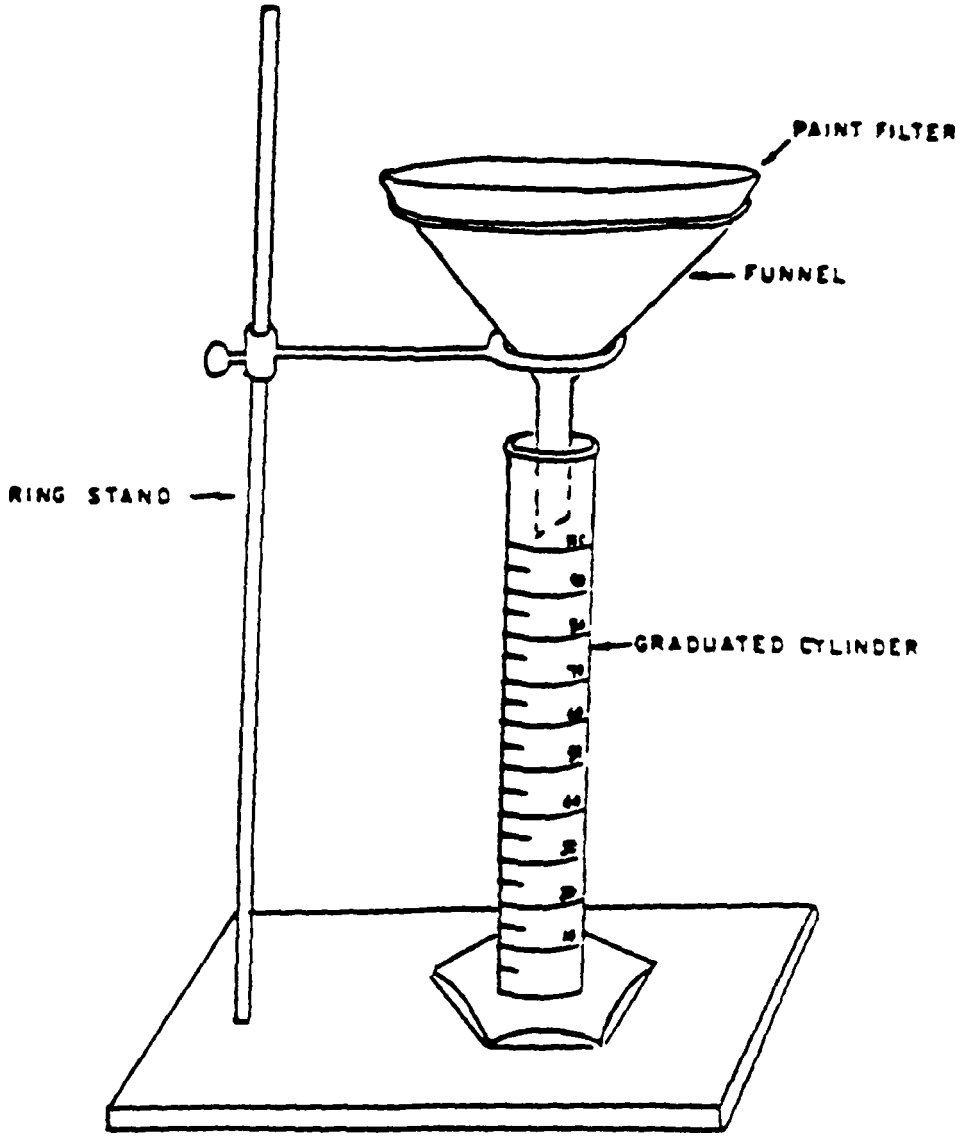
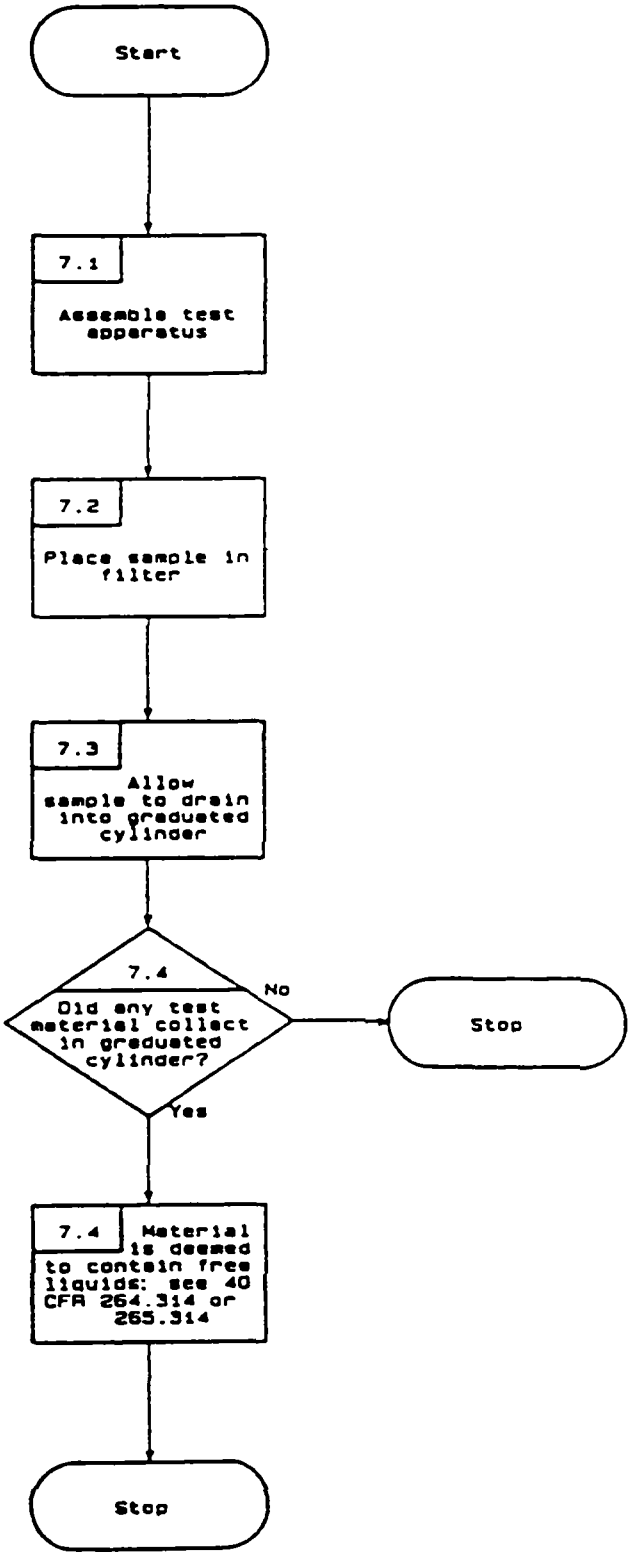


Figure 1. Paint filter test apparatus.


Start
7.1
Assemble test apparatus
7.2
Place sample in filter
7.3
Allow sample to drain into graduated cylinder
7.4
Did any test material collect in graduated cylinder?
No
Stop
Yes
7.4
Material is deemed to contain free liquids: see 40 CFR 264.314 or 265.314
Stop

ATTACHMENT C-7

STANDARD OPERATING PROCEDURES - WASTE SAMPLING

Attachment C-7
STANDARD OPERATING PROCEDURE
WASTE SAMPLING

This section describes in detail the procedures that are to be followed for sampling.

1. SAFETY CONSIDERATIONS

1) Proper ventilation is provided for the sampling operation.
2) Personnel must wear appropriate protective gear.
3) Any built-up pressure within a container is slowly released by gently cracking the bung.
4) For ignitable or potentially ignitable wastes, proper bonding and grounding is required.

2. SAMPLING EQUIPMENT

Materials and equipment required for sampling are as follows:

1) A suitable sized container/bottle appropriate for the waste.
2) Sample label.
3) Sampling thief (ensure proper dedicated sample thief for wastes reactivity group is selected or is properly decontaminated after each reactivity group).
4) Bung wrench (non-sparking for flammable wastes).
5) Packing slip and chain-of-custody form (for off-site analyses).
6) Four-foot sampling auger (trier) for non-flammables.

3. CONTAINER SAMPLING

3.1 Discrete Liquid Concentrated Waste Samples

The following procedure shall be adhered to during the sampling of individual containers.

1) Remove bung using a bung wrench (non-sparking for flammables).

Attachment C-7
STANDARD OPERATING PROCEDURE
WASTE SAMPLING

2) Slowly insert open thief to the bottom of the container or until a solid layer is encountered.
3) Allow the waste in the container to reach its natural level in the thief.
4) Cap the thief.
5) Carefully remove the thief from the container.
6) If this is the initial sample using a dedicated thief or a decontainated theif, release the liquid back into drum 3 times prior to actual sample collection to reduce potential for minor cross-contamination.
7) Transfer liquid into an inert container. Repeat process for other containers in composite sample trying to obtain equal volumes from each container.
7) Gently pour appropriate sample volume into sample jar.
8) Label sample.

3.2 Discrete Solid Waste Samples

The following procedures shall be adhered to during the sampling of individual containers.

1) Remove bung or container lid, as applicable.
2) Advance sample auger through entire container.
3) Carefully remove sampler.
4) Place composite solid waste sample into sample jar.
5) Label sample.

4. LIMITATIONS

1) Extremely hard solid wastes may require alternate sampling method.
2) Viscous liquids may adhere to exterior of thief.

DETREX CORPORATION – /ENTS DIVISION – DETROIT
LAB ANALYSIS REPORT

Company: _____ Approval #: _____
Product: _____ Date Rec.: _____
Manifest #: _____ # of containers _____

Profile Fingerprint Data:	**Gas Chromatography Summary (as % Solvent)**
Physical state at 70°C: _____	
Odor: _____	
Color: _____	
Free Liquid: _____	
Density / SG: _____	
pH range: _____	
Flash Point: _____	

Drum #	Color	Odor	Appearance	Physical State	Flam. Test	Water Reactive	Cyanide	pH	Paint filter	Compatibility

Rotovapor Distillation Results: initial and date _____

% Yield: _____ Water: _____ Spec. Grav.: _____ pH: _____ Oil: _____

Pensky-Marten Confirmation: Drum # _____ Plash Point: _____ initial and date _____

Specific Gravity (composite): SG: _____ Net Weight _____ % Yield: _____ Yield Weight: _____

Additional Comments: _____

_____

_____ initial and date _____

00-MI-C9

SECTION D

PROCESS INFORMATION

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ATTACHMENT D-4 DOT CONTAINER SPECIFICATIONS

ATTACHMENT D-5 TYPICAL HAZARDOUS WASTE CONTAINER MARKING

ATTACHMENT D-6 COATING SPECIFICATIONS AND MANUFACTURERS APPLICABILITY DETERMINATION

ATTACHMENT D-7 SECONDARY CONTAINMENT VOLUME CALCULATIONS

ATTACHMENT D-8 SCHEDULE OF INSTALLATION

D-1 CONTAINERS
[40 CFR 270.15, 264.170 THROUGH 264.178]

Hazardous wastes (wastes) are received at the Facility in Department of Transportation (DOT) approved shipping containers. Before scheduling any pickup of Wastes from generators, Facility Personnel will verify the amount of waste currently on hand to determine if the Facility has the necessary capacity to accept the wastes. This may be done via a visual inspection or by a container tracking system. In cases where the potential exists for total capacity to exceed the 13,750 gallons total allowable storage/staging of hazardous waste, arrangements will be made to ship waste off site to allow for acceptance of the new wastes.

Containers, upon their arrival at the Facility, will initially be placed in a staging area for screening in accordance with the Waste Analysis Plan (WAP - Section C), sampled, and then transferred to the appropriate hazardous waste container storage area once they have passed analysis. The transporter will remain on-site until the screening is complete and a signed copy of the manifest is provided to the transporter.

Prior to transferring containers from a transport truck to a staging area or from the staging area to the storage area, the compatibility groups associated with each container of waste will be reviewed with any containerized waste already present in the area to ensure potentially incompatible wastes are not placed together. Facility personnel will use the compatibility chart found in Attachment F-2 to verify compatibility. When drums are unloaded to the designated storage area only materials profiled as compatible with each other will be placed in this area. Once the containers have been approved, they will be moved to a storage area with compatible wastes. The locations of the modified proposed container storage areas and the staging areas are shown on the Facility plans provided in Attachment D-2

The procedure noted above, and detailed in Section F-5b & F-5d, is designed to preclude the need for having designated storage areas. This review will include reviewing the reactivity group numbers of other materials (products and non-hazardous wastes) stored in the same secondary containment area.

Detrex has also reviewed the issue regarding a failed container and the aspect of providing the required protection from material squirting into an adjacent storage area Detrex has revamped the configuration of the storage areas to allow at least 3 feet between the edge of adjacent hazardous waste storage areas 7 & 8 and between these areas and storage area 9 Based on past experience Detrex has found that failed containers holding free liquids are not able to project liquids if there is minor damage to the container This is because closed containers that fail below the liquid line rapidly develop a vacuum when liquids leave the container. Projection from leaks that occur near the liquid / air interface of a container open to the atmosphere lack the necessary head pressure to project any distance. Therefore second level containers in the worst case will only project if punctured at the bottom of the container Our experience has shown this squirting to be only an initial projection, and then a seeping since the container needs to take in air For large holes the liquid flows out without projecting.

D-1a(2) Container Management Practices [40 CFR 264.173]

To ensure that there is no spillage of hazardous waste during shipment from a generator's facility, each container must meet the requirements specified previously in Section D-1a(1).

The type of container the material will be shipped in will be as directed by the DOT (outlined in 49 CFR § 172, 173 and 178). Facility Personnel have access to the regulations, which specify the type of container that may be used. Columns 8b & 8c of DOT's Hazardous Material Table, found in 49 CFR Part 171 Subpart B, references information under Part 173 Subparts E & F regarding the types of containers that can be used. Since these regulations are constantly changing, Attachment D-4 has been provided to show how to determine the types of packages allowable under DOT's regulations rather than to provide a copy of the regulations themselves. All containers will remain tightly sealed while in the staging or storage areas and will only be opened when the waste material is to be sampled or transferred. For safety reasons sampling or transferring wastes in or out of a container will not occur while containers are stacked.

When containerized wastes are received at the Facility, they will be initially placed in the waste container staging area (Area 29 - see Attachment D-2). Containerized wastes will be sampled and analyzed according to the procedures discussed in Section C. Once the waste passes testing, the material will be moved to a suitable storage area. For storage area number 11, the staging area will be the transport vehicle itself. Containers will be placed at the end of the trailer and sampled. All other aspects of the screening process discussed in section C are applicable.

The following procedures will be followed to ensure that only compatible wastes will be stored/staged in any area of the Facility

1. All waste shipments to the Facility will be scheduled prior to receipt of the shipment;
2. Per DOT compatibility shipping requirements, only compatible wastes will be scheduled to be received at the same time; and
3. The wastes will be evaluated in the staging area (see Attachment D-2), segregated according to EPA compatibility (see Section F) with compatible wastes, and then transferred to the appropriate hazardous waste container storage area within the Facility.

Containers may be handled within the building using a forklift or a hand drum truck Containers being moved will always have properly secured lids and bungs, and care will be taken during the handling operations to protect against accidental damage to a container that could result in leakage or spillage while stored at the Facility Should a container incur a breach of integrity, its contents will be transferred to a DOT approved container or over-pack container

generator or ship the waste material to an alternate permitted facility. In either case, shipment of the returned material will be handled in accordance with manifesting requirements as defined by MDEQ, 49 CFR 172.205, and if more stringent, the rejection requirements of other states. A discrepancy will be noted in the discrepancy section of the manifest, noting the reason for rejection

If the waste is determined to be acceptable under the screening process, the generator will be forwarded a copy of the manifest within 30 days and a copy will be retained at the Facility for a period of at least 3 years.

6. The accepted container will be moved into an area with compatible materials.

7 Once the manifest is signed, indicating the screening of the waste has been completed, the transporter is released.

Hazardous waste containers are distinguished from virgin product containers by proper marking and labeling. Attachment D-5 provides a typical hazardous waste drum marking. Hazardous waste containers will be marked to identify their contents and to ensure that compatible wastes are stored in the appropriate areas

D-1a(3) Secondary Containment System Design and Operation
[40 CFR 270 15(a)(1), 264 175(a), 264.175(d)]

The secondary containment system consists of two units, an interior and exterior portion, and the containment trailers. These are:

1. Three separate interior container storage areas,
2. Containment trailers for storing flammable wastes, and
3 the loading/unloading area

The interior secondary containment system consists of a concrete slab and curbing For hazardous waste storage areas 7 & 8 portable ramps will be used to get over the secondary containment curbing in these areas. The curbing will be coated on the sides and top with a coating compatible with the wastes that may be potentially stored there Cross-sectional details of the interior secondary containment systems, concrete dikes, are provided in Attachment D-3.

The movement of the containers to the storage areas may be accomplished using forklifts and hand trucks

The Facility's maximum waste capacity is 13,750 gallons for storage areas 7, 8, 9, 11, and 29. Listed below are the maximum amounts of waste that may be stored in any one-container storage area at any given time

Secondary containment storage areas 7 & 8 will not be utilized for the storage of Hazardous Wastes until MDEQ has accepted certification denoting the new curbing and coating have been properly installed.

D-1a(3)(b) Containment System Drainage
[40 CFR 270 15(a)(2), 264.175(b)(2)]

Since there is no secondary containment drainage system, spills will be removed as described in paragraph D-1a(3)(e) as soon as practical after discovery.

In order to prevent direct contact between containerized hazardous wastes and standing liquids, the lower level of containers are placed on pallets to elevate them off the floor.

D-1a(3)(c) Containment System Capacity
[40 CFR 270.15(a)(3), 264 175(b)(3)]

The calculations and volumes for each secondary containment area are provided in Attachment D-7 The largest DOT container to be stored in any one of the container storage areas is a 550-gallon steel tote.

The proposed hazardous waste secondary containment systems as shown in Attachment D-2 provide the following secondary containment capacities (see Attachment D-7):

Containment Storage Area #7	17 3% of total volume (3,520 gallons) 110 6 % of largest container (550-gallon tote)
Containment Storage Area #8	17 3 % of total volume (3,520gallons) 110 6 % of largest container (550-gallon-tote)
Containment Storage Area #9	26 1 % of total volume (5,830 gallons) 199 3 % of largest container (,000-gallon tank)
Containment Storage Area # 11	57 4% of total volume (7,040 gallons) 97 % of largest container (550 gallon-tote)

Therefore, the minimum secondary containment capacity requirement (i e., 100 percent of largest container or 10 percent of total volume) is satisfied for the waste storage capacity for each of the secondary containment areas.

D-1b CONTAINERS WITHOUT FREE LIQUIDS

Most of the wastes to be stored at the Facility are liquid wastes. Solid wastes may also be accepted for storage or solids may be present with liquids inside waste containers (i.e., sludge).

Screening procedures for solid wastes are described in Section C-2 In the event visual evidence during sampling indicates the potential presence of free liquids within a container designated as a solid waste, a paint filter test may be conducted.

D-1b(1) Test for Free Liquids
[40 CFR 270.15(b)(1)]

A paint filter test may be conducted on any wastes. which are to be accepted by the Facility and managed as "containers without free liquids"

D-1b(2) Description of Containers
[40 CFR 264.171, 264.172]

DOT-approved containers identified in Section D-1a(1) may be utilized.

D-1b(3) Container Management Practices
[40 CFR 264 173]

The containers will be managed in the same manner as described in Section D-1a(2)

D-1b(4) Container Storage Area Drainage
[40 CFR 270 15(b)(2), 264 175(c)]

All container storage areas are enclosed within a single building or within the containment trailer In addition, the procedures documented in Section D-1a(3)(b) are in place to insure containers are properly elevated except within the containment trailer

D-1c SUBPART CC [40 CFR 264 1086]

The facility only accepts wastes in DOT approved containers. As such, Detrex meets the requirements for level 1 and level 2 controls. Facility personnel inspect each container upon its arrival at the facility to insure its structural integrity. Since the facility does not hold containers longer than one year there is no need for subsequent re-verification.

3) Waste screening is conducted to confirm the acceptability of the waste material;
4) Upon approval, the manifest is signed and dated;
5) Detrex retains the TSDF copy, and the transporter's copy of the manifest, in the event that they are also the transporter;
6) Within 30 days, a signed copy of the manifest is returned to the original generator; and
7) A copy of each manifest is maintained at the Facility for a period of at least three years.

Any discrepancies found in the manifest are appropriately noted as are steps taken to reconcile the discrepancy with the original waste generator In the event a discrepancy cannot be resolved within 15 days, Detrex will submit to the director a letter describing the discrepancy, attempts to reconcile it, and a copy of the manifest.

D-4 RECORD KEEPING
[299.9609]

Detrex maintains an operating record within the office of the Facility. This operating record includes a copy of this Operating License Application and related correspondence. The operating record, including the information described below, will be maintained until closure of the Facility.

The operating record includes at a minimum the following.

1) A description and quantity of all wastes received for container storage, including cross-reference to appropriate manifest document number and dates of receipt;
2) A copy of all manifests signed by the Facility for at least 3 years,
3) Records and results of all waste analyses conducted including preliminary characterization, waste screening and annual waste re-characterization;
4) Copies of the Contingency Plan, acknowledgment agreements, and all required reports from the implementation of the Contingency Plan,
5) Inspection reports - maintained on file for at least 3 years,
6) A record of any waste shipments rejected by the Facility,
7) Personnel training records for all former employers for at least 3 years after employment ends and records for current employees until closure;
8) A copy of the most recent closure cost estimate and a copy of financial assurance for closure,
9) Any related correspondence or reports submitted to, or received from, the Director relating to the TSDF operation, and
10) All monitoring, testing, or analytical data required by the operating license and notices to generators referenced in 40 CFR §264 12(b) will be maintained until closure

is located approximately 75 feet from the nearest property line (to the north), however it is over 130 feet to the nearest building (to the east). Based on the operation at the Eaton Avenue Facility, this is considered an adequate separation distance.

D-7 FACILITY DESIGN AND OPERATING STANDARDS [R299.9604]

The Facility is an existing TSDF and should therefore be exempt from the requirements of this rule.

Hazardous waste container storage areas 7, 8, & 9 are located within an enclosed building provided with adequate secondary containment. Containment area 11 is enclosed within trailers that provide secondary containment. These vehicles are located in a fenced area that is locked except when moving vehicles in or out of the area. Thus, run-on and run-off management systems are not required for the regulated units. Additionally, the outdoor loading/unloading area secondary containment system has been designed for the 24-hour 100-year rainfall event.

The Facility has been designed and is operated to prevent hazardous waste and hazardous waste constituents from escaping into the soil, surface water, groundwater, drains or sewers.

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ATTACHMENT D-1

EXISTING FACILITY PLAN

ATTACHMENT D-1
EXISTING FACILITY LAYOUT

I.D. No.	Equipment Name	Description
1.	Clayton Model E-100 Steam Generator	This unit is no longer in service
2.	Air Compressor	In use
3.	20,000 gal. Carbon steel Tank	Storage tank for Trichloroethylene
4.	10,000 gal. Carbon Steel Tank	This tank is currently out of service
5.	4,500 gal. Carbon Steel Tank	This tank is currently out of service
6.	4,500 gal. Carbon Steel Tank	Storage tank for Trichloroethylene
10 A/B	2 – 600 gal. Receiver Tanks	Product Storage Tanks
12.	2,300 gal. Carbon Steel Tank	Used for storage of Non-Hazardous Wastes.
13.	Detrex Model S-350 Still	This unit is currently out of service
15.	DCI Model Dyna-1-100 Still	This unit is currently out of service
16 A/B	Drying Columns	These units are currently out of service
17	5,000 gal. Carbon Steel Tank	Used for storage of Non-Hazardous Wastes.
20	2,500 gal. 316 Stainless Steel Tank	Used for storage Product
21	4,500 gal Carbon steel tank	Used for storage of Non-Hazardous Waste
22	4,500 gal. Carbon Steel Tank	Used for storage of Non-Hazardous Wastes
25	3,000 gal. 316 stainless steel Tank	Used for storage of Non-Hazardous Wastes.
27	Drum Filling Station	Product Drumming Station. Used for filling 55- gallon drums with product Unit can fill approximately 30 drums per hour and is operated as necessary
28	Product Blending Vessel	550 gal Carbon steel vessel utilized for product blending.
29	Roller conveyor	Used to weigh-in containers of waste.
30	Staging Area / Hazardous Waste Storage Area	Area used to store containerized waste that has not yet received full waste screening.
31	Hazardous Waste Storage Area	Storage area for wastes that have full waste screening performed.
32	Transfer Facility	Active

ATTACHMENT D-2

PROPOSED FACILITY PLAN

ATTACHMENT D-2
PROPOSED FACILITY LAYOUT

ID #	Equipment Name	Description
1.	Clayton Model E-100 Steam Generator	Out of service, slated for eventual removal
2.	Air Compressor	In use
3.	20,000 gal. Carbon steel Tank	Storage tank for Trichloroethylene
4.	10,000 gal. Carbon Steel Tank	This tank is currently out of service
5.	4,500 gal. Carbon Steel Tank	This tank is currently out of service
6	4,500 gal. Carbon Steel Tank	Storage tank for Trichloroethylene
7-9	Interior Hazardous Waste Storage	Active
10 A/B	2 – 600 gal. Receiver Tanks	Product storage
11	Exterior Hazardous Waste Storage	Storage of Flammables
12.	2,300 gal. Carbon Steel Tank	Storage of Non-Hazardous Wastes
13.	Detrex Model S-350 Still	Out of service, slated for eventual removal
15.	DCI Model Dyna-1-100 Still	Out of service, slated for eventual removal
16 A/B	Drying Columns	Out of service, slated for eventual removal
17	5,000 gal. Carbon Steel Tank	Storage of Non-Hazardous Wastes.
20	2,500 gal. 316 Stainless Steel Tank	Storage of Non-Hazardous Wastes
21	4,500 gal Carbon steel tank	Storage of Non-Hazardous Wastes
22	4,500 gal. Carbon Steel Tank	Storage of Non-Hazardous Wastes
25	3,000 gal. 316 stainless steel Tank	Storage of Non-Hazardous Wastes
27	Drum Filling Station	Product Drumming Station
28	Product Blending Vessel	550 gal. Carbon steel vessel utilized for product blending.
29	Staging area	Sampling (containers weighed as needed)

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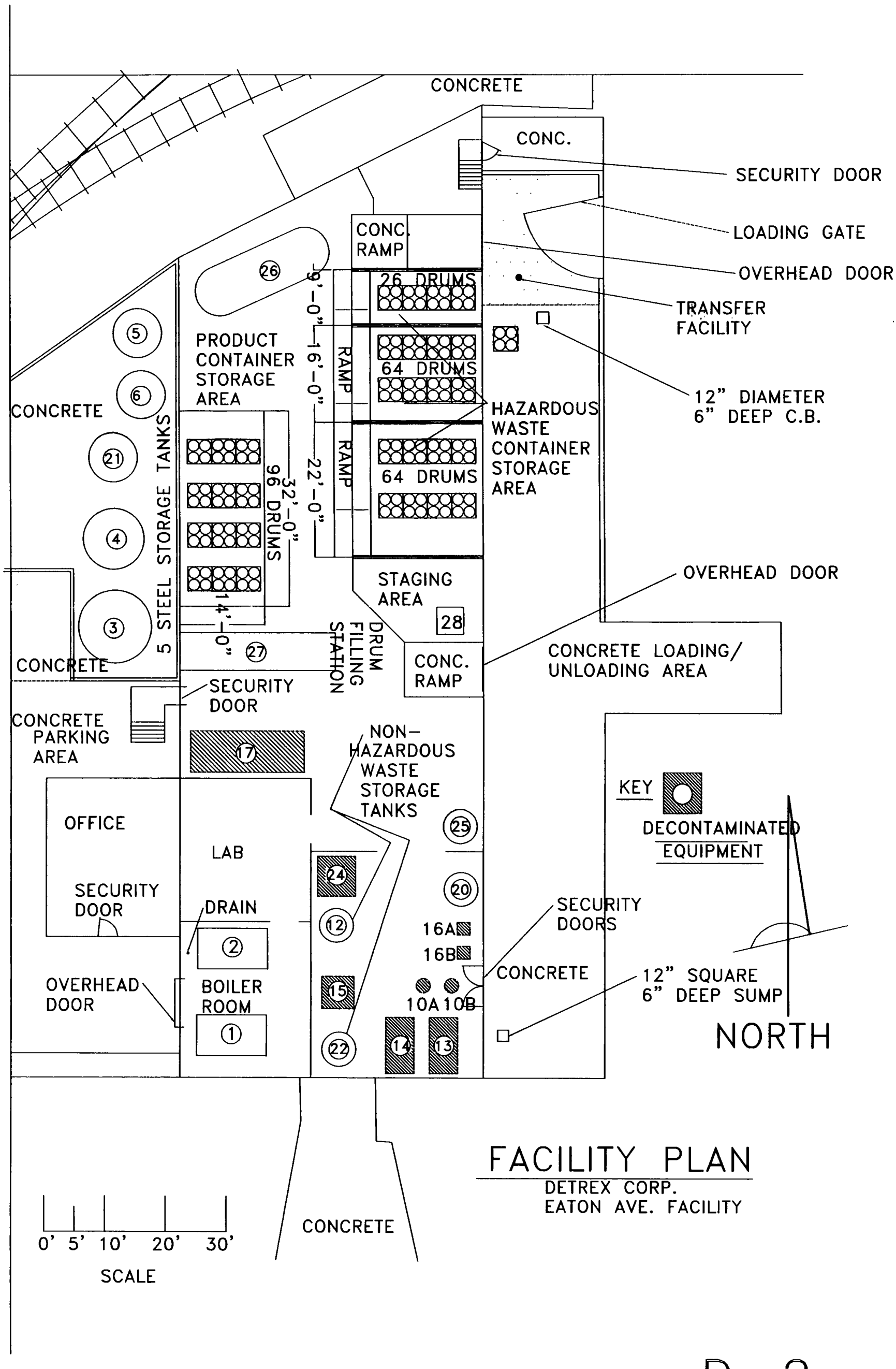
ATTACHMENT D-2
PROPOSED FACILITY LAYOUT

ID #	Equipment Name	Description
1.	Clayton Model E-100 Steam Generator	Out of service, slated for eventual removal
2.	Air Compressor	In use
3.	20,000 gal. Carbon steel Tank	Storage tank for Trichloroethylene
4.	10,000 gal. Carbon Steel Tank	This tank is currently out of service
5.	4,500 gal. Carbon Steel Tank	This tank is currently out of service
6.	4,500 gal. Carbon Steel Tank	Storage tank for Trichloroethylene
7-9	Interior Hazardous Waste Storage	Active
10 A/B	2 – 600 gal. Receiver Tanks	Product storage
11	Exterior Hazardous Waste Storage	Storage of Flammables
12.	2,300 gal. Carbon Steel Tank	Storage of Non-Hazardous Wastes
13.	Detrex Model S-350 Still	Out of service, slated for eventual removal
15	DCI Model Dyna-1-100 Still	Out of service, slated for eventual removal
16 A/B	Drying Columns	Out of service, slated for eventual removal
17	5,000 gal. Carbon Steel Tank	Storage of Non-Hazardous Wastes.
20	2,500 gal. 316 Stainless Steel Tank	Storage of Non-Hazardous Wastes
21	4,500 gal Carbon steel tank	Storage of Non-Hazardous Wastes
22	4,500 gal. Carbon Steel Tank	Storage of Non-Hazardous Wastes.
25	3,000 gal. 316 stainless steel Tank	Storage of Non-Hazardous Wastes.
27	Drum Filling Station	Product Drumming Station.
28	Product Blending Vessel	550 gal. Carbon steel vessel utilized for product blending.
29	Staging area	Sampling (containers weighed as needed)


CONCRETE
CONC.
SECURITY DOOR
LOADING GATE
OVERHEAD DOOR
TRANSFER FACILITY
12" DIAMETER 6" DEEP C.B.
CONC. RAMP
26 DRUMS
64 DRUMS
64 DRUMS
HAZARDOUS WASTE CONTAINER STORAGE AREA
PRODUCT CONTAINER STORAGE AREA
96 DRUMS
RAMP
RAMP
19'-0"
16'-0"
22'-0"
32'-0"
14'-0"
5 STEEL STORAGE TANKS
CONCRETE
CONCRETE
STAGING AREA
28
27
DRUM FILLING STATION
CONC. RAMP
OVERHEAD DOOR
CONCRETE LOADING/ UNLOADING AREA
SECURITY DOOR
CONCRETE PARKING AREA
17
NON-HAZARDOUS WASTE STORAGE TANKS
KEY
DECONTAMINATED EQUIPMENT
OFFICE
LAB
SECURITY DOOR
DRAIN
SECURITY DOORS
16A
16B
CONCRETE
10A 10B
OVERHEAD DOOR
BOILER ROOM
12" SQUARE 6" DEEP SUMP
NORTH
CONCRETE
0' 5' 10' 20' 30'
SCALE
FACILITY PLAN
DETREX CORP.
EATON AVE. FACILITY
DETREX CORPORATION
FACILITY
EATON AVE.
FACILITY
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D-2

ATTACHMENT D-3

DESIGN DRAWINGS OF STRUCTURAL RENOVATIONS

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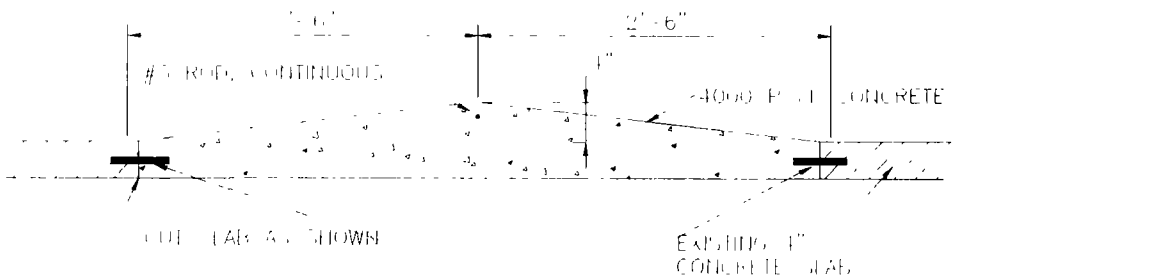
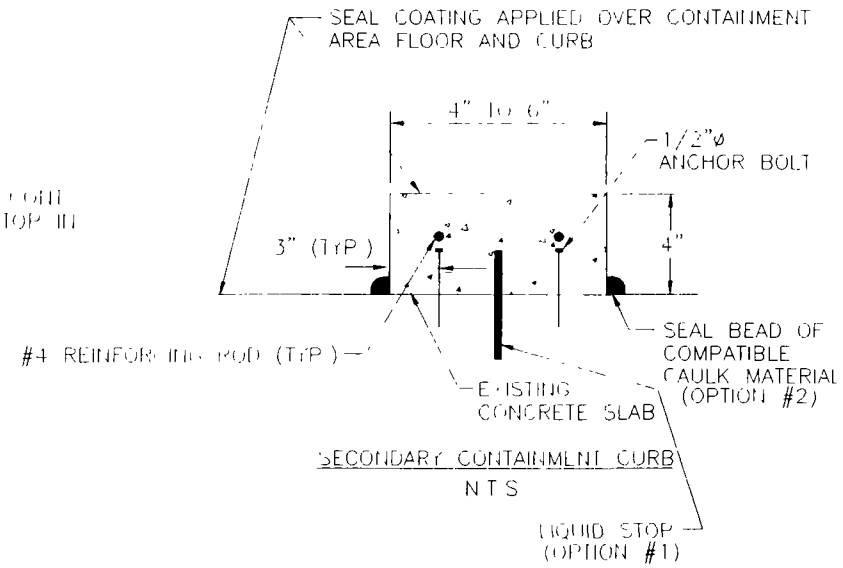
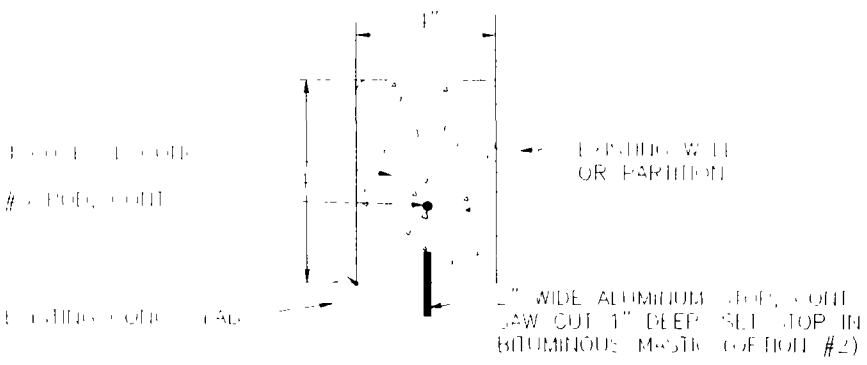


TYPICAL RAMP
SCALE NONE



SECONDARY CONTAINMENT CURB
N T S



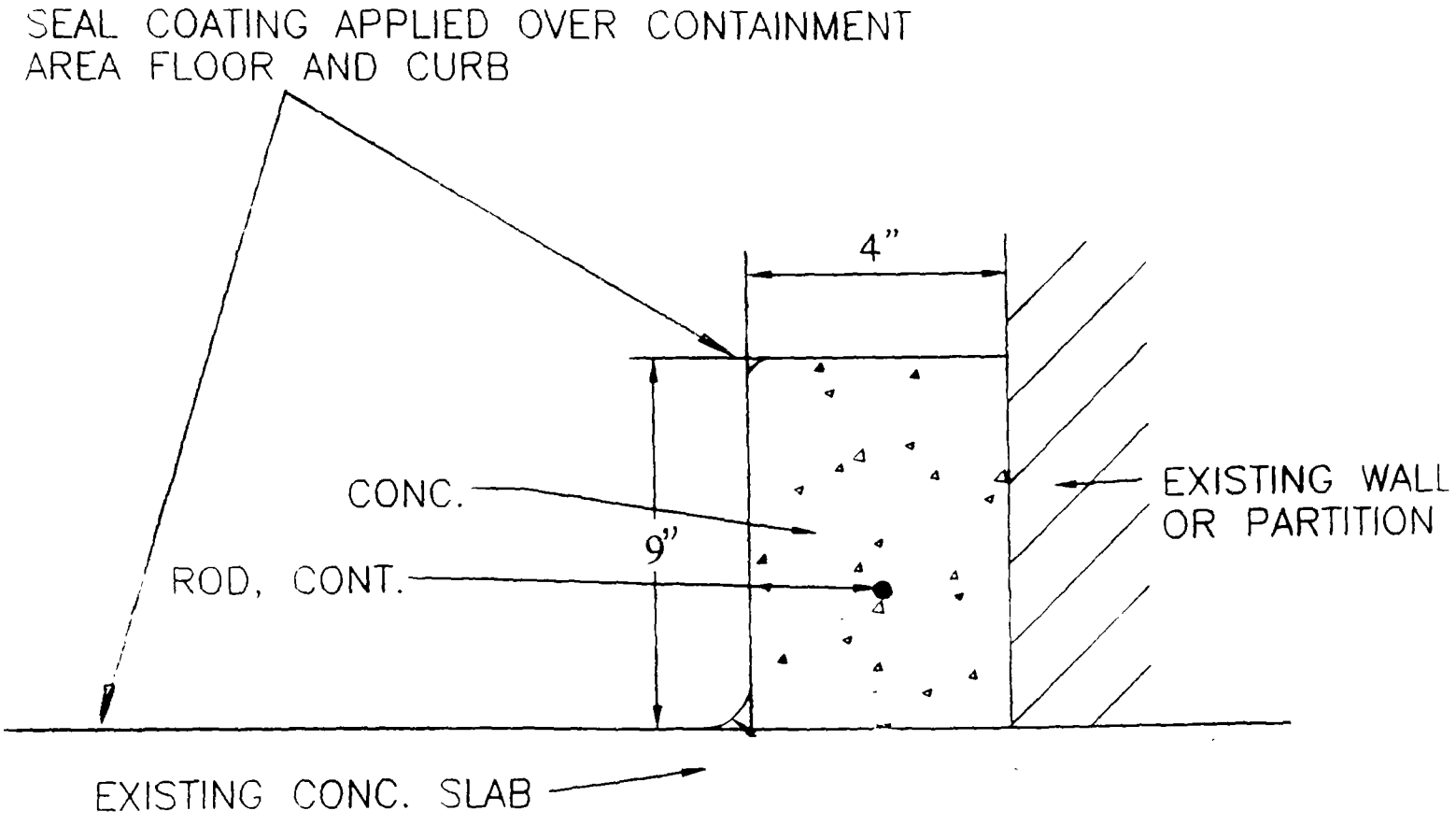
SECONDARY CONTAINMENT CURB (AGAINST WALL)
N T S

ATTACHMENT D-3

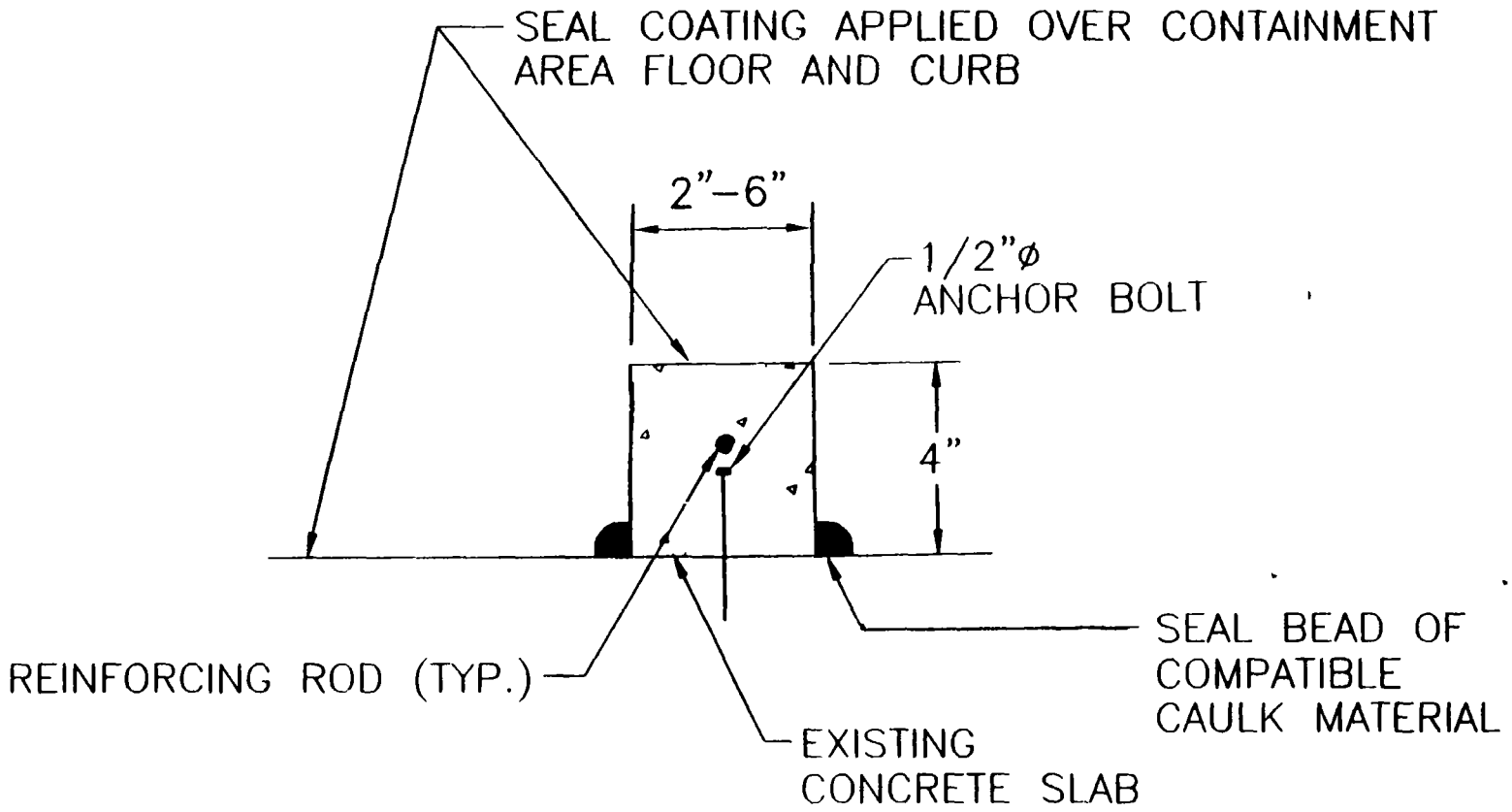
DATE	REV NO.	DRAWING RECORD	BY	DATE	REV NO.	CHANGE RECORD	BY	DR	E L R	DETREX CORPORATION	PROJECT No. 9601

ATTACHMENT D-3

CURBING VIEW



SECONDARY CONTAINMENT CURB (AGAINST WALL)



SECONDARY CONTAINMENT CURB

ATTACHMENT D-3
CURBING VIEW

ATTACHMENT D-4

DOT CONTAINER SPECIFICATIONS

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§172.101 HAZARDOUS MATERIALS TABLE, Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label codes	Special provisions	(8) Packaging (§173 ***) Exceptions	Non-bulk	Bulk	(9) Quantity Limitations Passenger aircraft/rail	Cargo aircraft only	(10) Vessel Stowage Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
+	**Trichloroacetyl chloride**	8	UN2442	II	8 6 1	2 A3 A7 B9 B14 B32 B74 N34 T38 T43 T45	None	227	244	Forbidden	Forbidden	D	40
	Trichlorobenzenes, liquid	6 1	UN2321	III	6 1	T7	153	203	241	60 L	220 L	A	
	Trichlorobutene	6 1	UN2322	II	6 1	T8	None	202	243	5 L	60 L	A	25, 40
	1,1,1-Trichloroethane	6 1	UN2831	III	6 1	N36 T7	153	203	241	60 L	220 L	A	40
	Trichloroethylene	6 1	UN1710	III	6 1	N36 T1	153	203	241	60 L	220 L	A	40
	Trichloroisocyanuric acid, dry	5 1	UN2468	II	5 1		152	212	240	5 kg	25 kg	A	13
	Trichloromethyl perchlorate	Forbidden											
	Trichlorosilane	4 3	UN1295	I	4 3 3 8	A7 N34 T24 T26	None	201	244	Forbidden	Forbidden	D	21, 28 40, 49 100
	Tricresyl phosphate *with more than 3 percent ortho isomer*	6 1	UN2574	II	6 1	A3 N33 N34 T8	None	202	243	5 L	60 L	A	
	Triethyl phosphite	3	UN2323	III	3	B1 T1	150	203	242	60 L	220 L	A	
	Triethylamine	3	UN1296	II	3 8	B101 T8	None	202	243	1 L	5 L	B	40
	Triethylenetetramine	8	UN2259	II	8	B2 T8	154	202	242	1 L	30 L	B	40
	Trifluoroacetic acid	8	UN2699	I	8	A3 A6 A7 B4 N3 N34 T18 T27	None	201	243	0 5 L	2 5 L	B	12, 40
	Trifluoroacetyl chloride	2 3	UN3057		2 3 8	2 B7 B9 B14	None	304	314 315	Forbidden	Forbidden	D	40
	Trifluorochloroethylene, inhibited	2 3	UN1082		2 3 2 1	3 B14	None	304	314 315	Forbidden	Forbidden	D	40
	1,1,1-Trifluoroethane, compressed *or* **Refrigerant gas R 143a**	2 1	UN2035		2 1		306	304	314 315	Forbidden	150 kg	B	40
	Trifluoromethane *or* **Refrigerant gas R 23**	2 2	UN1984		2 2		306	304	314 315	75 kg	150 kg	A	
	Trifluoromethane, refrigerated liquid	2 2	UN3136		2 2		306	None	314 315	50 kg	500 kg	D	
	2-Trifluoromethylaniline	6 1	UN2942	III	6 1		153	203	241	60 L	220 L	A	
	3-Trifluoromethylaniline	6 1	UN2948	II	6 1	T14	None	202	243	5 L	60 L	A	40
	Triformoxime trinitrate	Forbidden											
	Triisobutylene	3	UN2324	III	3	B1 T1 T30	150	203	242	60 L	220 L	A	
	Triisopropyl borate	3	UN2616	II	3	T8 T31	150	202	242	5 L	60 L	A	
				III	3	B1 T8 T31	150	203	242	60 L	220 L	A	
D	**Trimethoxysilane**	6 1	NA9269		6 1 3	2 B9 B14 B32 B74 T38 T43 T45	None	227	244	Forbidden	Forbidden	E	40
	Trimethyl borate	3	UN2416	II	3	T14	150	202	242	5 L	60 L	B	
	Trimethyl phosphite	3	UN2329		3	B1 T1	150	203	242	60 L	220 L	A	
	1,3,5-Trimethyl-2,4 6-trinitrobenzene	Forbidden											
	Trimethylacetyl chloride	6 1	UN2438	I	6 1 8 3	2 A3 A6 A7 B3 B9 B14 B32 B74 N34 T38 T43 T45	None	227	244	Forbidden	Forbidden	D	25 40
	Trimethylamine, anhydrous	2 1	UN1083		2 1		306	304	314 315	Forbidden	150 kg	B	40
	Trimethylamine, aqueous solutions *with not more than 50 percent trimethylamine by mass*	3	UN1297		3 8	T42	None	201	243	0 5 L	2 5 L	D	40 41
				II	3 8	B1 T14	None	202	243	1 L	5 L	B	40 41
				III	3 8	B1	150	203	242	5 L	60 L	A	40 41
	1,3,5-Trimethylbenzene	3	UN2325		3	B1 T1	None	203	242	60 L	220 L	A	
	Trimethylchlorosilane	3	UN1298	II	3 8	A3 A7 B77 N34 T14 T26	None	202	243	1 L	5 L	E	40
	Trimethylcyclohexylamine	8	UN2326		8	T2	154	203	241	5 L	60 L	A	
	Trimethylene glycol diperchlorate	Forbidden											

§172.101 HAZARDOUS MATERIALS TABLE, Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label codes	Special provisions	(8) Packaging (§173 ***) Exceptions	Non-bulk	Bulk	(9) Quantity Limitations Passenger aircraft/rail	Cargo aircraft only	(10) Vessel Stowage Location	Other
(1)	(2)	(3)	(4)	(5)	(6)		(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Trimethylhexamethylene diisocyanate	6.1	UN2328	III	6.1	T8	153	203	241	60 L	220 L	B	
	Trimethylhexamethylenediamines	8	UN2327	III	8	T7	154	203	241	5 L	60 L	A	
	Trimethylol nitromethane trinitrate	Forbidden											
	Trinitro-meta-cresol	1.1D	UN0216	II	1.1D		None	62	None	Forbidden	Forbidden	B	1E, 5E
	2,4,6-Trinitro-1,3-diazobenzene	Forbidden											
	2,4,6-Trinitro-1,3,5-triazido benzene (dry)	Forbidden											
	Trinitroacetic acid	Forbidden											
	Trinitroacetonitrile	Forbidden											
	Trinitroamine cobalt	Forbidden											
	Trinitroaniline or **Picramide**	1.1D	UN0153	II	1.1D		None	62	None	Forbidden	Forbidden	B	1E, 5E
	Trinitroanisole	1.1D	UN0213	II	1.1D		None	62	None	Forbidden	Forbidden	B	1E, 5E
	Trinitrobenzene, *dry or wetted with less than 30 percent water, by mass*	1.1D	UN0214	II	1.1D		None	62	None	Forbidden	Forbidden	B	1E, 5E
	Trinitrobenzene, wetted *with not less than 30 percent water, by mass*	4.1	UN1354	II	4.1	23, A2, A8, A19, N41	None	211	None	0.5 kg	0.5 kg	E	28
	Trinitrobenzenesulfonic acid	1.1D	UN0386	II	1.1D		None	62	None	Forbidden	Forbidden	E	1E, 5E
	Trinitrobenzoic acid, *dry or wetted with less than 30 percent water, by mass*	1.1D	UN0215	II	1.1D		None	62	None	Forbidden	Forbidden	B	1E, 5E
	Trinitrobenzoic acid, wetted *with not less than 30 percent water, by mass*	4.1	UN1355	II	4.1	23, A2, A8, A19, N41	None	211	None	0.5 kg	0.5 kg	E	28
	Trinitrochlorobenzene or **Picryl chloride**	1.1D	UN0155	II	1.1D		None	62	None	Forbidden	Forbidden	B	1E, 5E
	Trinitroethanol	Forbidden											
	Trinitroethylnitrate	Forbidden											
	Trinitrofluorenone	1.1D	UN0387	II	1.1D		None	62	None	Forbidden	Forbidden	B	1E, 5E
	Trinitromethane	Forbidden											
	1,3,5-Trinitronaphthalene	Forbidden											
	Trinitronaphthalene	1.1D	UN0217	II	1.1D		None	62	None	Forbidden	Forbidden	B	1E, 5E
	Trinitrophenetole	1.1D	UN0218	II	1.1D		None	62	None	Forbidden	Forbidden	B	1E, 5E
	Trinitrophenol or **Picric acid**, *dry or wetted with less than 30 percent water, by mass*	1.1D	UN0154	II	1.1D		None	62	None	Forbidden	Forbidden	B	1E, 5E
	Trinitrophenol, wetted *with not less than 30 percent water, by mass*	4.1	UN1344	II	4.1	23, A8, A19, N41	None	211	None	1 kg	15 kg	E	28, 36
	2,4,6-Trinitrophenyl guanidine (dry)	Forbidden											
	2,4,6-Trinitrophenyl nitramine	Forbidden											
	2,4,6-Trinitrophenyl trimethylol methyl nitramine trinitrate (dry)	Forbidden											
	Trinitrophenylmethylnitramine or **Tetryl**	1.1D	UN0208	II	1.1D		None	62	None	Forbidden	Forbidden	B	1E, 5E
	Trinitroresorcinol or **Styphnic acid**, *dry or wetted with less than 20 percent water, or mixture of alcohol and water, by mass*	1.1D	UN0219	II	1.1D		None	62	None	Forbidden	Forbidden	B	1E, 5E
	Trinitroresorcinol, wetted or **Styphnic acid wetted** *with not less than 20 percent water or mixture of alcohol and water, by mass*	1.1D	UN0394	II	1.1D		None	62	None	Forbidden	Forbidden	B	1E, 5E
	2,4,6-Trinitroso-3-methyl nitraminoanisole	Forbidden											
	Trinitrotetramine cobalt nitrate	Forbidden											
	Trinitrotoluene and Trinitrobenzene mixtures or **TNT and trinitrobenzene mixtures** or **TNT and hexanitrostilbene mixtures** or **Trinitrotoluene and hexanitrostilbene mixtures**	1.1D	UN0388	II	1.1D		None	62	None	Forbidden	Forbidden	B	1E, 5E

§172.101 HAZARDOUS MATERIALS TABLE, Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label codes	Special provisions	(8) Packaging (§173.***) Exceptions	Non-bulk	Bulk	(9) Quantity Limitations Passenger aircraft/rail	Cargo aircraft only	(10) Vessel Stowage Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
G I	**Compressed gas, toxic, oxidizing, corrosive, n.o.s.** *Inhalation Hazard Zone B*	2 3	UN3306		2 3 5 1 8	2	None	302 305	314 315	Forbidden	Forbidden	D	40 89 90
G I	**Compressed gas, toxic, oxidizing, corrosive, n.o.s.** *Inhalation Hazard Zone C*	2 3	UN3306		2 3 5 1 8	3	None	302 305	314 315	Forbidden	Forbidden	D	40, 89, 90
G I	**Compressed gas, toxic, oxidizing, corrosive, n.o.s.** *Inhalation Hazard Zone D*	2 3	UN3306		2 3, 5 1 8	4	None	302 305	314 315	Forbidden	Forbidden	D	40, 89 90
G	**Compressed gas, toxic, oxidizing, n.o.s.** *Inhalation Hazard Zone A*	2 3	UN3303		2 3 5 1	1	None	192	245	Forbidden	Forbidden	D	40
G	**Compressed gas, toxic, oxidizing, n.o.s.** *Inhalation Hazard Zone B*	2 3	UN3303		2 3, 5 1	2	None	302 305	314 315	Forbidden	Forbidden	D	40
G	**Compressed gas, toxic, oxidizing, n.o.s.** *Inhalation Hazard Zone C*	2 3	UN3303		2 3 5 1	3	None	302 305	314 315	Forbidden	Forbidden	D	40
G	**Compressed gas, toxic, oxidizing, n.o.s.** *Inhalation Hazard Zone D*	2 3	UN3303		2 3 5 1	4	None	302 305	314 315	Forbidden	Forbidden	D	40
D	**Consumer commodity**	ORM-D			None		156 306	156 306	None	30 kg gross	30 kg gross	A	
	Contrivances, water-activated, *with burster expelling charge or propelling charge*	1 2L	UN0248	II	1 2L	101	None	62	None	Forbidden	Forbidden	E	2E, 8E 11E 17E
	Contrivances, water-activated, *with burster expelling charge or propelling charge*	1 3L	UN0249		1 3L	101	None	62	None	Forbidden	Forbidden	E	2E 8E 11E 17E
	Copper acetoarsenite	6 1	UN1585	I	6 1		None	212	242	25 kg	100 kg	A	
	Copper acetylide	Forbidden											
	Copper amine azide	Forbidden											
	Copper arsenite	6 1	UN1586	II	6 1		None	212	242	25 kg	100 kg	A	
	Copper based pesticides, liquid, flammable, toxic, *flash point less than 23 degrees C*	3	UN2776	I	3 6 1		None	201	243	Forbidden	30 L	B	40
				II	3 6 1		None	202	243	1 L	60 L	B	40
	Copper based pesticides, liquid toxic	6 1	UN3010	I	6 1	T42	None	201	243	1 L	30 L	B	40
				II	6 1	T14	None	202	243	5 L	60 L	B	40
				III	6 1	T14	153	203	241	60 L	220 L	A	40
	Copper based pesticides, liquid, toxic, flammable *flashpoint not less than 23 degrees C*	6 1	UN3009	I	6 1 3	T42	None	201	243	1 L	30 L	B	40
				II	6 1 3	T14	None	202	243	5 L	60 L	B	40
				III	6 1 3	B1 T14	153	203	242	60 L	220 L	A	40
	Copper based pesticides, solid, toxic	6 1	UN2775		6 1		None	211	242	5 kg	50 kg	A	40
				II	6 1		None	212	242	25 kg	100 kg	A	40
				III	6 1		153	213	240	100 kg	200 kg	A	40
	Copper chlorate	5 1	UN2721	II	5 1	A1	152	212	242	5 kg	25 kg	A	56 58 106
	Copper chloride	8	UN2802	III	8		154	213	240	25 kg	100 kg	A	
	Copper cyanide	6 1	UN1587	II	6 1		None	204	242	25 kg	100 kg	A	26
	Copper selenate see **Selenates** *or* **Selenites**												
	Copper selenite see **Selenates** *or* **Selenites**												
	Copper tetramine nitrate	Forbidden											
AW	**Copra**	4 2	UN1363	III	4 2		None	213	241	Forbidden	Forbidden	A	13 19 48 119
	Cord detonating, *flexible*	1 1D	UN0065	II	1 1D	102	63(a)	62	None	Forbidden	Forbidden	B	
	Cord, detonating, *flexible*	1 4D	UN0289	II	1 4D		None	62	None	Forbidden	75 kg	A	24E
	Cord detonating *or* **Fuse detonating** *metal clad*	1 2D	UN0102	I	1 2D		None	62	None	Forbidden	Forbidden	B	
	Cord, detonating or **Fuse, detonating** *metal clad*	1 1D	UN0290	II	1 1D		None	62	None	Forbidden	Forbidden	B	
	Cord, detonating, mild effect *or* **Fuse, detonating, mild effect** *metal clad*	1 4D	UN0104	II	1 4D		None	62	None	Forbidden	75 kg	A	24E
	Cord, igniter	1 4G	UN0066	II	1 4G		None	62	None	Forbidden	75 kg	A	24E
	Cordeau detonant fuse see **Cord, detonating,** *etc* **Cord, detonating,** *flexible*												
	Cordite see **Powder, smokeless**												
G	**Corrosive liquid, acidic, inorganic n.o.s**	8	UN3264		8	B10	None	201	243	0.5 L	2.5 L	B	40
				II	8	B2 T14	154	202	242	1 L	30 L	B	40
				III	8	--	154	203	241	5 L	60 L	A	40

§172.101 HAZARDOUS MATERIALS TABLE, Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label codes	Special provisions	(8) Packaging (§173 ***) Exceptions	Non-bulk	Bulk	(9) Quantity Limitations Passenger aircraft/rail	Cargo aircraft only	(10) Vessel Stowage Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
G	**Corrosive liquid, acidic, organic, n.o.s.**	8	UN3265	I	8	B10	None	201	243	0.5 L	2.5 L	B	40
					8	B2 T14	154	202	242	1 L	30 L	B	40
					8	T7	154	203	241	5 L	60 L	A	40
G	**Corrosive liquid, basic, inorganic, n.o.s.**	8	UN3266	I	8	B10	None	201	243	0.5 L	2.5 L	B	40
				II	8	B2 T14	154	202	242	1 L	30 L	B	40
				III	8	T7	154	203	241	5 L	60 L	A	40
G	**Corrosive liquid, basic, organic, n.o.s.**	8	UN3267	I	8	B10	None	201	243	0.5 L	2.5 L	B	40
				II	8	B2 T14	154	202	242	1 L	30 L	B	40
				III	8	T7	154	203	241	5 L	60 L	A	40
G	**Corrosive liquid, self-heating, n.o.s.**	8	UN3301	I	8, 4.2	B10	None	201	243	0.5 L	2.5 L	D	
				II	8, 4.2	B2	154	202	242	1 L	30 L	D	
G	**Corrosive liquids, flammable, n.o.s.**	8	UN2920	I	8, 3	B10 T42	None	201	243	0.5 L	2.5 L	C	25, 40
				II	8, 3	B2 T15 T26	None	202	243	1 L	30 L	C	25, 40
G	**Corrosive liquids, n.o.s.**	8	UN1760	I	8	A7 B10 T42	None	201	243	0.5 L	2.5 L	B	40
				II	8	B2 T14	154	202	242	1 L	30 L	B	40
G				III	8	T7	154	203	241	5 L	60 L	A	40
G	**Corrosive liquids, oxidizing, n.o.s.**	8	UN3093		8, 5.1		None	201	243	Forbidden	2.5 L	C	89
				II	8, 5.1		None	202	243	1 L	30 L	C	89
G	**Corrosive liquids, toxic, n.o.s.**	8	UN2922	I	8, 6.1	A7 B10 T18 T27	None	201	243	0.5 L	2.5 L	B	40
				II	8, 6.1	B3 T18 T26	None	202	243	1 L	30 L	B	40
				III	8, 6.1	T8	154	203	241	5 L	60 L	B	40
G	**Corrosive liquids, water-reactive, n.o.s.**	8	UN3094	I	8, 4.3		None	201	243	Forbidden	1 L	E	
				II	8, 4.3		None	202	243	1 L	5 L	E	
G	**Corrosive solid, acidic, inorganic, n.o.s.**	8	UN3260	I	8		None	211	242	1 kg	25 kg	B	
				II	8		154	212	240	15 kg	50 kg	B	
				III	8		154	213	240	25 kg	100 kg	A	
G	**Corrosive solid, acidic, organic, n.o.s.**	8	UN3261		8		None	211	242	1 kg	25 kg	B	
				II	8		154	212	240	15 kg	50 kg	B	
				III	8		154	213	240	25 kg	100 kg	A	
G	**Corrosive solid, basic, inorganic, n.o.s.**	8	UN3262	I	8		None	211	242	1 kg	25 kg	B	
				II	8		154	212	240	15 kg	50 kg	B	
				III	8		154	213	240	25 kg	100 kg	A	
G	**Corrosive solid, basic, organic, n.o.s.**	8	UN3263		8		None	211	242	1 kg	25 kg	B	
				II	8		154	212	240	15 kg	50 kg	B	
				III	8		154	213	240	25 kg	100 kg	A	
G	**Corrosive solids, flammable, n.o.s.**	8	UN2921		8, 4.1	B106	None	211	242	1 kg	25 kg	B	12, 25
				II	8, 4.1		None	212	242	15 kg	50 kg	B	12, 25
G	**Corrosive solids, n.o.s.**	8	UN1759	I	8		None	211	242	1 kg	25 kg	B	
				II	8	128	154	212	240	15 kg	50 kg	A	
				III	8	128	154	213	240	25 kg	100 kg	A	
G	**Corrosive solids, oxidizing, n.o.s**	8	UN3084		8, 5.1	B100	None	211	242	1 kg	25 kg	C	
				II	8, 5.1	B100	None	212	242	15 kg	50 kg	C	
G	**Corrosive solids, self-heating, n.o.s.**	8	UN3095		8, 4.2	B100	None	211	243	1 kg	25 kg	C	
				II	8, 4.2		None	212	242	15 kg	50 kg	C	
G	**Corrosive solids, toxic, n.o.s.**	8	UN2923		8, 6.1		None	211	242	1 kg	25 kg	B	40
				II	8, 6.1		None	212	240	15 kg	50 kg	B	40
				III	8, 6.1		154	213	240	25 kg	100 kg	B	40, 95
G	**Corrosive solids, water-reactive, n.o.s.**	8	UN3096		8, 4.3	B105	None	211	243	1 kg	25 kg	D	
				I	8, 4.3	B105	None	212	242	15 kg	50 kg	D	
D W	**Cotton**	9	NA1365		9	137 W41	None	None	None	No limit	No limit	A	
A W	**Cotton waste, oily**	4.2	UN1364	I	4.2		None	213	None	Forbidden	Forbidden	A	54
A W	**Cotton, wet**	4.2	UN1365	I	4.2		None	204	241	Forbidden	Forbidden	A	
	Coumarin derivative pesticides, liquid, flammable, toxic, *flashpoint less than 23 degrees C*	3	UN3024		3, 6.1		None	201	243	Forbidden	30 L	B	40
				I	3, 6.1		None	202	243	1 L	60 L	B	40
	Coumarin derivative pesticides, liquid, toxic	6.1	UN3026		6.1		None	201	243	1 L	30 L	B	40
					6.1		None	202	243	5 L	60 L	B	40

(ii) *Substances shipped refrigerated or frozen (ice, pre-frozen packs, dry ice).* Ice or dry ice must be placed outside the secondary packagings. Interior supports must be provided to secure the secondary packagings in the original position after the ice or dry ice has dissipated. If ice is used, the packaging must be leakproof. If dry ice is used, the outer packaging must permit the release of carbon dioxide gas.

(iii) *Substances shipped in liquid nitrogen.* Plastic primary receptacles capable of withstanding very low temperatures must be used. Secondary packaging must also withstand very low temperatures and in most cases will need to be fitted over individual primary receptacles. Requirements for shipment of liquid nitrogen must also be observed.

(f) Whatever the intended temperature of shipment, the primary receptacle or secondary packaging used for infectious substances must be capable of withstanding, without leakage, an internal pressure which produces a pressure differential of not less than 95 kPa (14 psi) and temperatures in the range of -40°C to +55°C (-40°F to +131°F).

(g) The requirements of this section supplement the requirements of the Department of Health and Human Services contained in 42 CFR part 72.

(h) *Exceptions.* The following substances are not subject to any requirements of this subchapter if the items as packaged do not contain any material otherwise subject to the requirements of this subchapter.

(1) Diagnostic specimens.

(2) Biological products.

§173.197 Regulated medical waste.

Regulated medical waste must be packaged in packagings conforming to the requirements of part 178 of this subchapter at the Packing Group II performance level. The packagings must be:

(a) Rigid;

(b) Leak resistant;

(c) Impervious to moisture;

(d) Of sufficient strength to prevent tearing or bursting under normal conditions of use and handling;

(e) Sealed to prevent leakage during transport;

(f) Puncture resistant for sharps and sharps with residual fluids; and

(g) Break-resistant and tightly lidded or stoppered for fluids in quantities greater than 20 cubic centimeters.

§173.198 Nickel carbonyl.

(a) Nickel carbonyl must be packed in specification steel or nickel cylinders as prescribed for any compressed gas except acetylene. A cylinder used exclusively for nickel carbonyl may be given a complete external visual inspection in lieu of the interior hydrostatic pressure test required by §173.34(e). Visual inspection must be in accordance with CGA Pamphlet C-6.

(b) Packagings for nickel carbonyl must conform to §173.40.

§173.201 Non-bulk packagings for liquid hazardous materials in Packing Group I.

(a) When §172.101 of this subchapter specifies that a liquid hazardous material be packaged under this section, only non-bulk packagings prescribed in this section may be used for its transportation. Each packaging must conform to the general packaging requirements of subpart B of part 173, to the requirements of part 178 of this subchapter at the Packing Group I performance level, and to the requirements of the special provisions of Column 7 of the §172.101 Table.

(b) The following combination packagings are authorized:

Outer packagings:

Steel drum: 1A1 or 1A2
Aluminum drum: 1B1 or 1B2
Metal drum other than steel or aluminum: 1N1 or 1N2
Plywood drum: 1D
Fiber drum: 1G
Plastic drum: 1H1 or 1H2
Steel jerrican: 3A1 or 3A2
Plastic jerrican: 3H1 or 3H2
Aluminum jerrican: 3B1 or 3B2
Steel box 4A
Aluminum box: 4B
Natural wood box. 4C1 or 4C2
Plywood box: 4D
Reconstituted wood box: 4F
Fiberboard box: 4G
Expanded plastic box 4H1
Solid plastic box: 4H2

Inner packagings:

Glass or earthenware receptacles
Plastic receptacles
Metal receptacles
Glass ampoules

(c) Except for transportation by passenger aircraft, the following single packagings are authorized:

Steel drum 1A1 or 1A2
Aluminum drum: 1B1 or 1B2
Metal drum other than steel, or aluminum: 1N1 or 1N2
Plastic drum 1H1 or 1H2
Steel jerrican: 3A1 or 3A2
Plastic jerrican 3H1 or 3H2
Aluminum jerrican 3B1 or 3B2
Plastic receptacle in steel, aluminum, fiber or plastic drum: 6HA1 6HB1 6HG1 6HH1
Plastic receptacle in steel, aluminum wooden, plywood or fiberboard box: 6HA2 6HB2 6HC, 6HD2 or 6HG2
Glass porcelain or stoneware in steel aluminum or fiber drum 6PA1 6PB1 or 6PG1
Glass porcelain or stoneware in steel, aluminum, wooden or fiberboard box 6PA2 6PB2 6PC or 6PG2

Glass, porcelain or stoneware in solid or expanded plastic packaging: 6PH1 or 6PH2
Cylinders, specification, as prescribed for any compressed gas, except for Specifications 8 and 3HT

§173.202 Non-bulk packagings for liquid hazardous materials in Packing Group II.

(a) When §172.101 of this subchapter specifies that a liquid hazardous material be packaged under this section, only non-bulk packagings prescribed in this section may be used for its transportation. Each packaging must conform to the general packaging requirements of subpart B of part 173, to the requirements of part 178 of this subchapter at the Packing Group I or II performance level (unless otherwise excepted), and to the particular requirements of the special provisions of Column 7 of the §172.101 Table.

(b) The following combination packagings are authorized:

Outer packagings:

Steel drum: 1A1 or 1A2
Aluminum drum: 1B1 or 1B2
Metal drum other than steel or aluminum: 1N1 or 1N2
Plywood drum: 1D
Fiber drum 1G
Plastic drum: 1H1 or 1H2
Wooden barrel: 2C2
Steel jerrican: 3A1 or 3A2
Plastic jerrican: 3H1 or 3H2
Aluminum jerrican: 3B1 or 3B2
Steel box: 4A
Aluminum box: 4B
Natural wood box: 4C1 or 4C2
Plywood box: 4D
Reconstituted wood box 4F
Fiberboard box 4G
Expanded plastic box, 4H1
Solid plastic box: 4H2

Inner packagings

Glass or earthenware receptacles
Plastic receptacles
Metal receptacles
Glass ampoules

(c) Except for transportation by passenger aircraft, the following single packagings are authorized:

Steel drum: 1A1 or 1A2
Aluminum drum: 1B1 or 1B2
Metal drum other than steel or aluminum 1N1 or 1N2
Plastic drum 1H1 or 1H2
Fiber drum 1G (with liner)
Wooden barrel 2C1
Steel jerrican 3A1 or 3A2
Plastic jerrican 3H1 or 3H2
Aluminum jerrican 3B1 or 3B2
Plastic receptacle in steel, aluminum fiber or plastic drum: 6HA1 6HB1 6HG1 or 6HH1
Plastic receptacle in steel aluminum wooden plywood or fiberboard box 6HA2 6HB2 6HC 6HD2 or 6HG2
Glass porcelain or stoneware in steel aluminum or fiber drum 6PA1 6PB1 or 6PG1
Glass, porcelain or stoneware in steel, aluminum, wooden or fiberboard box: 6PA2, 6PB2, 6PC or 6PG2
Glass, porcelain or stoneware in solid or expanded plastic packaging: 6PH1 or 6PH2
Plastic receptacle in plywood drum: 6HD1
Glass, porcelain or stoneware in plywood drum or wickerwork hamper: 6PD1 or 6PD2
Cylinders, specification, as prescribed for any compressed gas, except for Specifications 8 and 3HT

§173.203 Non-bulk packagings for liquid hazardous materials in Packing Group III.

(a) When §172.101 of this subchapter specifies that a liquid hazardous material be packaged under this section, only non-bulk packagings prescribed in this section may be used for its transportation. Each packaging must conform to the general packaging requirements of subpart B of part 173, to the requirements of part 178 of this subchapter at the Packing Group I, II or III performance level, and to the requirements of the special provisions of Column 7 of the §172.101 Table.

(b) The following combination packagings are authorized:

Outer packagings:

Steel drum: 1A1 or 1A2
Aluminum drum: 1B1 or 1B2
Metal drum other than steel or aluminum: 1N1 or 1N2
Plywood drum: 1D
Fiber drum: 1G
Plastic drum: 1H1 or 1H2
Wooden barrel 2C2
Steel jerrican. 3A1 or 3A2
Plastic jerrican 3H1 or 3H2
Aluminum jerrican: 3B1 or 3B2
Steel box 4A
Aluminum box 4B
Natural wood box: 4C1 or 4C2
Plywood box: 4D
Reconstituted wood box 4F
Fiberboard box, 4G
Expanded plastic box: 4H1
Solid plastic box: 4H2

Inner packagings:

Glass or earthenware receptacles
Plastic receptacles
Metal receptacles
Glass ampoules

(c) The following single packagings are authorized:

Steel drum: 1A1 or 1A2
Aluminum drum: 1B1 or 1B2
Metal drum other than steel or aluminum: 1N1
Plastic drum: 1H1 or 1H2
Fiber drum: 1G (with liner)
Wooden barrel: 2C1
Steel jerrican: 3A1 or 3A2
Plastic jerrican: 3H1 or 3H2
Aluminum jerrican: 3B1 or 3B2
Plastic receptacle in steel, aluminum, fiber or plastic drum: 6HA1, 6HB1, 6HG1 or 6HH1
Plastic receptacle in steel, aluminum, wooden, plywood or fiberboard box: 6HA2, 6HB2, 6HC, 6HD2 or 6HG2
Glass, porcelain or stoneware in steel, aluminum or fiber drum: 6PA1, 6PB1, or 6PG1
Glass, porcelain or stoneware in steel, aluminum, wooden or fiberboard box: 6PA2, 6PB2, 6PC or 6PG2
Glass, porcelain or stoneware in solid or expanded plastic packaging: 6PH1 or 6PH2
Plastic receptacle in plywood drum: 6HD1
Glass, porcelain or stoneware in plywood drum or wickerwork hamper: 6PD1 or 6PD2
Cylinders, as prescribed for any compressed gas, except for Specifications 8 and 3HT

§173.204 Non-bulk, non-specification packagings for certain hazardous materials.

When §172.101 of this subchapter specifies that a liquid or solid hazardous material be packaged under this section, any appropriate non-bulk packaging which conforms to the general packaging requirements of subpart B of part 173 may be used for its transportation. Packagings need not conform to the requirements of part 178 of this subchapter.

§173.205 Specification cylinders for liquid hazardous materials.

When §172.101 of this subchapter specifies that a hazardous material be packaged under this section, any specification cylinder, except those specified for acetylene, is authorized. Cylinders used for poisonous materials (Division 6.1 or 2.3) must conform to the requirements of §173.40.

§173.211 Non-bulk packagings for solid hazardous materials in Packing Group I.

(a) When §172.101 of this subchapter specifies that a solid hazardous material be packaged under this section, only non-bulk packagings prescribed in this section may be used for its transportation. Each package must conform to the general packaging requirements of subpart B of part 173, to the requirements of part 178 of this subchapter at the Packing Group I performance level, and to the requirements of the special provisions of Column 7 of the §172.101 Table.

(b) The following combination packagings are authorized:

Outer packagings:

Steel drum: 1A1 or 1A2
Aluminum drum: 1B1 or 1B2
Metal drum other than steel or aluminum: 1N1 or 1N2
Plywood drum: 1D
Fiber drum: 1G
Plastic drum: 1H1 or 1H2
Wooden barrel: 2C2
Steel jerrican: 3A1 or 3A2
Plastic jerrican: 3H1 or 3H2
Aluminum jerrican: 3B1 or 3B2
Steel box: 4A
Aluminum box: 4B
Natural wood box: 4C1 or 4C2
Plywood box: 4D
Reconstituted wood box: 4F
Fiberboard box: 4G
Solid plastic box: 4H2

Inner packagings:

Glass or earthenware receptacles
Plastic receptacles
Metal receptacles
Glass ampoules

(c) Except for transportation by passenger aircraft, the following single packagings are authorized:

Steel drum: 1A1 or 1A2
Aluminum drum: 1B1 or 1B2
Metal drum other than steel or aluminum: 1N1 or 1N2
Plastic drum: 1H1 or 1H2
Fiber drum: 1G
Steel jerrican: 3A1 or 3A2
Plastic jerrican: 3H1 or 3H2
Aluminum jerrican: 3B1 or 3B2
Steel box with liner: 4A
Aluminum box with liner: 4B
Natural wood box, sift proof: 4C2
Plastic receptacle in steel, aluminum, plywood, fiber or plastic drum: 6HA1, 6HB1, 6HD1, 6HG1 or 6HH1
Plastic receptacle in steel, aluminum, wooden, plywood or fiberboard box: 6HA2, 6HB2, 6HC, 6HD2 or 6HG2
Glass, porcelain or stoneware in steel, aluminum, plywood or fiber drum: 6PA1, 6PB1, 6PD1 or 6PG1
Glass, porcelain or stoneware in steel, aluminum, wooden or fiberboard box: 6PA2, 6PB2, 6PC or 6PG2
Glass, porcelain or stoneware in expanded or solid plastic packaging: 6PH1 or 6PH2

§173.212 Non-bulk packagings for solid hazardous materials in Packing Group II.

(a) When §172.101 of this subchapter specifies that a solid hazardous material be packaged under this section, only non-bulk packagings prescribed in this section may be used for its transportation. Each package must conform to the general packaging requirements of subpart B of part 173, to the requirements of part 178 of this

subchapter at the Packing Group I or II performance level, and to the requirements of the special provisions of Column 7 of the 172.101 Table.

(b) The following combination packagings are authorized:

Outer packagings:

Steel drum: 1A1 or 1A2
Aluminum drum: 1B1 or 1B2
Metal drum other than steel or aluminum: 1N1 or 1N2
Plywood drum: 1D
Fiber drum: 1G
Plastic drum: 1H1 or 1H2
Wooden barrel: 2C2
Steel jerrican: 3A1 or 3A2
Plastic jerrican: 3H1 or 3H2
Aluminum jerrican: 3B1 or 3B2
Steel box: 4A
Aluminum box: 4B
Natural wood box: 4C1 or 4C2
Plywood box: 4D
Reconstituted wood box: 4F
Fiberboard box: 4G
Solid plastic box: 4H2

Inner packagings:

Glass or earthenware receptacles
Plastic receptacles
Metal receptacles
Glass ampoules

(c) Except for transportation by passenger aircraft, the following single packagings are authorized:

Steel drum: 1A1 or 1A2
Aluminum drum: 1B1 or 1B2
Plywood drum: 1D
Plastic drum: 1H1 or 1H2
Fiber drum: 1G
Metal drum other than steel or aluminum: 1N1 or 1N2
Wooden barrel: 2C1 or 2C2
Steel jerrican: 3A1 or 3A2
Plastic jerrican: 3H1 or 3H2
Aluminum jerrican: 3B1 or 3B2
Steel box: 4A
Steel box with liner: 4A
Aluminum box: 4B
Aluminum box with liner: 4B
Natural wood box: 4C1
Natural wood box, sift proof: 4C2
Plywood box: 4D
Reconstituted wood box: 4F
Fiberboard box: 4G
Expanded plastic box: 4H1
Solid plastic box: 4H2
Bag, woven plastic: 5H1, 5H2 or 5H3
Bag, plastic film: 5H4
Bag, textile: 5L1, 5L2 or 5L3
Bag, paper, multiwall, water resistant: 5M2
Plastic receptacle in steel, aluminum, plywood fiber or plastic drum: 6HA1, 6HB1, 6HD1, 6HG1 or 6HH1
Plastic receptacle in steel aluminum, wood, plywood or fiberboard box: 6HA2, 6HB2, 6HC, 6HD2 or 6HG2
Glass, porcelain or stoneware in steel, aluminum, plywood or fiber drum: 6PA1, 6PB1, 6PD1 or 6PG1
Glass, porcelain or stoneware in steel, aluminum, wooden or fiberboard box: 6PA2, 6PB2, 6PC or 6PG2
Glass, porcelain or stoneware in expanded or solid plastic packagin 6PH1 or 6PH2

§173.213 Non-bulk packagings for solid hazardous materials in Packing Group III.

(a) When §172.101 of this subchapter specifies that a solid hazardous material be packaged under this section, only non-bulk packagings prescribed in this section may be used for its transportation. Each package must conform to the general packaging requirements of subpart B of part 173, to the requirements of part 178 of this subchapter at the Packing Group I, II or III performance level, and to the requirements of the special provisions of Column 7 of the §172.101 Table.

(b) The following combination packagings are authorized:

Outer packagings:

Steel drum: 1A1 or 1A2
Aluminum drum: 1B1 or 1B2
Metal drum other than steel or aluminum: 1N1 or 1N2
Plywood drum: 1D
Fiber drum: 1G
Plastic drum: 1H1 or 1H2
Wooden barrel: 2C2
Steel jerrican: 3A1 or 3A2
Plastic jerrican: 3H1 or 3H2
Aluminum jerrican: 3B1 or 3B2
Steel box: 4A
Aluminum box: 4B
Natural wood box: 4C1 or 4C2
Plywood box: 4D
Reconstituted wood box: 4F
Fiberboard box: 4G
Solid plastic box: 4H2

Inner packagings:

Glass or earthenware receptacles
Plastic receptacles
Metal receptacles
Glass ampoules

(c) The following single packagings are authorized:

Steel drum: 1A1 or 1A2
Aluminum drum: 1B1 or 1B2
Plywood drum: 1D
Fiber drum: 1G
Plastic drum: 1H1 or 1H2
Metal drum other than steel or aluminum: 1N1 or 1N2
Wooden barrel: 2C1 or 2C2
Steel jerrican: 3A1 or 3A2
Plastic jerrican: 3H1 or 3H2
Aluminum jerrican: 3B1 or 3B2
Steel box with liner: 4A
Steel box: 4A
Aluminum box with liner: 4B
Natural wood box: 4C1
Natural wood box, sift proof: 4C2
Plywood box: 4D
Reconstituted wood box: 4F
Fiberboard box: 4G
Expanded plastic box: 4H1
Solid plastic box: 4H2

Subpart L—Non-bulk Performance-oriented Packaging Standards

§178.500 Purpose, scope and definitions.

(a) This subpart prescribes certain requirements for non-bulk packagings for hazardous materials. Standards for these packagings are based on the UN Recommendations.

(b) Terms used in this subpart are defined in §171.8 of this subchapter.

§178.502 Identification codes for packagings.

(a) Identification codes for designating kinds of packagings consist of the following:

(1) A numeral indicating the kind of packaging, as follows:

(i) "1" means a drum.
(ii) "2" means a wooden barrel.
(iii) "3" means a jerrican.
(iv) "4" means a box.
(v) "5" means a bag.
(vi) "6" means a composite packaging.
(vii) "7" means a pressure receptacle.

(2) A capital letter indicating the material of construction, as follows:

(i) "A" means steel (all types and surface treatments).
(ii) "B" means aluminum.
(iii) "C" means natural wood.
(iv) "D" means plywood.
(v) "F" means reconstituted wood.
(vi) "G" means fiberboard.
(vii) "H" means plastic.
(viii) "L" means textile.
(ix) "M" means paper, multi-wall.
(x) "N" means metal (other than steel or aluminum).
(xi) "P" means glass, porcelain or stoneware.

(3) A numeral indicating the category of packaging within the kind to which the packaging belongs. For example, for steel drums ("1A"), "1" indicates a non-removable head drum (i.e., "1A1") and "2" indicates a removable head drum (i.e., "1A2").

(b) For composite packagings, two capital letters are used in sequence in the second position of the code, the first indicating the material of the inner receptacle and the second, that of the outer packaging. For example, a plastic receptacle in a steel drum is designated "6HA1".

(c) For combination packagings, only the code number for the outer packaging is used.

(d) Identification codes are set forth in the standards for packagings in §§178.504 through 178.523 of this subpart.

§178.503 Marking of packagings.

(a) A manufacturer must mark every packaging that is represented as manufactured to meet a UN standard with the marks specified in this section. The markings must be durable, legible and placed in a location and of such a size relative to the packaging as to be readily visible, as specified in §178.3(a). Except as otherwise provided in this section, every reusable packaging liable to undergo a reconditioning process which might obliterate the packaging marks must bear the marks specified in paragraphs (a)(1) through (a)(6) and (a)(9) of this section in a permanent form (e.g. embossed) able to withstand the reconditioning process. A marking may be applied in a single line or in multiple lines provided

Reserved

the correct sequence is used. As illustrated by the examples in paragraph (e) of this section, the following information must be presented in the correct sequence. Slash marks should be used to separate this information. A packaging conforming to a UN standard must be marked as follows:

(1) The United Nations symbol as illustrated in paragraph (e)(1) of this section (for embossed metal receptacles, the letters UN may be applied in place of the symbol);

(2) A packaging identification code designating the type of packaging, the material of construction and, when appropriate, the category of packaging under §§178.504 through 178.523 of this subpart within the type to which the packaging belongs. The letter "V" must follow the packaging identification code on packagings tested in accordance with §178.601(g)(2); for example, "4GV". The letter "W" must follow the packaging identification code on packagings when required by an approval under the provisions of §178.601(h) of this part;

(3) A letter identifying the performance standard under which the packaging design type has been successfully tested, as follows:

(i) X—for packagings meeting Packing Group I, II and III tests;

(ii) Y—for packagings meeting Packing Group II and III tests; or

(iii) Z—for packagings only meeting Packing Group III tests;

(4) A designation of the specific gravity or mass for which the packaging design type has been tested, as follows:

(i) For packagings without inner packagings intended to contain liquids, the designation shall be the specific gravity rounded down to the first decimal but may be omitted when the specific gravity does not exceed 1.2; and

(ii) For packagings intended to contain solids or inner packagings, the designation shall be the maximum gross mass in kilograms;

(5)(i) For single and composite packagings intended to contain liquids, the test pressure in kilopascals rounded down to the nearest 10 kPa of the hydrostatic pressure test that the packaging design type has successfully passed;

(ii) For packagings intended to contain solids or inner packagings, the letter "S";

(6) The last two digits of the year of manufacture. Packagings of types 1H and 3H shall also be marked with the month of manufacture in any appropriate manner; this may be marked on the packaging in a different place from the remainder of the markings;

(7) The state authorizing allocation of the mark. The letters 'USA' indicate that the packaging is manufactured and marked in the United States in compliance with the provisions of this subchapter;

(8) The name and address or symbol of the manufacturer or the approval agency certifying compliance with subpart L and subpart M of this part. Symbols, if used must be registered with the Associate Administrator for Hazardous Materials Safety;

(9) For metal or plastic drums or jerricans intended for reuse or reconditioning as single packagings or the outer packagings of a composite packaging, the thickness of the packaging material, expressed in millimeters (rounded to the nearest 0.1 mm), as follows:

(i) Metal drums or jerricans must be marked with the nominal thickness of the metal used in the body. The marked nominal thickness must not exceed the minimum thickness of the steel used by more than the thickness tolerance stated in ISO Standard 3574. (See Appendix C of this part.) The unit of measure is not required to be marked. When the nominal thickness of either head of a metal drum is thinner than that of the body, the nominal thickness of the top head, body, and bottom head must be marked (e.g., "1.0–1.2–1.0" or "0.9–1.0–1.0").

(ii) Plastic drums or jerricans must be marked with the minimum thickness of the packaging material. Minimum thicknesses of plastic must be as determined in accordance with §173.28(b)(4). The unit of measure is not required to be marked;

(10) In addition to the markings prescribed in paragraphs (a)(1) through (a)(9) of this section, every new metal drum having a capacity greater than 100 L must bear the marks described in paragraphs (a)(1) through (a)(6), and (a)(9)(i) of this section, in a permanent form, on the bottom. The markings on the top head or side of these packagings need not be permanent, and need not include the thickness mark described in paragraph (a)(9) of this section. This marking indicates a drum's characteristics at the time it was manufactured, and the information in paragraphs (a)(1) through (a)(6) of this section that is marked on the top head or side must be the same as the information in paragraphs (a)(1) through (a)(6) of this section permanently marked by the original manufacturer on the bottom of the drum; and

(11) Rated capacity of the packaging expressed in liters may be marked.

(b) For a packaging with a removable head, the markings may not be applied only to the removable head.

(c) *Marking of reconditioned packagings.* (1) If a packaging is reconditioned, it shall be marked by the reconditioner near the marks required in paragraphs

(a)(1) through (6) of this section with the following additional information:

(i) The name of the country in which the reconditioning was performed (in the United States, use the letters "USA");

(ii) The name and address or symbol of the reconditioner. Symbols, if used, must be registered with the Associate Administrator for Hazardous Materials Safety;

(iii) The last two digits of the year of reconditioning;

(iv) The letter "R"; and

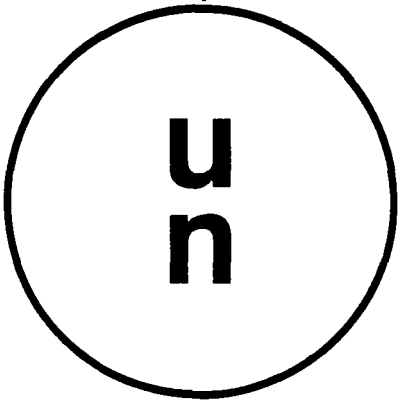
(v) For every packaging successfully passing a leakproofness test, the additional letter "L".

(2) When, after reconditioning, the markings required by paragraph (a)(1) through (a)(5) of this section no longer appear on the top head or the side of the metal drum, the reconditioner must apply them in a durable form followed by the markings in paragraph (c)(1) of this section. These markings may identify a different performance capability than that for which the original design type had been tested and marked, but may not identify a greater performance capability. The markings applied in accordance with this paragraph may be different from those which are permanently marked on the bottom of a drum in accordance with paragraph (a)(10) of this section.

(d) *Marking of remanufactured packagings.* For remanufactured metal drums, if there is no change to the packaging type and no replacement or removal of integral structural components, the required markings need not be permanent (e.g., embossed). Every other remanufactured drum must bear the marks required in paragraphs (a)(1) through (a)(6) of this section in a permanent form (e.g., embossed) on the top head or side. If the metal thickness marking required in paragraph (a)(9)(i) of this section does not appear on the bottom of the drum, or if it is no longer valid, the remanufacturer also must mark this information in permanent form.

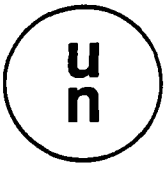
(e) The following are examples of symbols and required markings:

(1) The United Nations symbol is:



(2) Examples of markings for a new packaging are as follows:

(i) For a fiberboard box designed to contain an inner packaging:

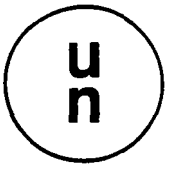


4G/Y145/S/83

USA/RA

(as in §178.503(a)(1) through (a)(8) of this subpart).

(ii) For a steel drum designed to contain liquids:



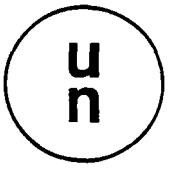
1A1/Y1.4/150/83

USA/VL824

1.0

(as in §178.503(a)(1) through (a)(9) of this subpart).

(iii) For a steel drum to transport solids or inner packagings:



1A2/Y150/S/83

USA/VL825

(as in §178.503(a)(1) through (a)(8) of this subpart).

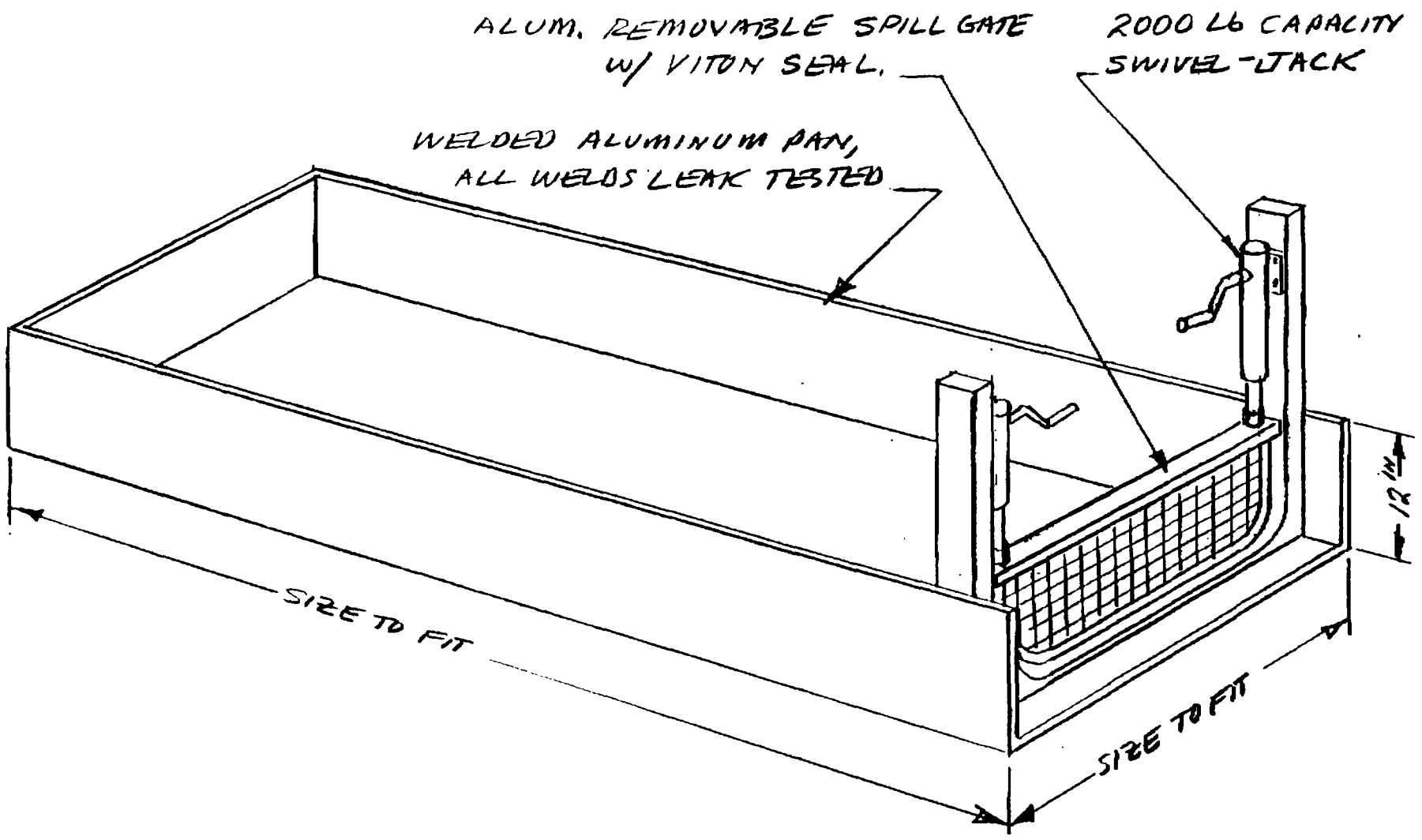
(3) Examples of markings for reconditioned packagings are as follows:

1A1/Y1.4/150/92

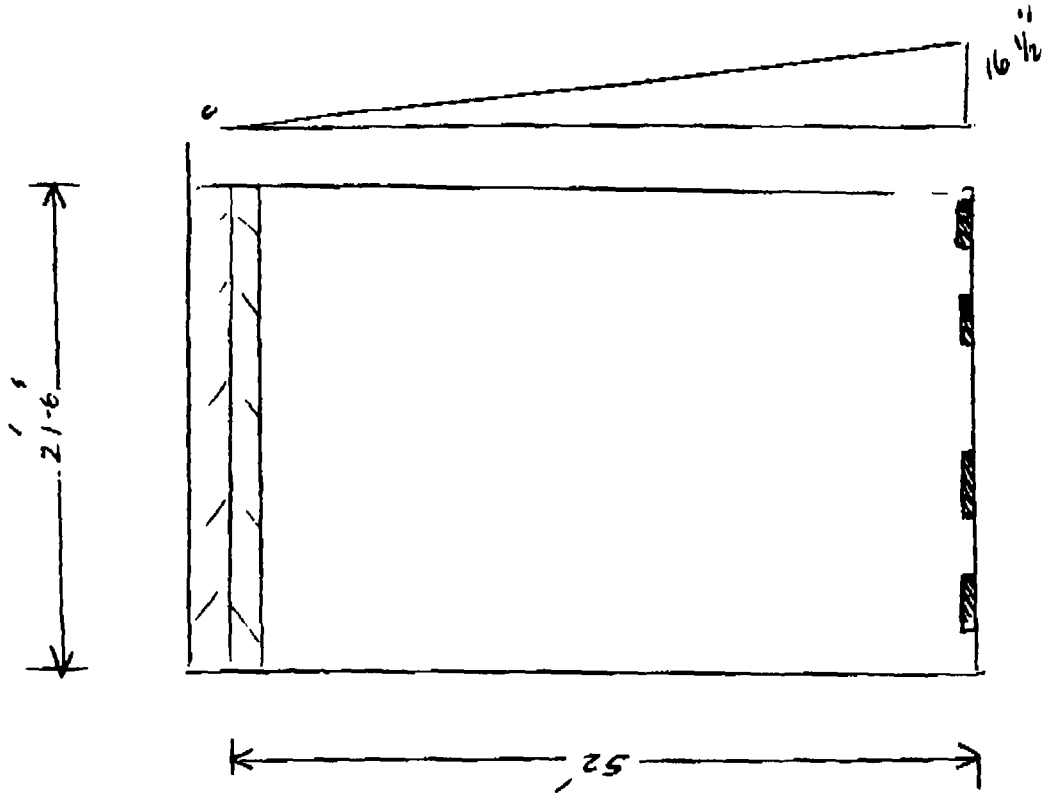
USA/RB/93 RL

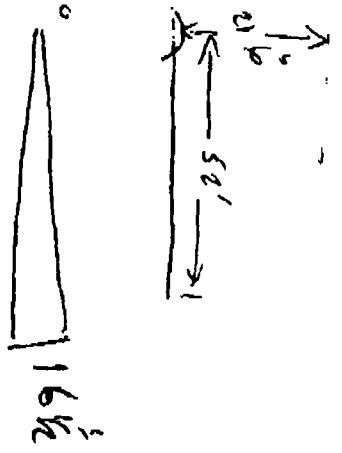
(as in §178.503(c)(1), (2), (3), (4), and (5)).

SPILL CONTAINMENT SYSTEM.



TANK TRUCK SERVICE & SALES, INC.
25150 DEQUINDRE
WARREN, MICHIGAN 48091


16 1/2"
21'-6"
52'


16 1/2"
52'
10'

ATTACHMENT D-5

TYPICAL HAZARDOUS WASTE CONTAINER MARKING

RECEIVED
JAN 05 2000
Waste Management
Division

FOR INFORMATION ONLY

Proper D.O.T. Shipping Name: _____

_____

UN or NA# _____

Generator Information:

Name: _____

Facility: _____

Address: _____

Phone: _____

City: _____

State: _____ Zip: _____

EPA ID No. / Manifest Document No. _____

State Manifest Document No. _____

EPA Waste No. _____

HAZARDOUS WASTE

FEDERAL LAW PROHIBITS IMPROPER DISPOSAL.

IF FOUND, CONTACT THE NEAREST POLICE OR PUBLIC SAFETY AUTHORITY OR THE U.S. ENVIRONMENTAL PROTECTION AGENCY.

HANDLE WITH CARE!

Workplace Accumulation Start Date:

Waste Accumulation Area:

MANEJESE CON CUIDADO
CONTIENE DESPERDICIOS TOXICOS

ATTACHMENT D-6

COATING SPECIFICATIONS AND MANUFACTURERS APPLICABILITY DETERMINATION

INTERNATIONAL COATINGS INC.

2925 Lucy Lane, Franklin Park, Illinois 60131 • 708/451-0279 • 800/624-8919 • Fax 708/451-0379

June 12, 1995

Mr. Ron Swan
Detrex Corporation
P.O. Box 5111
Southfield, MI 48086

Dear Mr. Swan:

Please be advised that our ICO-Super Guard 100% solid epoxy novalac material will withstand chemical attack for at least 72 hours from the list of chemical reagents you submitted (see enclosed), providing that the material is applied according to manufacturer's instructions. Complete product and application specs are also enclosed, along with design details for handling expansion joints, tanks, and metal legs.

I hope the above information has been helpful.

Very truly yours,

M Kramer

Mike Kramer

MK/dc

CD/DETREX

HAZARDOUS WASTE CODES

General Waste Listing

Waste Constituent Name	Waste Code Number(s)	Characteristic
Ignitable Waste	D001	Ignitable
Corrosive Waste	D002	Corrosive
Cadmium	D006	Toxic
Chromium	D007	Toxic
Lead	D008	Toxic
Mercury	D009	Toxic
Selenium	D010	Toxic
Silver	D011	Toxic
Endrin	D012	Toxic
Lindane	D013	Toxic
2,4 D	D016	Toxic
Chlordane	D020	Toxic
Heptachlor	D031	Toxic
Benzene	D018, F005, U019	Ignitable, Toxic
Carbon Tetrachloride	D019, F001, U211	Toxic
Chlorobenzene	D021, F002, U037	Toxic
Chloroform	D022, U044	Toxic
O-Cresol	D023, F004, U052	Toxic
M-Cresol	D024, F004, U052	Toxic
P-Cresol	D025, F004, U052	Toxic
Cresol	D026, F004, U052	Toxic
1,4 Dichlorobenzene	D027, U072	Toxic
1,2 Dichloroethane	D028, U077	Toxic
1,1 Dichloroethylene	D029, U078	Toxic
Hexachlorobenzene	D032, U127	Toxic
Hexachloroethane	D034, U131	Toxic
Methyl Ethyl Ketone	D035, F005, U159	Ignitable, Toxic
Pentachlorophenol	D037	Toxic
Tetrachloroethylene	D039, F001, F002, U210	Toxic
Trichloroethylene	D039, F001, F002, U210	Toxic
2,4,5-Trichlorophenol	D041	Toxic
2,4,6-Trichlorophenol	D042	Toxic
Acetone	F003, U002	Ignitable
Methylbenzene	U220	Toxic
Tetrachloroethane	F001, F002	Toxic
1-Butanol	U031	Ignitable, Toxic
Cyclohexanone	F003, U057	Ignitable
Dichlorodifluoromethane	U075	Toxic
Dipropylamine	U110	Ignitable, Toxic
1,1-Dichloroethane	U076	Toxic
1,1,1-Trichloroethane	F001, F002, U226	Toxic
Ethyl Acetate	F001, U112	Ignitable
Ethyl Acrylate	U113	Ignitable, Toxic
Isobutyl Alcohol	F004, U140	Toxic
Dichloromethane	U080	Toxic
Trichlorofluoromethane	F001, F002, U121	Toxic
Methanol	F003, U154	Ignitable
4-Methyl, 2-Pentanone	U161	Toxic
Phenol	U188	Toxic
Toluene	F005, U220	Ignitable
Xylene	U239	Ignitable
Allyl Alcohol	P005	Listed Haz. Waste
Petroleum (D.A.F.)	K048	Toxic
Petroleum (Slop Oil)	K049	Toxic
Petroleum(Sludge)	K050	Toxic
Petroleum (API Sep. Sldg)	K051	Toxic
Petroleum (Tank Bottoms)	K052	Toxic
Pharmaceutical Waste	K064	Toxic
Chlorobenzenes	K065	Toxic

INTERNATIONAL COATINGS INC.

2925 Lucy Lane, Franklin Park, Illinois 60131 • 708/451-0279 • 800/624-8919 • Fax 708/451-0379

SPECIFICATION FOR INSTALLATION OF EPOXY FLOOR AND WALL SYSTEMS FOR SECONDARY CONTAINMENT AREAS

1.00 SCOPE

1.01 SECTION INCLUDES:

1.01.1 Epoxy System for Secondary Containment Areas

1.02 RELATED SECTIONS:

1.02.1 Section 3.02; Concrete subfloor steel trowelled with a light broom finish

1.02.2 Section 07900 - Joint Sealants - Expansion joints

1.03 SUBMITTALS

1.03.1 Submit all applied samples and printed information to the Project Engineer.

1.03.2 Product Data: Provide two copies of manufacturers MSDS pages and product data on specified products describing physical performance characteristics, chemical resistance, available colors and packaging.

1.03.3 Provide complete Installation Instructions published by manufacturer. This should include special procedures, perimeter termination procedures, substrate joint and crack treatment, treatment for penetrations, surface mounted and equipment bases, cove and cant cove applications, adjacent and integral wall or vertical surface treatment and recommendations and procedures for establishing anti-slip profile on completed surfaces.

1.03.4 Furnish written Maintenance procedures as specified in section 1.09

1.03.5 Furnish written proof of Applicator Certification by the manufacturer.

1.03.6 The installation of all epoxy coating materials will be the responsibility of an applicator certified and approved by the manufacturer of the specified materials.

1.03.7 The manufacturer will submit a written statement detailing a schedule of application inspections to be accomplished by the manufacturers representative to assist the Owner in assessing compliance with project specifications, quality control and the manufacturer's recommended application instructions.

1.04 QUALIFICATIONS

1.04.1 Manufacturer: Manufacturer shall be a company specializing in the manufacturing of all products in the system specified in this section with a minimum of five (5) years experience.

1.04.2 Applicator: Company specializing in performing the work of this section with a minimum of three (3) years experience. Must be certified by the manufacturer of the material as having successfully completed the manufacturer's training and certification process.

1.04.3 Supervisor: Must have been trained by the manufacturer.

1.04.4 Applicators not certified by material manufacturer must arrange for full time instruction by the manufacturer throughout the time of the complete application. Such arrangements must be at the discretion of the manufacturer at their prevailing rates, all costs to be paid by the applicator.

1.05 REGULATORY REQUIREMENTS

1.05.1 Installation must conform to all State, County and City codes.

1.05.2 All materials must be 100% solids with no emissions of VOCs, known carcinogens or other hazardous materials.

1.06 DELIVERY, STORAGE AND HANDLING

1.06.1 Deliver, unload, store, protect and handle all specified products required on this project. All materials must be delivered to the job site in sealed, undamaged containers.

1.06.2 All containers shall have proper DOT labeling, material name, date of manufacture, color and batch number where appropriate.

1.06.3 Materials should be allowed to stabilize at the storage temperatures for a minimum of three days prior to application.

1.07 ENVIRONMENTAL REQUIREMENTS

1.07.1 Temperature in area of application shall be maintained at the ambient temperature recommended by the manufacturer for a minimum of 24 hours prior to, during and after the application of any materials unless otherwise prescribed by the manufacturer.

1.07.2 During the application of any materials and for the duration of the prescribed curing time the floor surface shall be protected from the direct air flow of any heat or cooling duct, open window or door.

1.08 WARRANTY

1.08.1 Applicator will provide a written one year warranty on company letter head signed by an officer of the corporation and notarized.

1.08.2 Warranty shall cover any defects in material or application that produces delamination from the substrate, degradation of the surface and excessive signs of wear.

1.08.3 Warranty from the applicator shall detail the product or system used, manufacturer name and address and copy of manufacturer's warranty.

1.08.4 Warranty will detail procedures to be used in formal notification of applicator when a suspected defect or problem is to be addressed by the applicator. The contact information for the manufacturer will be furnished to allow the owner to send duplicate of formal notification to the manufacturer.

1.09 MAINTENANCE DATA

1.09.1 Furnish complete maintenance data from the manufacturer covering recommended periodic maintenance steps, maintenance materials, procedures for regular cleaning, stain removal, spot repairs.

1.09.2 Furnish recommendations from manufacturer for schedule of periodic inspections by representative of the manufacturer.

1.09.3 Submit a list of wet samples of each product that will be supplied at no charge to owner to be retained for touch-up of damaged areas.

1.10 INSTALLATION DESCRIPTION

1.10.1 The scope of the installation will be detailed in a separate document and will include the description of the area and the system or systems to be installed in the area or areas.

1.10.2 The installer shall be responsible for verifying all measurements of the work area described verbally, by drawings or by written instructions and shall describe those measurements used as the basis for his submittals.

1.10.3 When instructed the installer will submit a unit pricing quotation based on the instructions, materials systems and specifications contained herein.

1.10.4 Any changes to the original description of the project scope shall be done only after instructed to do so in writing and accepted in writing. The written documents shall include any agreed upon change in cost to the owner.

2.00 PRODUCTS

2.01 MANUFACTURER

2.01.1 International Coatings, Inc. Franklin Park, Illinois

2.02 MATERIALS

2.02.1 Provide materials as specified herein. All products specified for the total coating system installation shall be manufactured by a single manufacturer. All products shall meet or exceed the performance specification of those products specified. The products named are those established as most suitable for the intended use and establish a desired level of quality and performance.

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2.02.2 Other systems are acceptable as alternates upon submittal of acceptable documentation of comparative testing accomplished by independent testing laboratories. Such testing shall be of a qualitative and quantitative analysis and include comparison of performance characteristics of the standard with the alternate. All such testing will be done at the expense of the submitter.

2.02.3 REFERENCES

ASTM D2730 E2	Tensile Properties for Organic Coatings
ASTM D2697 E1	Absorption of Chemical Resistant Coatings
ASTM D4060	Test method for Abrasion Resistance of Organic Coatings Tabor Abrasor
ASTM D 638	Tensile Elongation
ASTM C 307	Tensile Strength
ASTM C 580	Flexural Strength
ASTM C 579	Compressive Yield
ASTM C 399	Fracture Toughness
ASTM D 790	Flexural Strength

2.02.4 COATING SYSTEM

Coating System shall be a chemical resistant, low odor, 100% solids epoxy novolac material that has no VOC and no known carcinogens. The system shall be available in a coating, 1/4" hand trowelled overlayment, block filler, trowelled vertical liner, primer and chemical resistant caulking.

2.02.5 PRIMER

ICO-PRIMER FC as manufactured by International Coatings of Franklin Park, IL . Material shall be a low odor, two-part, solvent free epoxy designed for maximum penetration and sealing of porous surfaces to enhance adhesion and assist in the prevention of outgassing. It should have excellent adhesion to tile, brick and damp or dry concrete. It should prevent the excessive absorption of resin in the finish application into the substrate. It shall cure normally at temperatures between 32°F and 50°F or higher and also be available in versions to cure below 32°F.

2.02.6 HAND TROWELLED OVERLAYMENT-HIGH CHEMICAL RESISTANCE

ICO-SUPER GUARD as manufactured by International Coating of Franklin Park, IL. The material shall be a low odor, three part, solvent free 100% solids epoxy novolac overlayment with moderate restlience to resist thermal and mechanical shock. It should be a trowelled in-place material, normally applied to a nominal thickness of 1/4" without needing a final topcoat to seal it's surface. It shall have a resin rich mix ratio of 2.7:1 aggregate to resin. Higher mix ratio systems that require a topcoat or surface slurry are not acceptable. It shall have an elongation of 2.0% when tested using ASTM D638, a fracture toughness readin[illegible] of 980 psi/in./2 when tested against ASTM C399, a compressive yield not to exceed 70[illegible] psi when tested against ASTM C-579 and a tensile strength of at least 1300 psi when teste[illegible] against ASTM C-307. The material shall have excellent damp adhesion. It must be cap[illegible] of resisting immersion for 30 days in 98% sulfuric acid, 50% sodium hydroxide, 50[illegible] hydrofluoric, MEK, and 7 days in N-Methyl pyrolidone and methylene chloride.

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2.02.7 SELF LEVELLING OVERLAYMENT SYSTEM

ICO-SUPER GUARD SL as manufactured by International Coatings, Inc. Franklin Park, IL is a low odor, three part solvent free 100% solids epoxy novolac possessing moderate resilience to thermal and mechanical shock. It shall have a bond strength to quarry tile of over 1000 psi, an elongation of 5%, compressive strength of 10,230 psi, tensile strength of 2075 psi and flexural strength of 3825 psi.

2.02.8 TROWELLED VERTICAL LINER-High Chemical Resistance

ICO-LINER as manufactured by International Coatings, Franklin Park, IL. The material shall be a low odor, three-part solvent-free 100% solids epoxy novolac designed to line such vertical surfaces as berm walls, sumps, pits and trenches. It shall have an elongation of 5% when tested against ASTM D-638, developing moderate resilience to resist thermal and mechanical shock. It should be able to be trowel applied at thicknesses up to 1/8" in one pass without developing shrinkage cracks. It shall have a mix ratio of 1.3:1 by volume of graded aggregate to resin and hardener and have excellent adhesion to tile, brick and damp as well as dry concrete. It shall be unaffected by 36% hydrochloric acid, 50% nitric, 98% sulfuric acid, methylene chloride, MEK and acetone.

2.02.9 COATING-High Chemical Resistance

SUPER GUARD COATING as manufactured by International Coatings, Franklin Park, IL. The material shall be a low odor, solvent free, 100% solids flexibilized epoxy novolac coating with moderate resilience to resist thermal and mechanical shock. It shall be roller applied at a minimum thickness of 15 mils per coat on vertical surfaces without evidence of slumping with a minimum of two coats used. It shall have an elongation of 2% when tested using ASTM D638 and a minimum tensile strength of 380 psi, flexural strength of 7035 psi, bond strength to quarry tile over 1000 psi. It shall be able to resist 30 day submersion test of 37% hydrochloric, 50% hydrofluoric, 98% sulfuric, dimethyl formamide, tetrahydrofuran, MEK and acetone.

2.02.10 ICO-GEL

ICO-GEL as manufactured by International Coatings of Franklin Park, IL. The material shall be a low odor, solvent free, three part epoxy with bond strength exceeding 1000 psi on quarry tiles. It should be able to be applied on vertical surfaces up to 1" thick at 77°F in a single step application without sagging. The system must adhere to damp, as well as dry concrete. It shall be resin-rich mixture, with a sand: liquid ration not to exceed 1.5:1 by volume. The compressive strength when tested in accordance with ASTM C-579 shall not exceed 6200 psi and the tensile strength shall be 1810 psi when tested under ASTM C-307. The system shall be unaffected by oils, greases, caustics and mild acids.

2.02.11 SEALANT

ICO-CAULK-X as supplied by International Coatings of Franklin Park, IL. The material shall be a highly chemical resistant single component gun grade caulking compound, able to remain flexible down to -65°F. It should be usable in horizontal as well as vertical joints without slumping in normal joint volumes. It should have an elongation of at least 550%, a Shore A hardness of 28., tensile strength of 150 psi, peel strength of 20 psi. It must pass 72 hour immersion tests of 10% nitric, 30% phosphoric, 50% sulfuric, methylene chloride, MEK and toluene. The material shall be supplied in 10 oz. tubes.

2.02.12 SLIP-RESISTANT SURFACING

The finished surface of all materials shall be a slip-resistant profile created in the final coat. It shall be of a type as recommended by the manufacturer of the coating system used.

3.0 INSTALLATION

3.01 SURFACE EVALUATION

The following tests and observations should be made by the applicator to insure the concrete substrate is acceptable for the application of the specified system. All tests and necessary corrections of defects must be accomplished by the responsible trades prior to application of any of the materials specified herein.

3.01.1 TENSILE STRENGTH

Tensile strength testing according to ASTM D4541-85 shall exceed 275 psi.

3.01.2 MOISTURE CONTENT

Moisture content shall be tested according to ASTM D4263-88 by taping a 2' x 2' plastic sheet of 10 mils minimum thickness. The presence of any condensation before 6 hours would indicate excessive moisture and reason for delaying the application.

3.01.3 SURFACE TEMPERATURE

The surface temperature shall be checked on any surfaces to be covered to insure the application will be accomplished at the temperature range recommended by the material manufacturer for the material being applied.

3.01.4 VISUAL EXAMINATION

A meticulous visual examination of the surface to be covered will be made to detect areas of skimmed concrete, loose or weak areas. Inspection by sounding with a hammer or dragging a heavy chain followed by marking any defective or hollow surface to identify complete removal of sub-standard concrete.

3.01.5 CURING AGENT

If the presence of a curing agent or form release material is detected applicator will be responsible for insuring those materials are totally removed prior to any coating or overlayment application.

3.02 SURFACE PREPARATION

The following steps should be accomplished following the appropriate International Coatings Application Instructions and specifications as detailed in the published version dated April 2, 1994.

3.02.1 Remove any oil concrete or grease spots with appropriate solvent or chemical deg ng materials followed by pressure washing and insure complete removal of any residu.

3.02.2 Remove any existing failing coatings or patches completely from the floor as well a equipment bases and curbs, exposing the structural c. sub.

3.02.3 On all old concrete mechanically abrade the surface to remove any contaminated concrete, to insure an absolutely clean surface to chemically bond to.

3.02.4 All new concrete surfaces should be shot blasted, sand blasted or scarified to remove any latency and any curing agents form release agents, contaminants or foreign material that may inhibit or prevent adequate chemical bond. Surface texture after blasting should resemble 80 mesh sand paper after two passes perpendicular to each other.

3.02.5 Acid etching is acceptable as a means of creating open texture to new concrete, removal of laitance and chemical removal of some contaminants. After etching, the surface mst be thoroughly rinsed until rinse water has a ph of 7 or equal to the ph of the clean rinse water. When the floor is dry it must be totally vacuumed to remove all residual dust and concrete particles.

3.02.6 All open cracks, joints and construction joints should be cleaned of all loose debris, dirt, oils or other contaminants.

3.02.7 Remove all failing coatings and rust from all metal equipment feet, bases, metal stair feet, supports and other metal surfaces projecting from the concrete, to a minimum of 4" above the concrete surface.

3.02.8 Cut back and/or remove any joint backing or filler strips in the expansion joints to a minimum of 1-1/2 " deep.

3.02.9 Insert disposable filler in the joints to prevent filling with the overlayment materials and to allow for accurate location of final sawcuts in the overlayment.

3.02.10 All straight line cracks shall be saw cut to produce a minimum joint 3/4" wide and 1-1/4" deep centered over the original crack. Remove all dust and debris and fill as specified for expansion joint application.

3.02.11 All cracks that are not straight line cracks or expansion joints, shall be routed out to produce a minimum joint of 1/4" x 1/4". These joints shall be filled with ICO-Gel or a slurry of ICO Primer FC and graded silica aggregate and struck off flush with the surrounding surface.

3.02.12 Cut a key of a least 1/2" x 1/2" around the perimeter of all drains, steel posts and any other penetrations and remove all dust, dirt or loose particles. Remove any rust, sealants or coating material from the drain ring.

3.02.13 Saw cut the concrete where there will be a stopping point for the overlayment application that does not meet a rising or vertical surface. The inside edge of the saw cut should be chipped away at a 45° angle to form an undercut key for the edge of the application.

3.03 NEW CONCRETE FINISHING

3.03.1 NEW CONCRETE SURFACES

All new concrete surfaces that will be covered with the systems specified herein should have received a steel trowel light broom finish and be free of all curing agents or sealer applications. The surface will be prepared as detailed in 3.02.

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3.04 MATERIALS APPLICATION

3.04.1 Trowel coat all curbs, column bases and vertical surfaces that have been eroded by chemical attack with Vertical Liner (ICO-Liner) applied at a nominal 1/8" thickness, smoothing the material to close the surface so that no voids or pinholes are left. If application temperatures are above 90°F, a maximum of 1 cup (8oz) of mineral thickener can be used.

3.04.2 Apply primer to all walls up to a height of the first mortar joint above the floor level. Primer should be applied in a liberal fashion to insure penetration of the pits and openings of the surface. Allow to dry a minimum of 4 hours. Any areas that "dull out" should be recoated so the finish surface has a uniform sheen.

3.04.3 Fill all bugholes with (ICO-Gel) epoxy paste, striking off the material smooth and flush with the surrounding surface.

3.04.4 When the ICO-GEL is dry, apply two coat of ICO-Super Guard Coating to the block walls specified at the rate of 100 SF per gallon per coat.

3.04.5 On all smooth concrete walls, apply two coats of ICO-Super Guard Coating at the rate of 100 SF per gallon per coat. The application should be uniform with no misses, holidays, runs or streaks.

3.04.6 Apply primer (ICO-Primer FC) to all horizontal surfaces that will be covered within 24 hours with the overlayment material. The coverage rate should be 200 SF per gallon.

3.04.7 Any horizontal surfaces requiring more than 1/4" of fill to restore them to a level condition can be covered with ICO-Patch to bring them level with the surrounding smooth surface of the existing floor.

3.04.8 Apply the hand trowelled overlayment (ICO-Super Guard) at a minimum of 1/4" thick following the existing contour of the concrete. The depth shall be set with pinguides, gauge rakes, screed strips or other measuring devise that will insure specified minimum depth.

3.04.9 The overlayment should not be diluted or mixed with solvent. Caution should be exercised to insure the mix ratios recommended by the manufacturer are strictly adhered to.

3.04.10 After spreading and finish trowelling is complete the surface can be backrolled with IPA dampened rollers to bring up the resin. There should be no dripping or puddling of IPA on the surface. The rolling should smooth out trowel marks and other surface imperfections.

3.04.11 After backrolling, the surface should be covered with a uniform dusting of 30-[illegible] mesh grade sand, applied at the rate of 1/4 pound per square foot.

3.04.12 After a minimum of 12 hours curing time all loose sand should be removed by s[illegible]ing and vacuuming and discarded.

3.04.13 A 45° cant cove shall be formed at the intersection of all floor and rising vertical [illegible]aces. The face of the cant cove shall be approximately 2" wide and be made of ICO-Super Guard bodied up with suitable filler.

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3.05 MATERIALS APPLICATION - EXPANSION JOINT

3.05.1 Remove the disposable joint filler from the expansion joints by sawcutting the overlayment above all expansion joints exposing the full width and length of the joint down to the joint in the concrete substrate.

3.05.2 Insert compressible closed cell joint backing in all expansion joints using a large enough size to provide 30% compression. The joint backing should be forced down in the joint to a depth equal to one-half the joint width, not to exceed 3/8" deep.

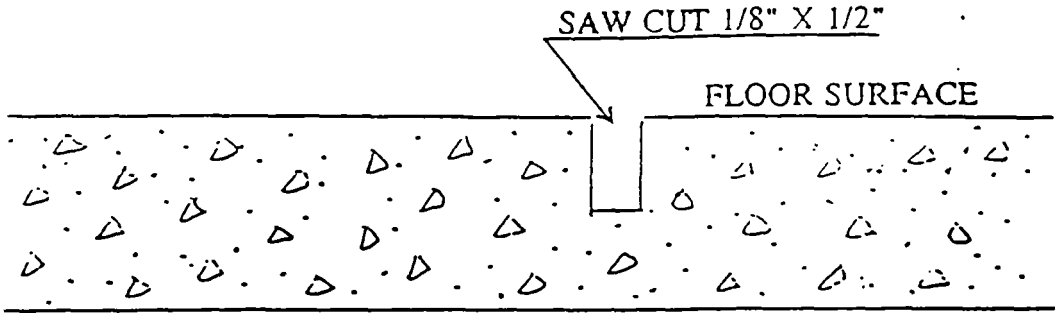
3.05.3 Caulk all expansion joints with the sealant (ICO-Caulk X) and tool the bead to insure full and complete bead contact. Finish bead should be neatly aligned with the saw cut joint edge with no gaps, strings or air bubbles.

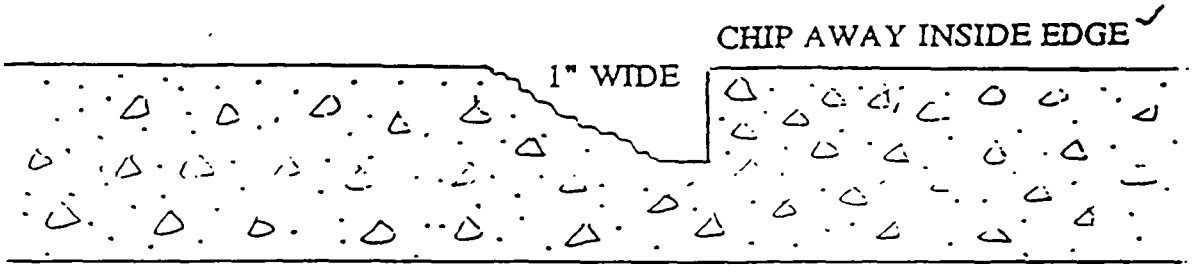
3.06 PROTECTION OF FINISHED WORK

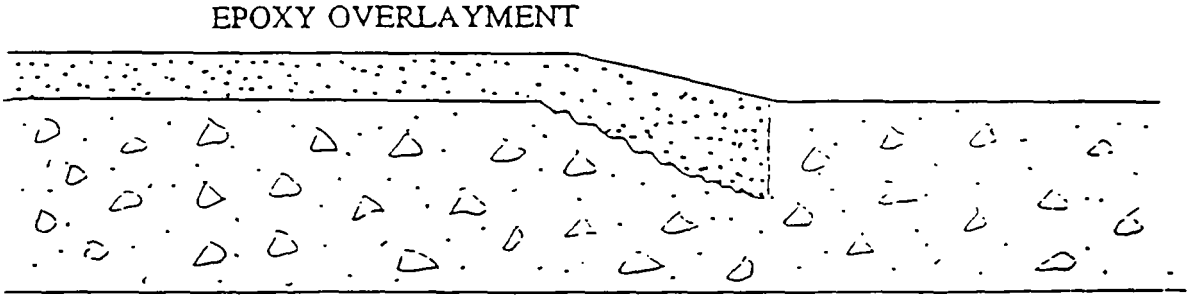
3.06.1 Prohibit traffic on floor finish for 24 hours after installation at ambient temperature at 70°F. (contact manufacturer for protection times required at temperatures below 50°F)

3.06.2 Barricade area to protect application until fully cured.

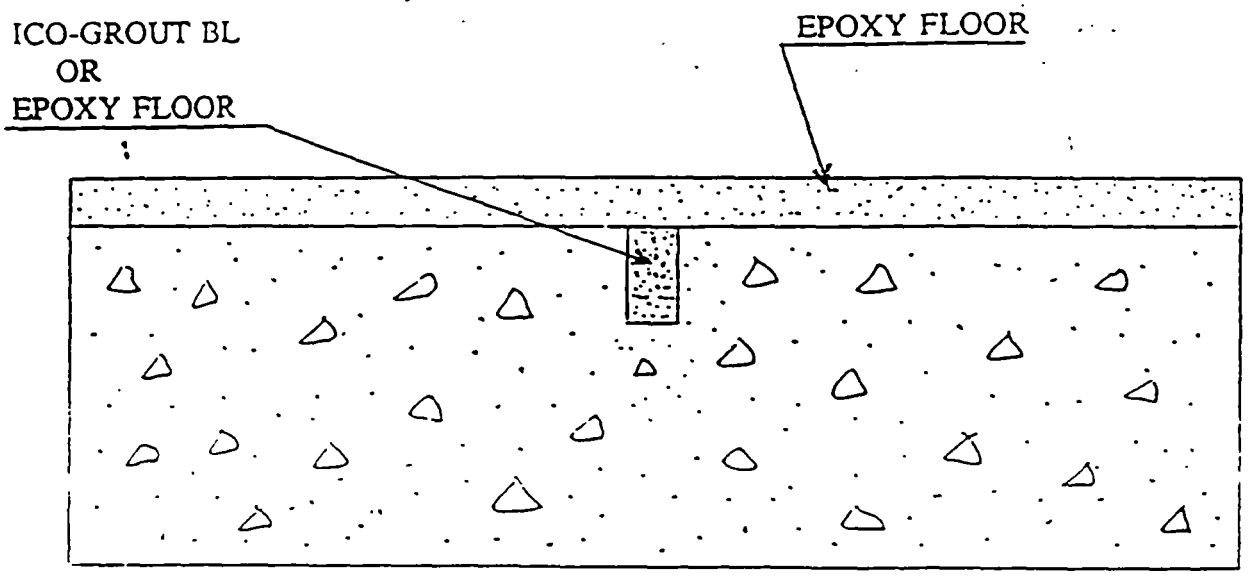
DRAWING DETAIL 1. PERIMETER KEY



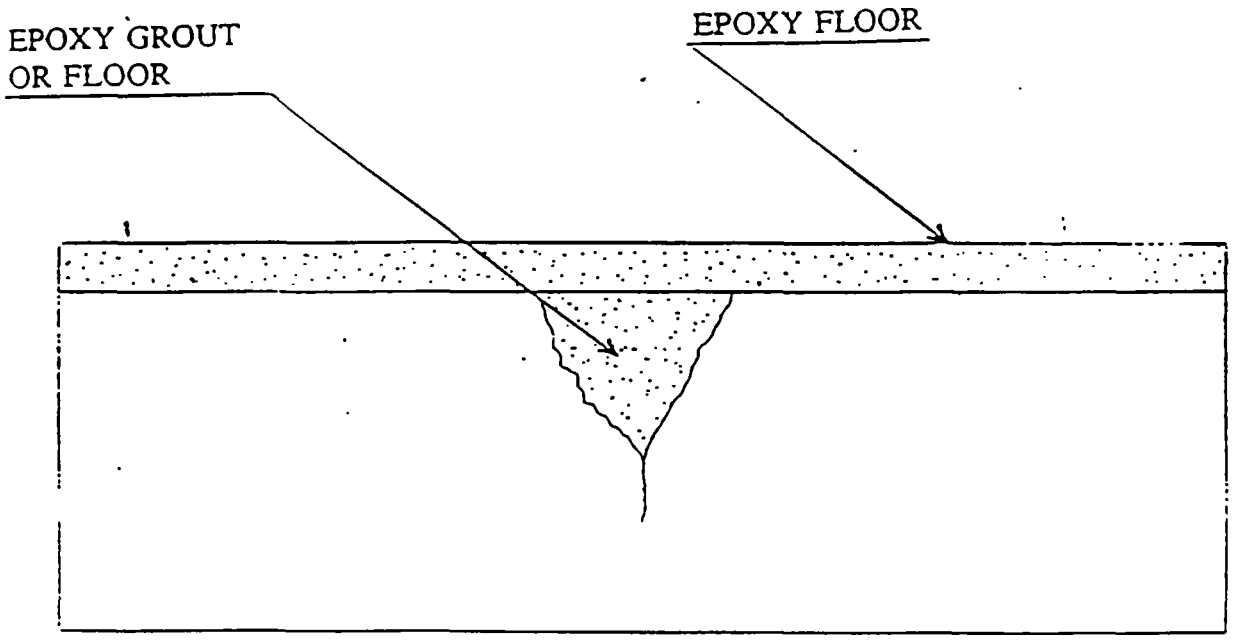




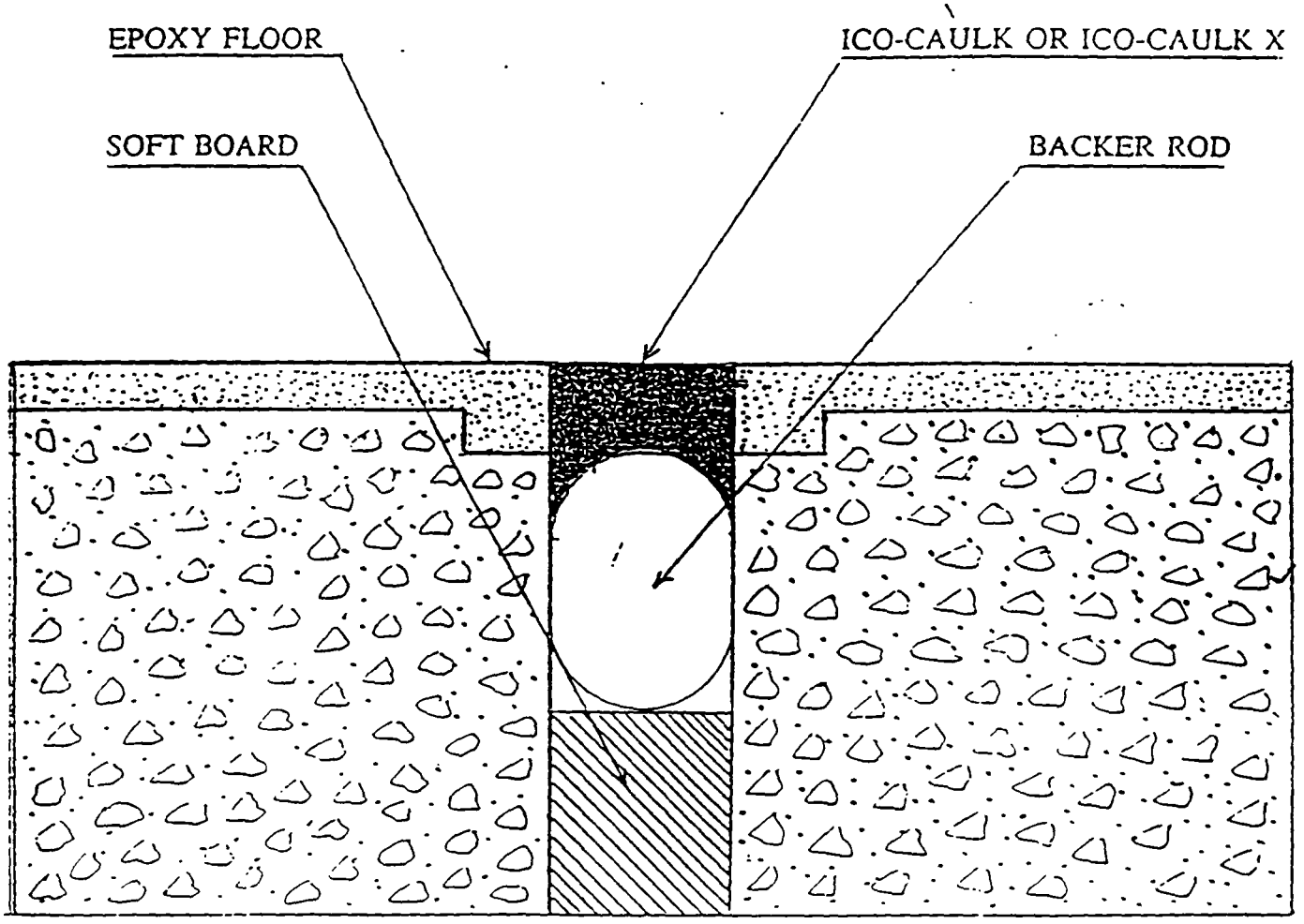
DRAWING DETAIL 2. CONTROL JOINT - NO CRACK FAILURE



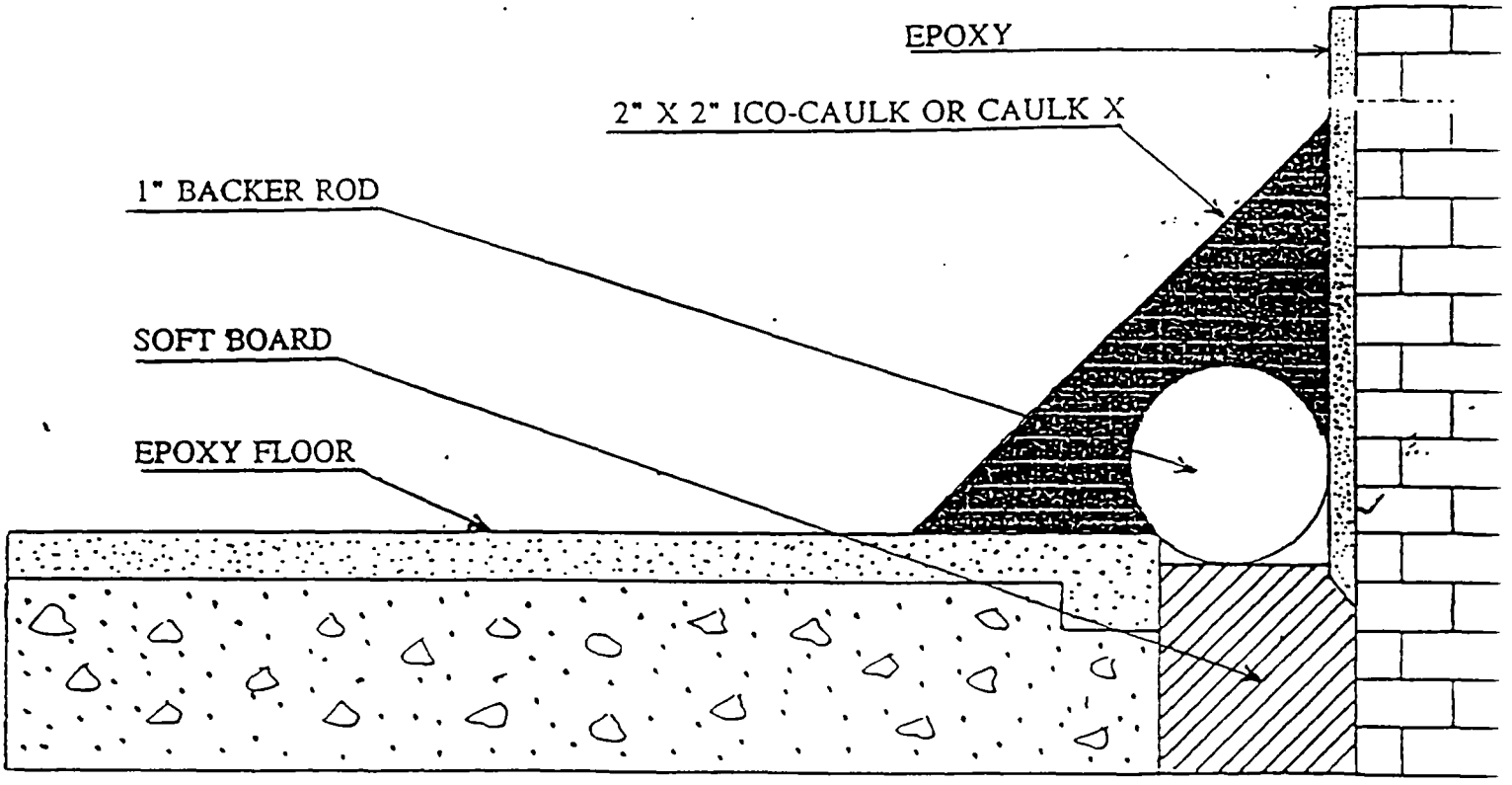
DRAWING DETAIL 3. CRACK REPAIR



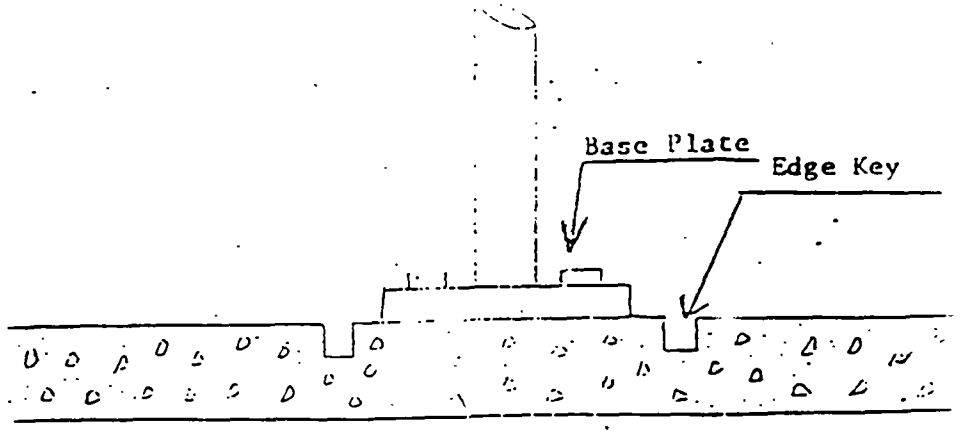
DRAWING DETAIL 4. EXPANSION JOINT

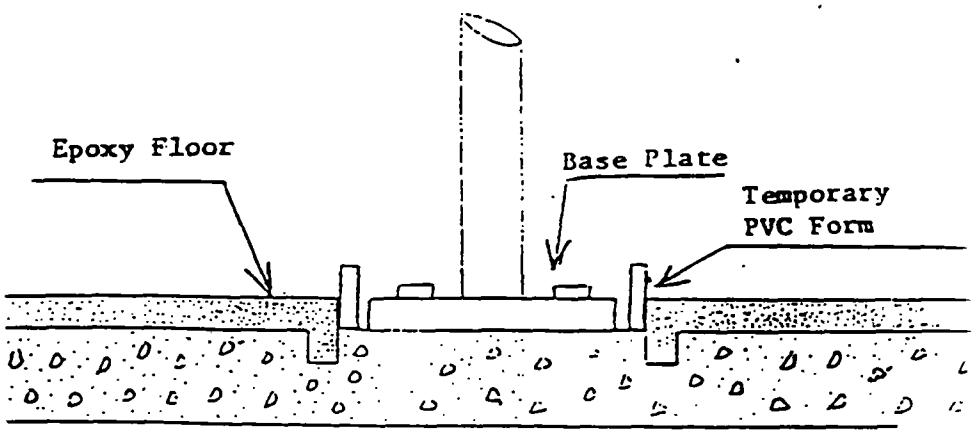


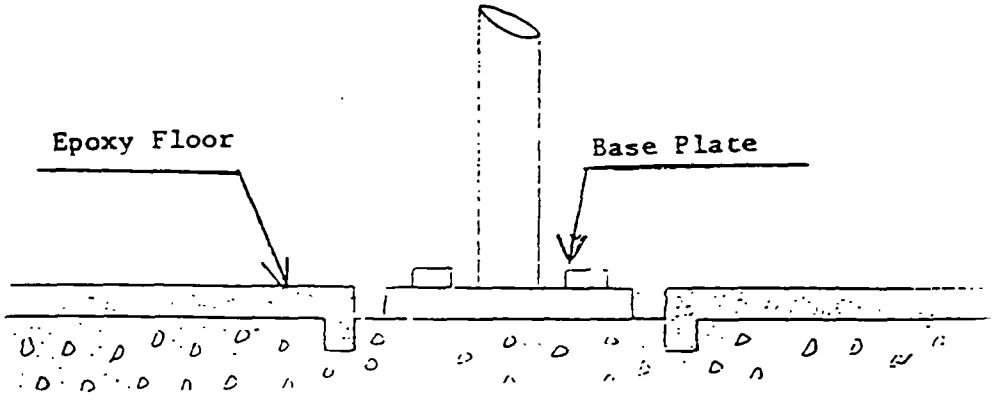
DRAWING DETAIL 5. CORNER EXPANSION JOINT

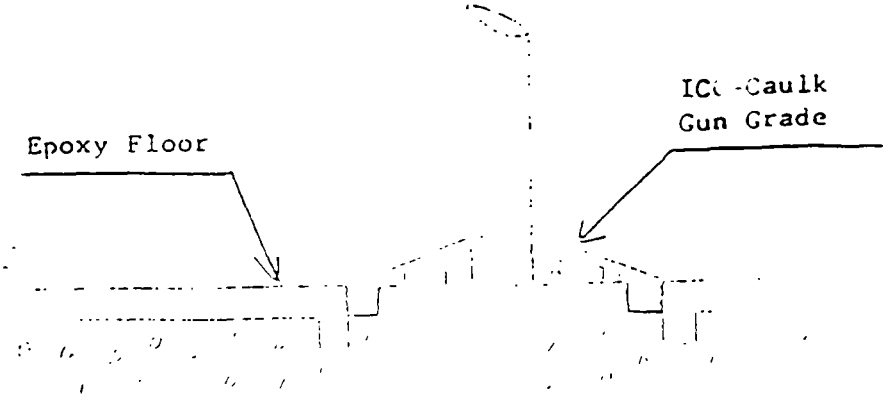


DRAWING DETAIL 6. METAL BASE PLATES

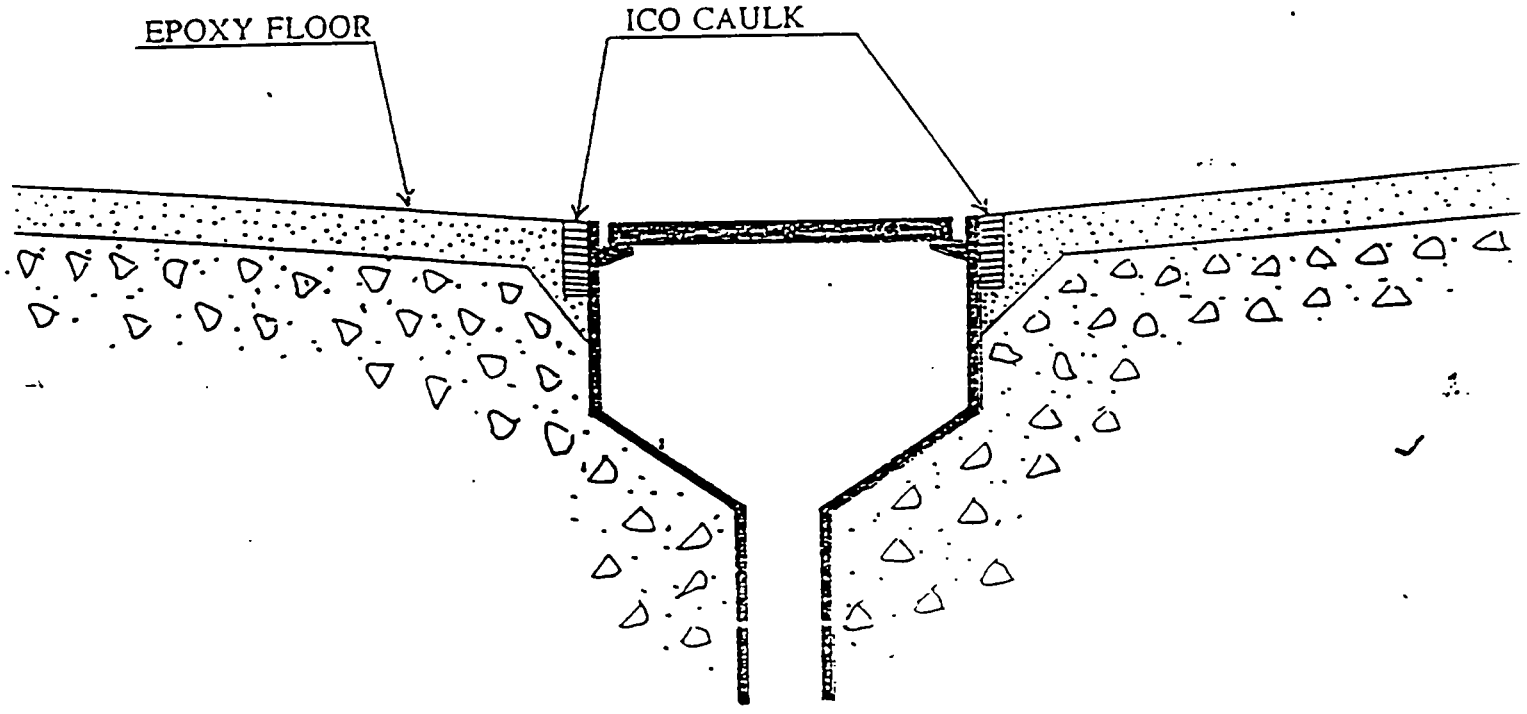




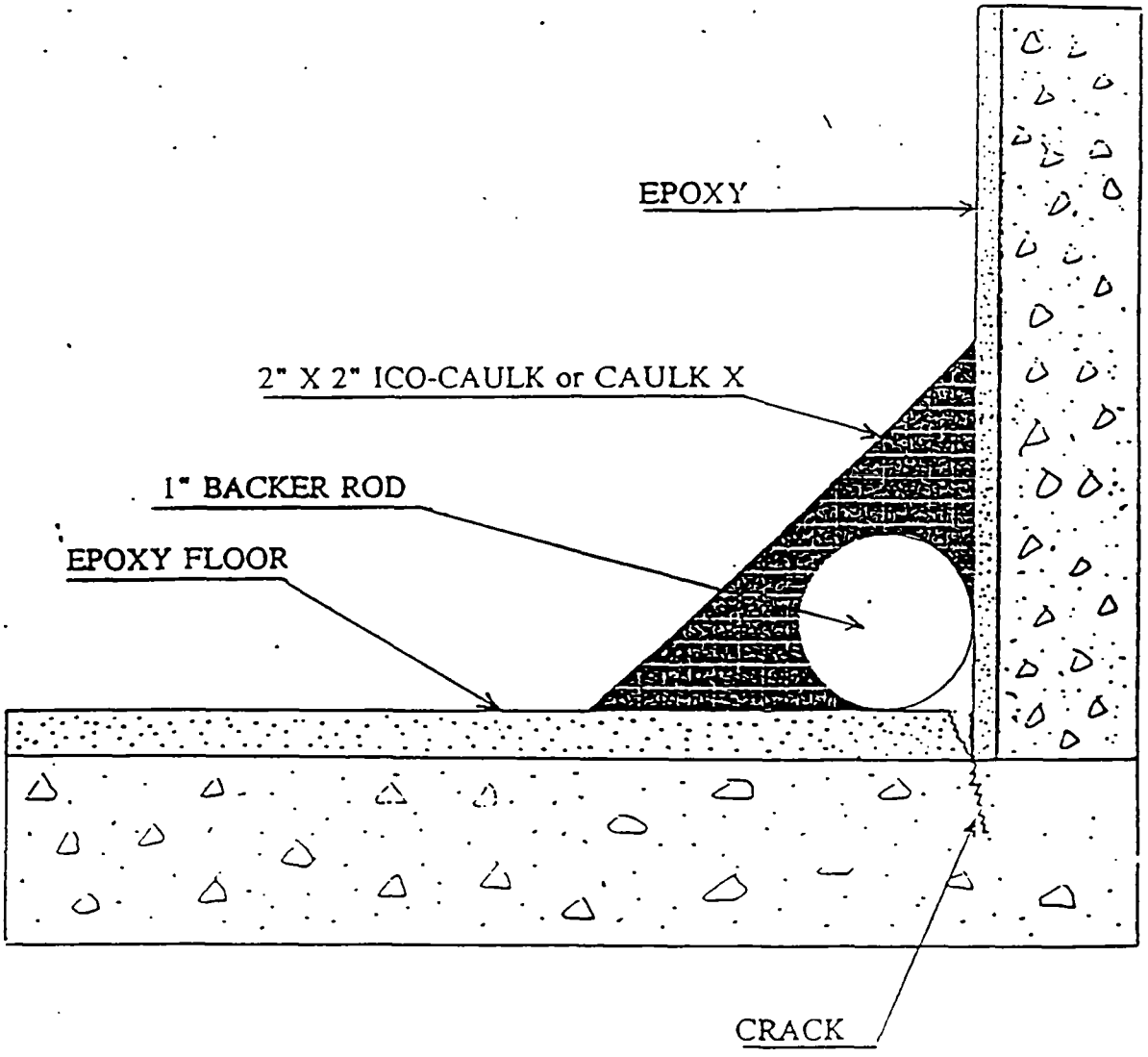




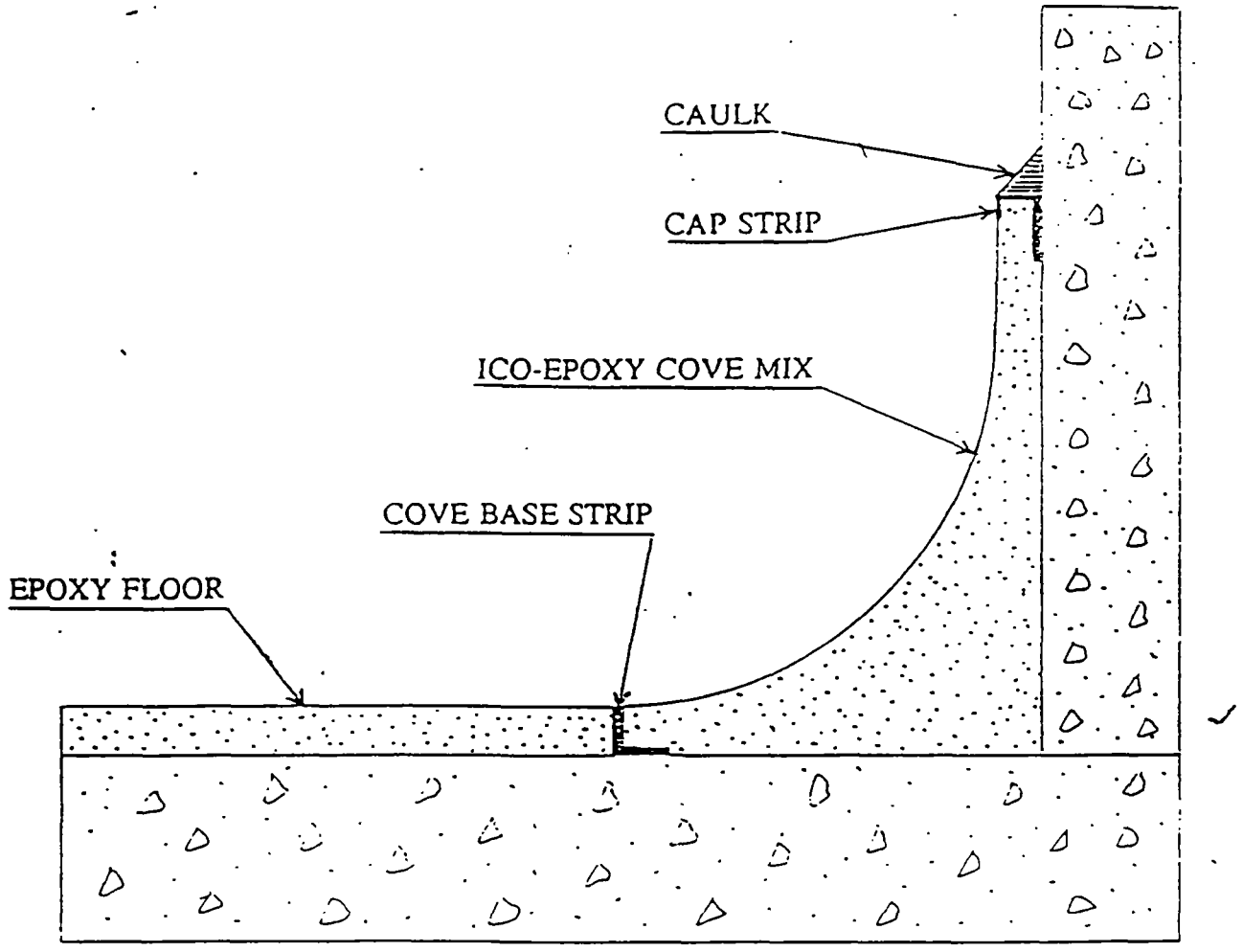
DRAWING DETAIL 7. DRAIN



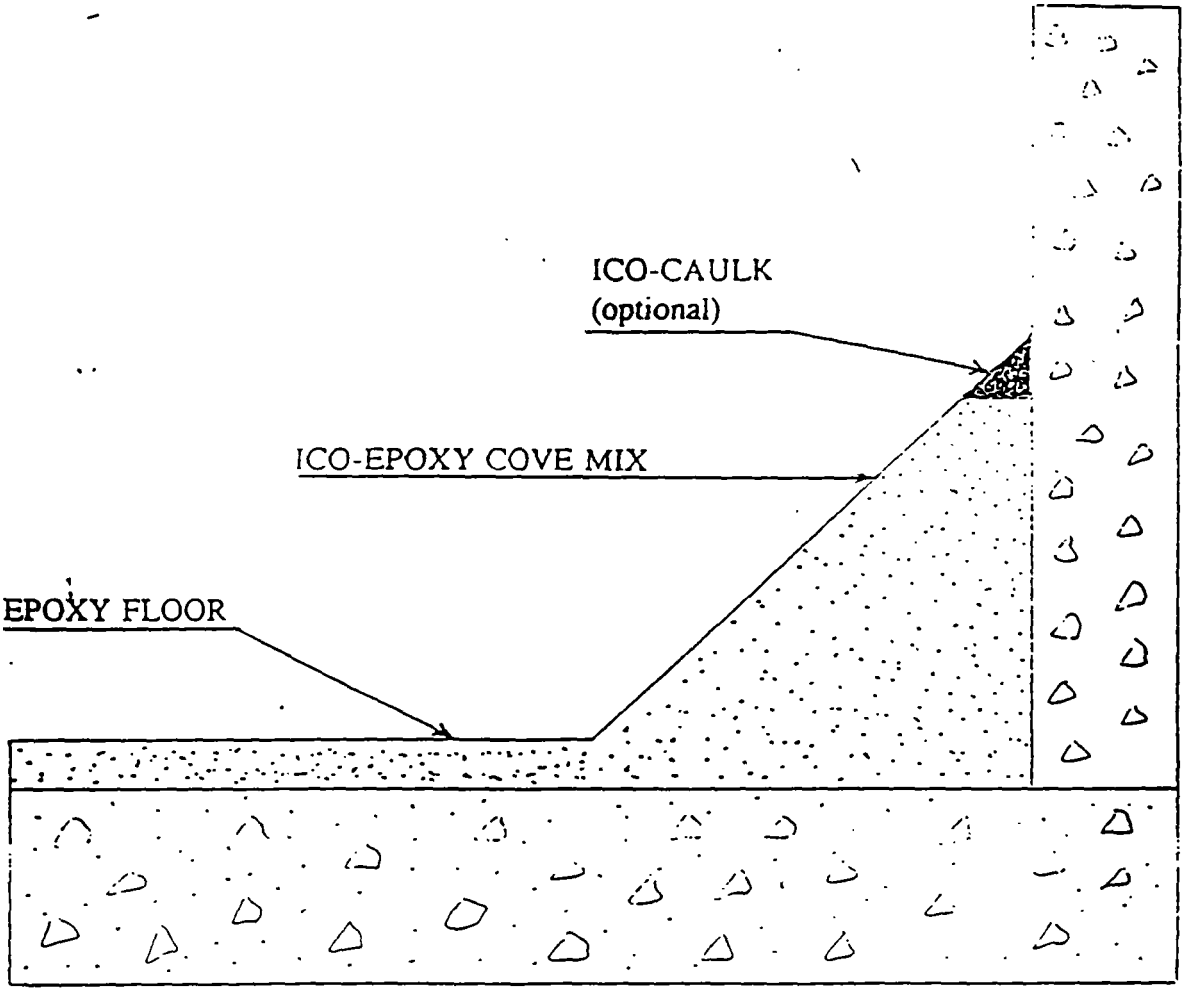
DRAWING DETAIL 8. CORNER DETAIL
NO EXPANSION JOINT



DRAWING DIAGRAM 9. COVE BASE



DRAWING DETAIL 10. 'CANT COVE BASE



INTERNATIONAL COATINGS INC.

Resilient Epoxy Flooring and Grouting Systems

PRODUCT DATA SHEET

ICO-SUPER GUARD™

Product Description

ICO-Super Guard™ is a solvent free, 100% solids, three part epoxy floor system hand trowelled in one pass in any thickness down to 3/16". It is our highest performing flooring system with excellent chemical resistance to concentrated acids, caustics and solvents. As a high performing epoxy novolac, it has superior heat resistant properties compared to conventional epoxies — up to 212°F for constant exposure. The enhanced toughness of **Super Guard™** allows for better resistance to thermal and mechanical shock, compared to harder, more brittle conventional materials.

Its resin rich mix eliminates the need for a top sealer coat, thereby reducing the downtime and improving resistance to moisture penetration even under heavy wear. **Super Guard's™** excellent adhesion to damp as well as dry concrete allows it to be applied over relatively new concrete, even outdoor slab-on-grades. To enhance its crack bridging capabilities, it can be applied over our elastomeric material, **ICO-Lastic™**, or reinforced with our chopped glass fibers.

Typical Application

ICO-Super Guard™ is particularly recommended in truck unloading pads, large tank farms and drum storage areas subjected to moderate to heavy mechanical wear where secondary containment for hazardous materials is mandated by regulatory agencies. Its outstanding chemical resistance makes **Super Guard™** an effective flooring material for acid etching and metal plating lines, as well as for solvent recycling centers, chemical processing plants and other highly corrosive areas.

Chemical Resistance

ICO-Super Guard™ is recommended for areas subjected to such chemicals as 98% sulfuric, 50% hydrofluoric, 50% nitric acid, methylene chloride, dimethyl formamide, acetone and trichlorethylene. A more complete list of chemical resistances is available in the **International Coatings Chemical Resistance Chart** or contact **ICO** Technical Assistance.

Physical Properties

Tensile Strength (ASTM C-307)	1475 psi	Flammability (D-635)	Self Extinguishing
Tensile Elongation, (C-307)	3%	Vapor Transmission Rate (E-96)	.27 perms
Flexural Strength (C-580)	2580 psi	Coefficient of Thermal Expansion (D-696)	5.9 x 10^{-5} per °F
Compression Strength (C-579)	6770 psi	Gardner Impact (D-2794)	120 in lbs.
Hardness, Shore D (D-2240)	72	Water Absorption (D-570)	0.2% in 24 hours
Bond Strength to Quarry Tile	> 1000 psi	Fracture Toughness (C-399)	980 psi/in$^{1/2}$

Physical Characteristics

Density, lbs./gal
- Pt. A 9.7
- Pt. B 7.7
- A & B Mixed 9.3

Viscosity @ 77°F, cps
- Pt. A 650
- Pt. B 100
- A & B Mixed 750

Shelf Life: 1 year at 77° in unopened containers

Mixing Ratios	By Volume	By Weight
Pt. A . Pt. B	4:1	5:1
Aggregate: Liquid	3.1:1	5:1

Curing Times @	60°F	77°F	90°F
Pot Life	40 min.	35 min.	25 min.
Working Times	15 min	20 min.	20 min
Hard, Foot Traffic	18 hrs.	12 hrs.	4 hrs.

Maximum hardness and chemical resistance are achieved after 7 days at 77°F

Color Availability

Standard colors: gray, dark gray, beige, red, green, brown, black.

Packaging and Coverage Rates

Basic Kit	28 SF at 1/4"
Bulk Pack	280 SF at 1/4"
Drum Kit	2800 SF at 1/4"

SEE REVERSE SIDE FOR WARRANTY AND CAUTION STATEMENT

Corro-Shield International, Inc.

7047 Barry Street
Rosemont, Illinois 60018
708-298-7770

Corro Ultra-Cote Chemical Resistance Chart

Chemical		Rating
Acetic Acid -	10%	FS
Acetic Acid -	20%	FS
Acetic Acid -	36%	NR
Acetic Anhydride		OS
Acetone		FS
Acrylonitrile		NR
Alum		FS
Ammonium Hydroxide		FS
Ammonium Nitrate		FS
Aniline		FS
Animal Fats		FS
Beer		FS
Benzene		FS
Black Liquor		FS
Boric Acid		FS
Brake Fluid		FS
Butyl Alcohol		FS
Butyl Cellusolv		FS
Calcium Chloride		FS
Calcium Nitrate		FS
Carbon Tetrachloride		FS
Carbonated Beverage		FS
Chlorine Water		FS
Chloroform		OS
Chromic Acid, 0 - 30%		FS
Citric Acid, conc.		FS
Copper Chloride		FS
Copper Sulfate		FS
Cumene Hydroperoxide		FS
Diesel Fuel		FS
Ethanol		FS
Ethyl Acetate		FS
Ethylene Dichloride		OS
Ethylene Glycol		FS
Ferric Chloride		FS
Ferrous Chloride		FS
Formaldehyde		FS
Formic Acid -	10%	FS
Formic Acid -	30%	NR
Formic Acid -	50%	NR
Freon TS		FS

Chemical		Rating
Gasoline		FS
Glacial Acetic		NR
Green Liquor		FS
n-Hexane		FS
Hydrobromic Acid - 50%		FS
Hydrochloric Acid - 37%		FS
Hydrofluoric Acid - 10%		FS
Hydrofluoric Acid - 30%		FS
Hydrofluoric Acid - 50%		FS
Hydrofluorosilicic Acid 30%		FS
Hydrogen Peroxide 50%		FS
Hydrogen Sulfide		FS
Isoprene		FS
Isopropyl Aclohol		FS
Jet Fuel		FS
Kerosene		FS
Klenzade		FS
Kodak Developer		FS
Lactic Acid -	20%	FS
Lactic Acid -	50%	FS
Lactic Acid -	88%	OS
Maleic Acid		FS
Malic Acid		FS
Methanol		FS
Methyl Acetate		FS
Methyl Esters		FS
Methyl Ethyl Ketone		FS
Methyl Isobutyl Ketone		FS
Methyl Methacrylate		FS
N-Methyl Pyrolidone		OS
Methyl Salicylate		FS
Methylene Chloride		FS
Mineral Oil		FS
Mineral Spirits		FS
Nitric Acid -	10%	FS
Nitric Acid -	30%	FS
Nitric Acid -	50%	NR
Nitric Acid -	conc.	NR
Nitropropane		FS
Oleic Acid		FS
Oxalic Acid		FS

Chemical		Rating
Palm Oil		FS
Perchloroethylene		FS
Peroxyacetic Acid		OS
Phenol		NR
Phosphoric Acid	30%	FS
Phosphoric Acid	50%	FS
Phosphoric Acid	85%	OS
Picric Acid, conc.		FS
Potassium Nitrate		FS
Pyridine		NR
Salt Brine		FS
Silver Nitrate		FS
Skydrol		FS
Sodium Chloride		FS
Sodium Hydroxide - 30%		FS
Sodium Hydroxide - 50%		FS
Sodium Hypochlorite, 5%		FS
Sodium Hypochlorite, 10%		FS
Sodium Hypochlorite, 15%		FS
Stearic Acid, conc.		FS
Styrene		FS
Sugars		
Sulfamic Acid, conc.		
Sulfuric Acid -	10%	FS
Sulfuric Acid -	50%	FS
Sulfuric Acid -	80%	FS
Sulfuric Acid -	98%	FS
Tannic Acid -	50%	FS
Tartaric Acid, conc.		FS
Tetrachloroethylene		FS
Tetrahydrofuran		FS
Toluene		FS
1.1.2 Trichloroethane		FS
Trichloroethylene		FS
Trichlorofluoroethane		FS
Tri Sodium Phosphate		FS
Uric Acid		FS
Vinegar		FS
Water, Deionized		FS
Water, Distilled		FS
White Liquor		FS
Xylene		FS

Key: NR - Not Recommended
OS - Occasional Spillage
FS - Frequent Spillage

Note: The above test data was obtained from total immersion tests. The table should be used as a gu as no warranty can be expressed or implied regarc accuracy of the information given as it would app actual plant use. Certain chemicals will discolor t epoxy floor, however, this will in no way a th integrity of the system.

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PRODUCT DATA SHEET (Rev. Mar. 95)

CORRO ULTRA-COTE (Ref. No. 103)

Product Description

Corro Ultra-Cote is a 100% solids, solvent free, low odor, novolac epoxy coating system. It's specially formulated resin produces a surface impervious to the spillage of a wide variety of acids and solvents, including Methylene Chloride and up to 98% Sulfuric Acid. Specifically formulated to resist some of the harshest chemicals, it makes for the ideal protective system for secondary containment areas.

Special Features

Corro Ultra-Cote cures to provide a hard wearing highly abrasive resistant coating with excellent chemical resistance.

Due to the blending in of special adhesion promoters Corro Ultra-Cote will adhere tenaciously to almost any clean, sound surface including damp concrete, without priming. It's low odor and no solvent smell requires no special ventilating precautions, unlike many other coating systems, resulting in less shut down time.Corro Ultra-Cote is applied and finished complete with a textured surface all in one application. With these unique characteristics and easy application techniques it makes for the ideal system for in-plant maintenance programs where protection against corrosion is of primary importance.

Optional Features

Corro Ultra-Cote is also available as a self-leveling system. Corro Ultra-Flor SL, a flooring, Corro Ultra-Flor, or as a grout for tiles, Corro Ultra-Grout. Refer to Product Data Sheets on these products.

Precautions

When working with Corro Ultra-Cote, good hygienic habits must be observed. Avoid skin contact, regular washing with warm soapy water is recommended. Long exposures to resins and hardeners may cause skin irritation, and the wearing of protective clothing and gloves is a must. Before using any of the products, please read their respective safety data sheets.

Priming

Corro Ultra-Cote is self-priming, however, priming is recommended only as a precautionary measure to try and seal the concrete to help reduce outgassing and eliminate the formation of blisters and "dry spots". However, if Corro Ultra-Cote is going to be applied over "green" concrete, then Corro-Cure (a slow set primer) must be used first. Refer to Corro-Prime data sheets.

Set Times

Corro Ultra-Cote is only available in one setting time, which is fast. Corro Ultra-Cote should be applied at a temperature between 50°F and 90°F. For temperatures lower than 50°F, please consult the factory.

Colors

Corro Ultra-Cote is supplied in the following colors: Gray, Dark Gray, Brick Red, Beige, Green and Brown. Special colors are available upon request.

Packaging and Mixing

Corro Ultra-Cote can be purchased in pre-measured 1, 2, or 3 gallon paks or 50 gallon drums. For further convenience and identification the buckets of Corro Ultra-Cote Part A and Part B will be labeled with matching Blue labels which also is the color of this product data sheet as well as the material safety data sheets. All our products will be identified by their own color coding. Corro Ultra-Cote is supplied in a user friendly mix ratio of 3:1 by volume A:B.

Clean Up

Corro Ultra-Cote while still wet can be cleaned up with a solvent, but if allowed to set then mechanical cleaning will have to be used.

Technical Assistance

With a combined total of over 180 years experience, our management team can offer unequaled design details to concrete and epoxy floors as well as installation techniques and materials designed to meet your requirements. We are prepared to assist in training your own maintenance crew in the installation of our products.

Carro Ultra-Cote Product Data Sheet - Page 2

Physical Characteristics

Density (lbs./gal.)

Part A	12.3
Part B	8
Parts A & B Mixed	11.2

Mix Ratios by Volume
A : B
3 : 1

Coverage (Theoretical)
One Gallon at 10 mils = 160 sq. ft.

Pot Life at 77°F
A & B Mixed — 25 minutes

Set time at 77°F

For walking on	4 hours
Light traffic	6 hours
Maximum Chemical Resistance	7 days

Chemical Resistance (21 days immersion)

Chemical		Rating
Acetic Acid	20%	FS
	Glacial	NR
Acetone		FS
Ammonium Hydroxide		FS
Aniline		FS
Animal Fats		FS
Beer		FS
Chlorine Water	30%	FS
Chloroform		OS
Citric Acid	50%	FS
Ethyl Acetate		FS
HCL	24%	FS
	conc. (37%)	FS
Hydrogen Peroxide	10%	FS
	30%	FS
Hydrogen Sulfide		FS
Lactic Acid	20%	FS
	50%	FS
	88%	OS
Methanol		FS
Methylene Chloride		FS
MEK		FS

Chemical		Rating
Nitric Acid	10%	FS
	30%	FS
	50%	NR
Palm Kernel Oil		FS
Phosphoric Acid	30%	FS
	50%	FS
	85%	OS
Picric Acid		FS
Salt Brine Solution		FS
Sodium Hydroxide	30%	FS
	50%	FS
Sodium Hypochlorite	5%	FS
	10%	FS
	15%	FS
Sulfuric Acid	10%	FS
	50%	FS
	80%	FS
	98%	FS
Tannic Acid	50%	FS
Toluene		FS
Xylene		FS

Note: The table should be used as a guideline, as no warranty can be expressed or implied regarding the accuracy of the information given as it would apply to actual plant use. Certain chemicals will discolor the epoxy floor, however, this will in no way affect the integrity of the system.

Code: FS - Frequent Spillage
OS - Occasional Spillage
NR - Not Recommended

Warranty

The data, statements and recommendations set forth in this product information sheet are based on testing, research and other development work which has been carefully conducted by us, and we believe such data, statements and recommendations will serve as reliable guidelines. However, this product is subject to numerable uses under varying conditions over which we have no control, and accordingly, we do NOT warrant that this product is suitable for any particular use. Users are advised to test the product in advance to make certain it is suitable for their particular production conditions and particular use or uses.

WARRANTY - All products manufactured by us are warranted to be first class material and free from defects in material and workmanship.

Liability under this warranty is limited to the net purchase price of any such products proven defective or, at our op[illegible] to the repair or replacement of said products upon their return to us transportation prepaid. All claims hereunder on defective products must be mad[illegible] within 30 days after the receipt of such products in your plant and prior to further processing or combining with other materials and produ[illegible]VE MAKE NO WARRANTY, EXPRESS OR IMPLIED, AS TO THE SUITABILITY OF ANY OF OUR PRODUCTS FOR ANY PARTICULAR [illegible] AND WE SHALL NOT BE SUBJECT TO LIABILITY FROM ANY DAMAGES RESULTING FROM THEIR USE IN OPERATIONS NOT UNDER OUR [illegible]ROL.

THIS WARRANTY IS EXCLUSIVE OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, AND NO REPRESE[illegible] OR ANY OTHER PERSON IS AUTHORIZED TO ASSUME FOR US ANY OTHER LIABILITY IN CONNECTION WITH THE SALE [illegible]CTS.

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Application Specifications for Corro Flexi-Prime and Corro-Cote

1. On uncoated concrete floors, clean by either acid etching with a 10% muriatic acid solution, followed by a neutralizing rinse, or if the concrete has a smooth power trowelled surface, then it must be abraded by lightly shot blasting or sanding. Oil saturated floors must be thoroughly cleaned with a heavy duty degreasing agent. Repeat if necessary.

2. All holes, eroded surfaces or badly pitted areas must be filled with Corro-Grout.

3. Control joints and cracks greater than 1/8" are to be filled with Corro-Grout.

4. Apply a coat of Corro Flexi-Prime to the concrete and while still wet, roll out the Corro-Mat over the primer, ensuring a complete wet out by immediately applying a second coat of Corro Flexi-Prime. Remove all trapped air bubbles by using a ribbed or porcupine roller. After wetting out the cloth, it will take on a transparent appearance. Areas showing the white of the cloth must be rolled over so as to ensure complete wet out. The Corro-mat after having been laid must be flat on the surface, and show no sign of any air bubbles. Any areas which have dried and show signs of a bubble must be cut out and reprimed and covered with the Corro-Mat.

5. After allowing the Corro Flexi-Prime to set, the area is then coated with two coats of Corro-Cote.

6. The Corro-Cote must be applied to the primer while it is still fresh or even slightly tacky. Do not allow the primer to set up hard, especially in direct sunlight. If for any reason the primer has allowed to set up hard, then it must be sanded to remove all gloss to provide a "key". The wearing of spike shoes will enable the applicator to walk on the floor if it is still tacky.

7. The first coat of Corro-Cote is applied at the rate of 160 square feet per gallon (10 mils) and is allowed to set or become tacky, thereafter, a second coat is applied at the same rate of coverage, and while it is still wet, chopped fiberglass pieces are blown or broadcast into the wet coating, to create a texture.

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Repair of Cracks and Expansion Joint

The object of this specification is to clean out and fill the cracks and then cover them with a 6" wide fiberglass cloth, impregnated with a flexible primer, and then to top coat with an epoxy coating.

SCOPE OF WORK

1. Chase open the cracks to form a V shape 3/4" wide by 1/4" deep, as well as mechanically cleaning the concrete 4" on either side of the crack.

2. Fill the crack with Corro-Grout as well as repairing any holes in the 4" strip of concrete on either side of the concrete.

3. After grouting the crack and holes, grind down any rough edges, especially those which may be left after grouting. The success of the fiberglass cloth is its ability to lay perfectly flat on the surface without any protrudances or rough edges to hinder this.

4. Allow the grout to set up to a semi-stiff or hard consistency, and then cover the crack with Corro-Mat which is 6" wide. The mat is impregnated with Corro Flexi-Prime. This is achieved by pouring the Flexi-Prime onto the mat and then spread with a trowel so as to wet out the mat unti' it takes on a transparent appearance.

5. While the primer is still wet, the cloth is rolled over with a ribbed or porcupine roller until all whiteness of the mat disappears.

6. After the primer has set, the area is then coated with a coat of Corro-Cote. The Corro-Cote is applied with a roller at the rate of 160 square feet per gallon.

Depending on the temperature, the Corro-Grout, Corro Flexi-Prime and Corro-Cote can be supplied in various setting times.

EXPANSION JOINT

The expansion joint is treated in the same manner as the cracks, except that the joint need not be chased open.

After cleaning, filling and covering the expansion joint with the fiberglass cloth. 's coated with Corro Ultra-Cote. The Ultra-Cote when mixed has a pot life of only twenty min. ı and is applied with a roller. For convenience, the Ultra-Cote is supplied in pre-measure. '4 gallon paks.

All Corro-Shield products are supplied in pre-measured, easy to use, convenient paks, however, if smaller amounts are required, they have easy, user friendly mix ratios of either 2:1 or 3:1 by volume. The mix ratios are printed on each bucket.

CORRO-SHIELD INTERNATIONAL, INC.

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PRODUCT DATA SHEET

Ref. No. 607 6/94

CORRO FLEXI-PRIME

Product Description

Corro Flexi-Prime is a 100% solids, solvent free, flexible epoxy primer designed to bridge cracks and seal porous surfaces. It is specially formulated with various setting times and with virtually no odor, making it ideal for bridging cracks in concrete floors, especially floors subject to temperature changes. With its unique formula, which includes special adhesion and wetting promoters, it penetrates and tenaciously adheres to both dry as well as damp concrete and metal.

Application

Corro Flexi-Prime when used in conjunction with our Corro-Mat, a 1.5 ounce non-binder chopped strand mat fiberglass cloth, creating a reinforced flexible membrane which bridges cracks as well as help to prevent cracks from propagating through to the protective layer. By using the Corro-Flexi-Prime with the Corro-Mat a reinforced flexible membrane is created that not only helps in bridging cracks, but also helps to seal old eroded concrete or floors that have been mechanically cleaned, leaving an "open" porous surface. Priming the "open" concrete will seal the surface helping to prevent any outgassing which could create blisters in the top protective layer. Priming is also recommended to help seal the "open" concrete to help reduce the absorption of the epoxy liquids eliminating "dry" spots. Corro Flexi-Prime can be applied to 24 hour old concrete but the concrete must first be primed with our Corro-Prime S.S. (Slow Set). Vertical walls can also be protected with the Corro Flexi-Prime and Corro-Mat.

Setting Times

Corro Flexi-Prime is supplied in two setting times, either as a slow set, 83 minutes pot life, for hot conditions, or normal set, 45 minutes pot life, for ambient conditions. For temperatures below 50°F a special fast set primer can be made, please consult the factory.

Coverage

When used to wet out the Corro-Mat coverage is reduced to approximately 35 square feet per gallon.

Packaging

Corro Flexi-Prime is supplied in one gallon paks, standard paks (4 gallon) or in drum paks. The gallon and standard paks are supplied as pre-measured paks. The drum paks, however, are to be measured out. Measuring is easy because Corro Flexi-Prime is supplied in a user friendly mix ratio of 2:1 by volume of Part A to Part B. This 2:1 ratio stays the same for slow set or regular set.

Precautions

As with any epoxy avoid contact with liquids as they may cause skin irritation after prolonged use. Wear protective gloves and clothing, and practicing good hygiene is necessary. Please read the Material Safety Data Sheets before using this product.

Special Features

Corro-Mat is a non-bindered chopped strand mat and is compatible wit epoxy resins. Unlike other fiberglas cloths which have binders to hold them together, Corro-Mat is stitched together. This process of manufacture allows for a complete wet out of the cloth and complete compatability with epoxy resins.

Technical Assistance

With a combined total of over 180 years experience, our management team can offer unequalled design details to concrete and epoxy floors as well as installation techniques and materials designed to meet your requirements. We are prepared to assist in training your own maintenance crew in the installation of our products.

Cleanup

Corro Flexi-Prime while still wet can be cleaned with any solvent. When dry, the primer can only be removed by mechanical means or special paint stripper.

Physical Characteristics

Solids by Weight 100%

Elongation % at 75°F 100
Elongation % at 14°F 52

Viscosity, cps 2960

Density
Part A: 8.82 lbs./gal.
Part B: 8.56 lbs./gal.
Mixed: 8.73 lbs./gal.

Full Chemical Cure: 7 days
Shelf Life: 12 months

Application Methods: Brush, Roller or Spray

Mixing Ratio:
By Volume (A:B) 2:1
By Weight (A:B) 2.1:1

Pot Life @ 75°F: 45 minutes

Thin Film Set Time: 13 hours at 75°F
33 hours at 50°F

Foot Traffic Set Time: 24 hours at 75°F
40 hours at 50°F

The data, statements and recommendations set forth in this product information sheet are based on testing, research and other development work which has been carefully conducted by us, and we believe such data, statements and recommendations will serve as reliable guidelines. However, this product is subject to numerable uses under varying conditions over which we have no control, and accordingly, we do NOT warrant that this product is suitable for any particular use. Users are advised to test the product in advance to make certain it is suitable for their particular production conditions and particular use or uses.
WARRANTY - All products manufactured by us are warranted to be first class material and free from defects in material and workmanship.
Liability under this warranty is limited to the net purchase price of any such products proven defective, or, at our option, to the repair or replacement of said products upon their return to us transportation prepaid. All claims hereunder on defective products must be made in writing within 30 days after the receipt of such products in your plant and prior to further processing or combining with other materials and products. WE MAKE NO WARRANTY, EXPRESS OR IMPLIED, AS TO THE SUITABILITY OF ANY OF OUR PRODUCTS FOR ANY PARTICULAR USE, AND WE SHALL NOT BE SUBJECT TO LIABILITY FROM ANY DAMAGES RESULTING FROM THEIR USE IN OPERATIONS NOT UNDER OUR DIRECT CONTROL.

THIS WARRANTY IS EXCLUSIVE OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, AND NO REPRESENTATIVE OF OURS OR ANY OTHER PERSON IS AUTHORIZED TO ASSUME FOR US ANY OTHER LIABILITY IN CONNECTION WITH THE SALE OF OUR PRODUCTS.

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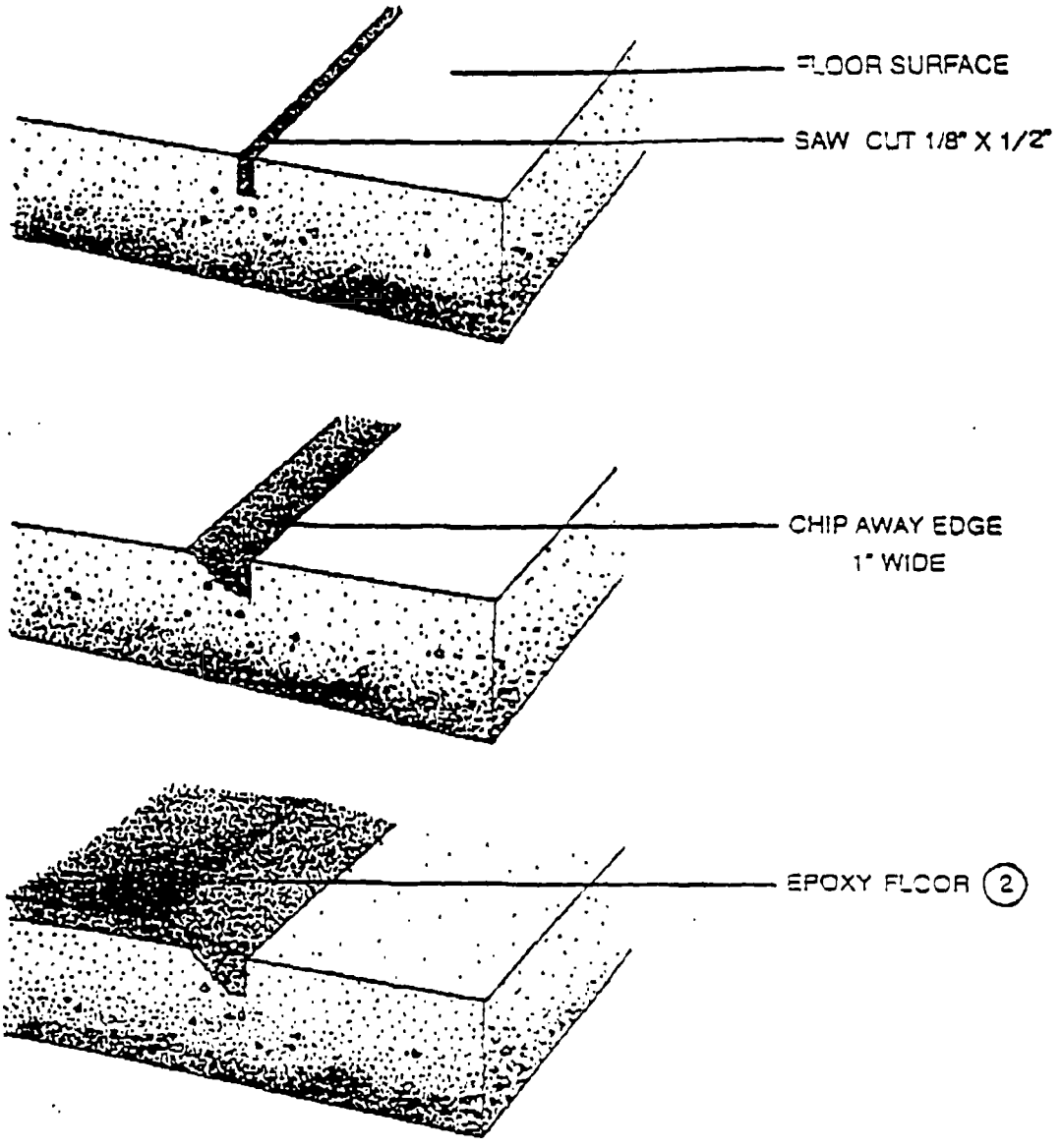
DRAWING DETAIL 1
PERIMETER KEY



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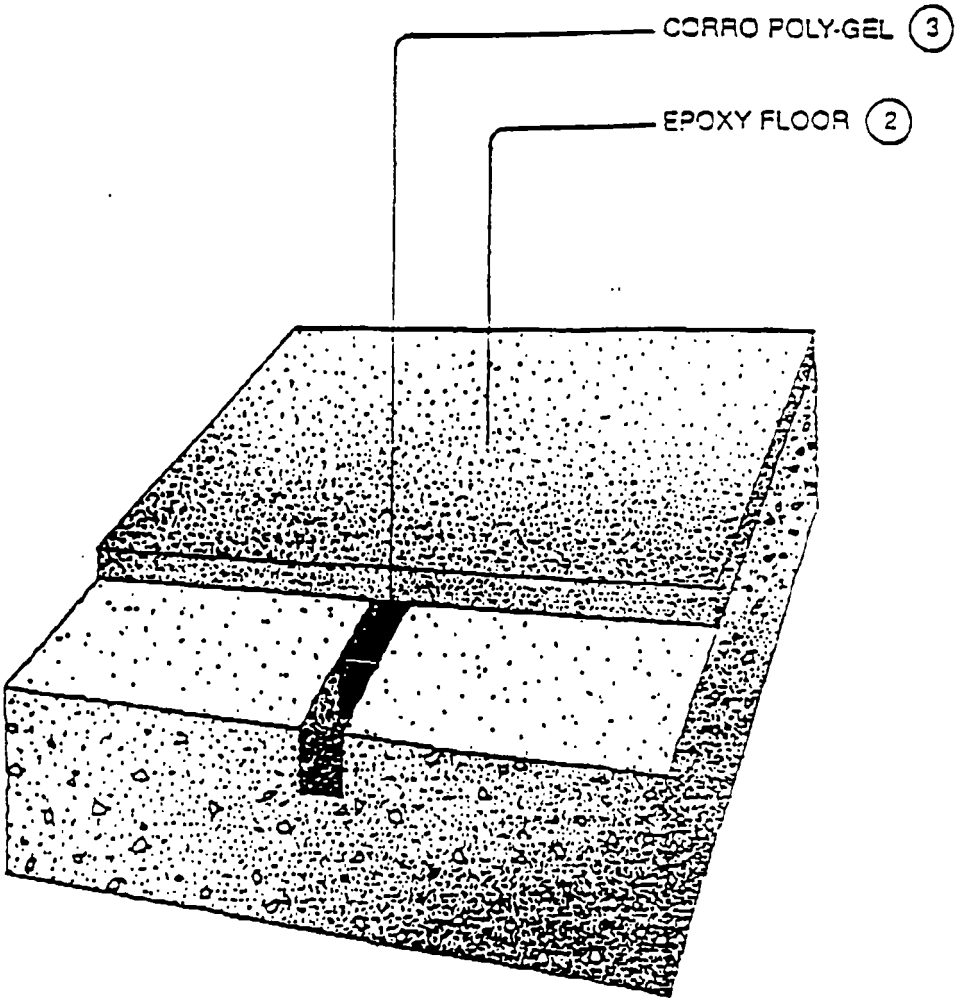

DRAWING DETAIL 2

CONTROL JOINT

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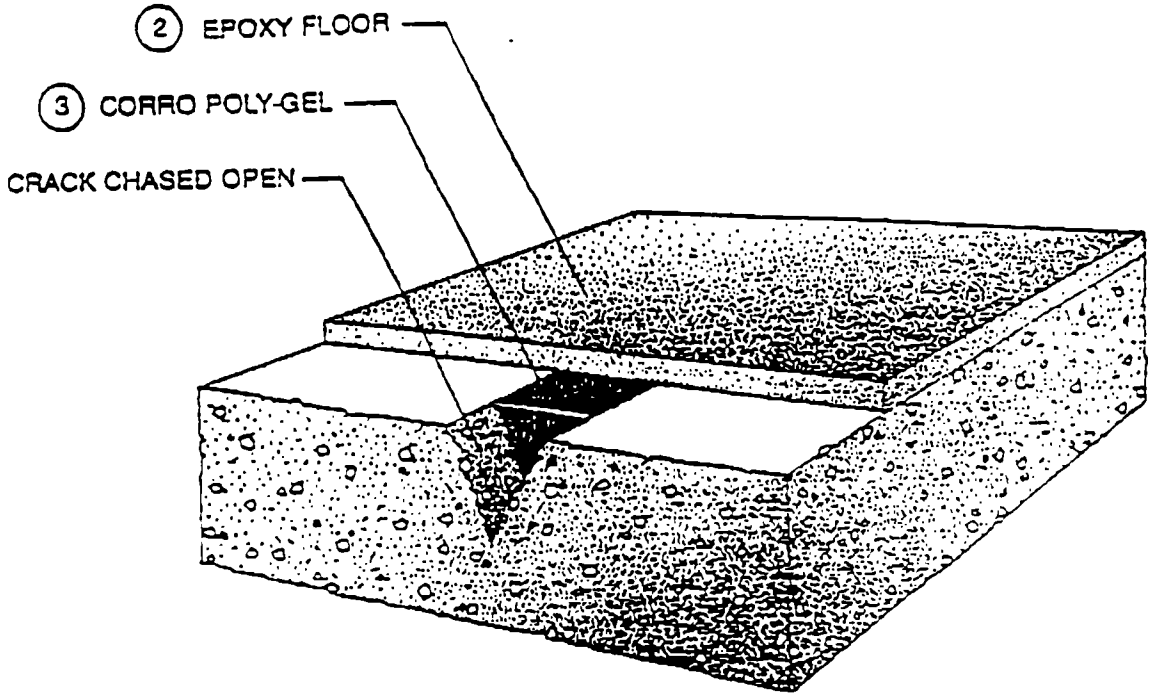
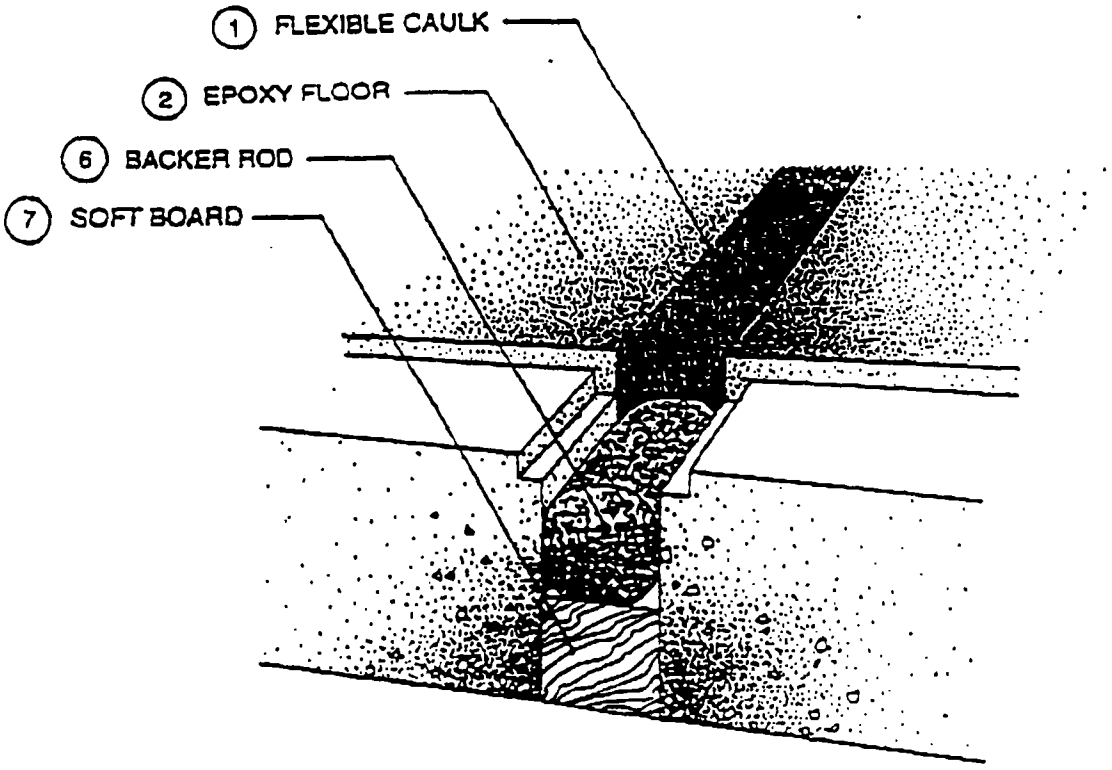


DRAWING DETAIL 3
CRACK REPAIR

CORRO-SHIELD INTERNATIONAL, INC.
7047 Barry Street • Rosemont, Illinois 60018 • ☎ 708-298-7770 • fax 708-298-7784



Note: The depth of the flexible caulk must never be deeper than 50% of the width

DRAWING DETAIL 4
EXPANSION JOINT

CORRO-SHIELD INTERNATIONAL, INC.
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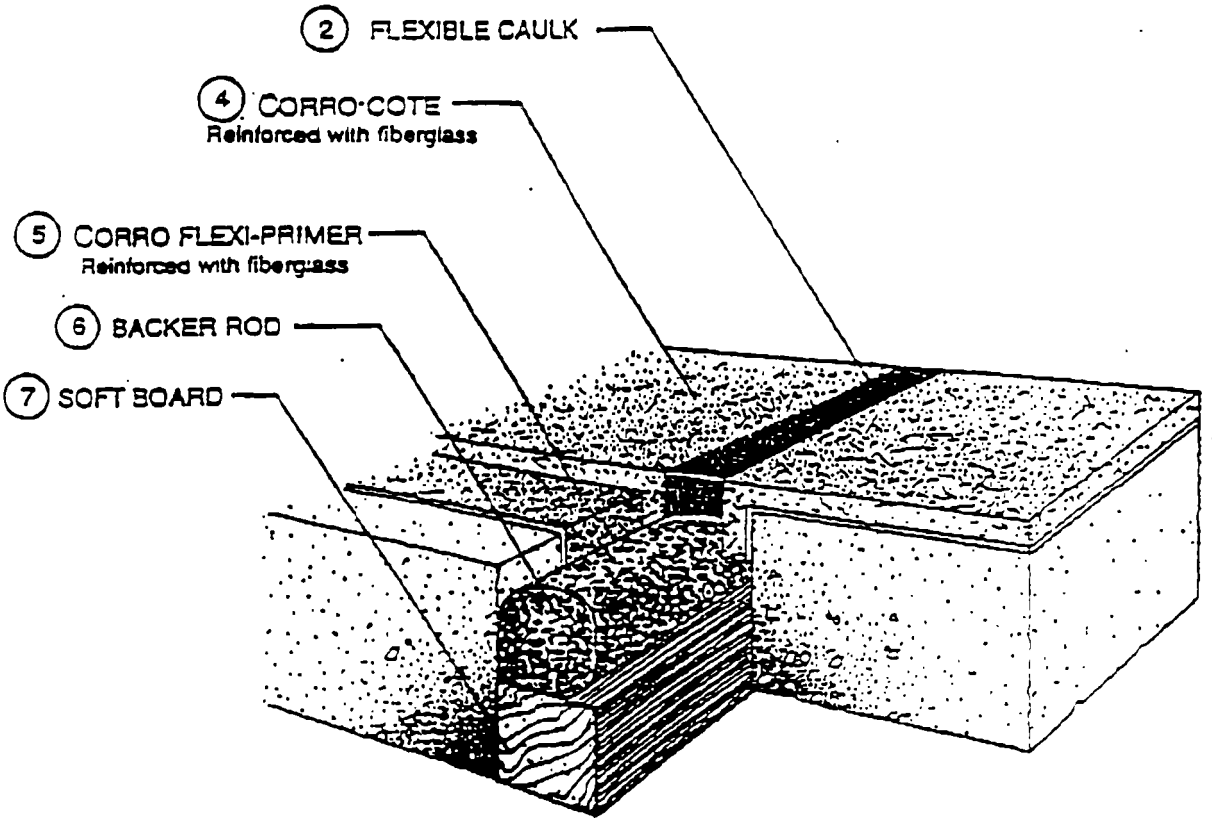
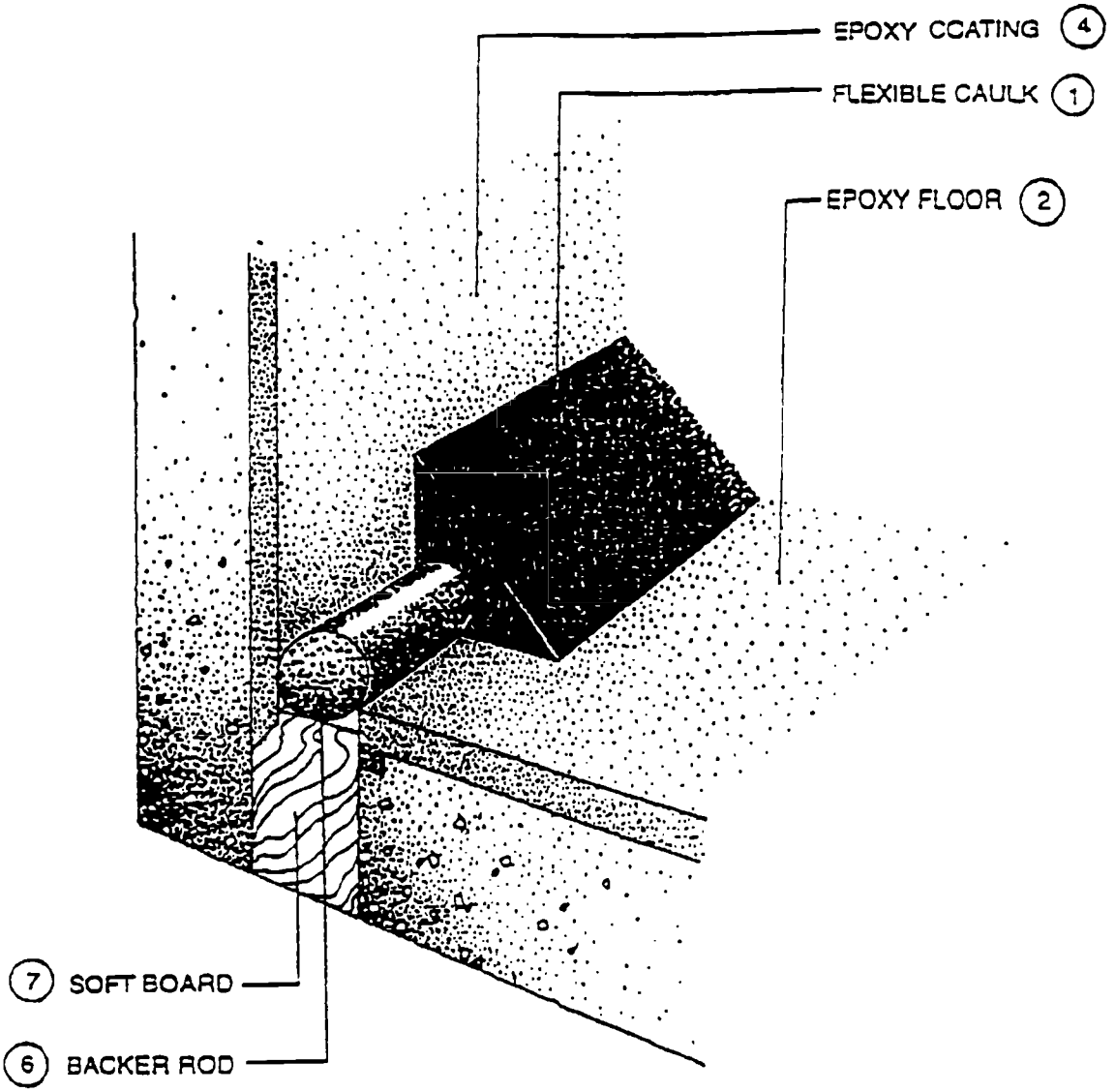


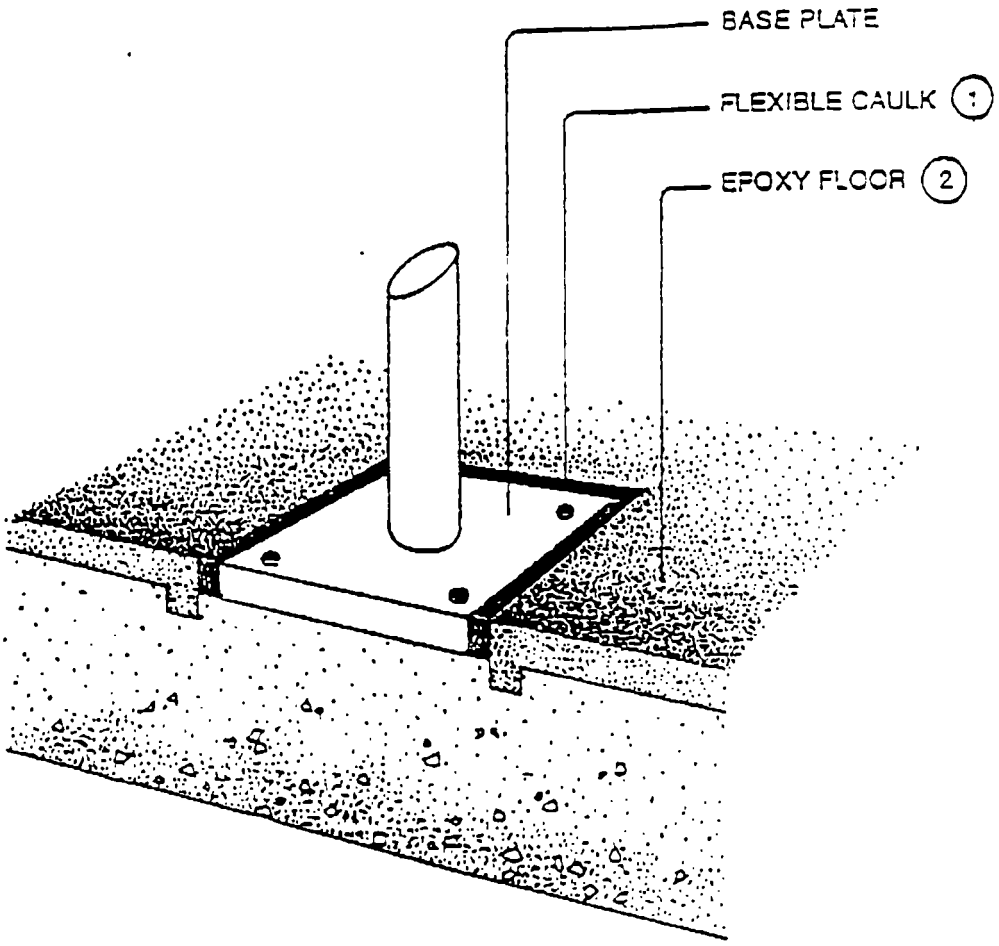
DRAWING DETAIL 4a
EXPANSION JOINT DETAIL

CORRO-SHIELD INTERNATIONAL, INC.
7047 Barry Street • Rosemont, Illinois 60018 • ☎ 708-298-7770 • fax 708-298-7784



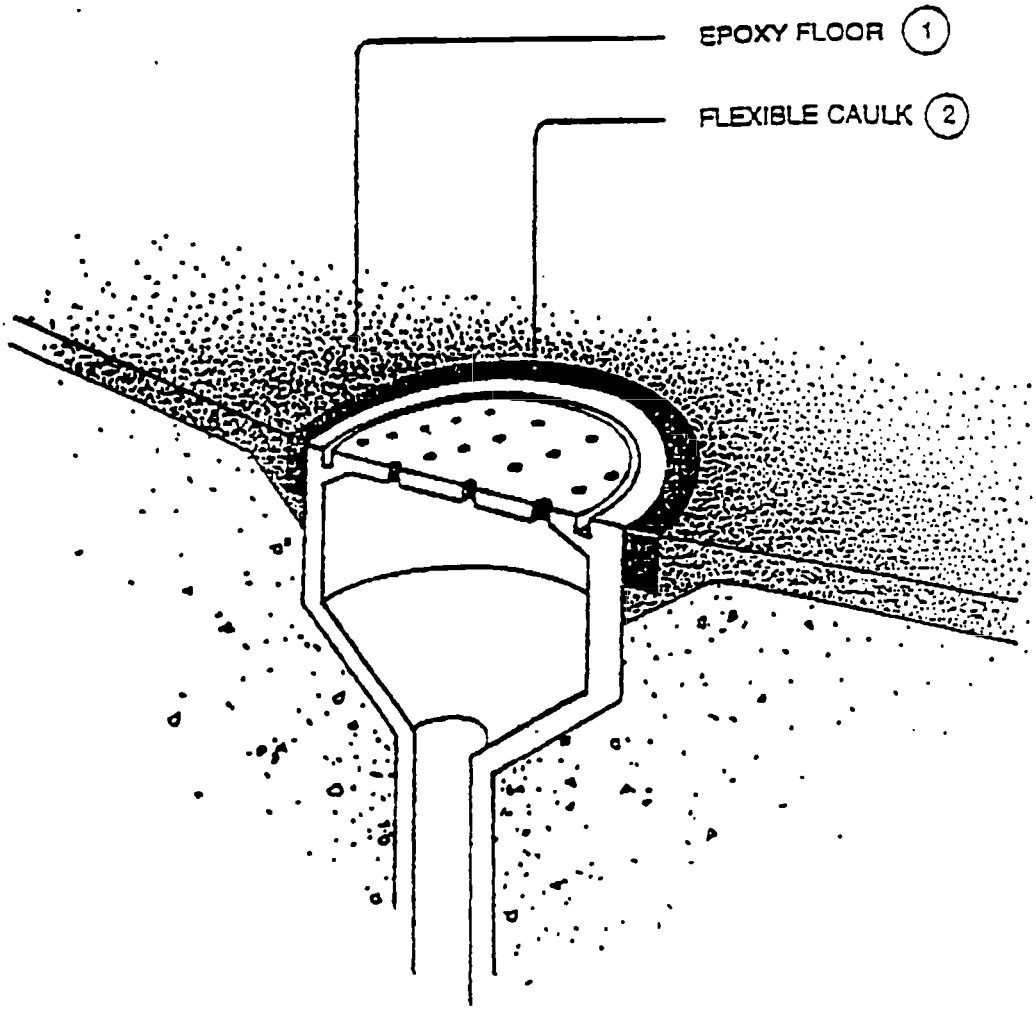
DRAWING DETAIL 5
CORNER EXPANSION JOINT

CORRO-SHIELD INTERNATIONAL, INC.
7047 Barry Street • Rosemont, Illinois 60018 • ☎ 708-298-7770 • fax 708-298-7784



DRAWING DETAIL 6
METAL BASE PLATES

CORRO-SHIELD INTERNATIONAL, INC.
7047 Barry Street • Rosemont, Illinois 60018 • ☎ 708-298-7770 • fax 708-298-7754



• DRAWING DETAIL 7
DRAIN

CORRO-SHIELD INTERNATIONAL, INC.
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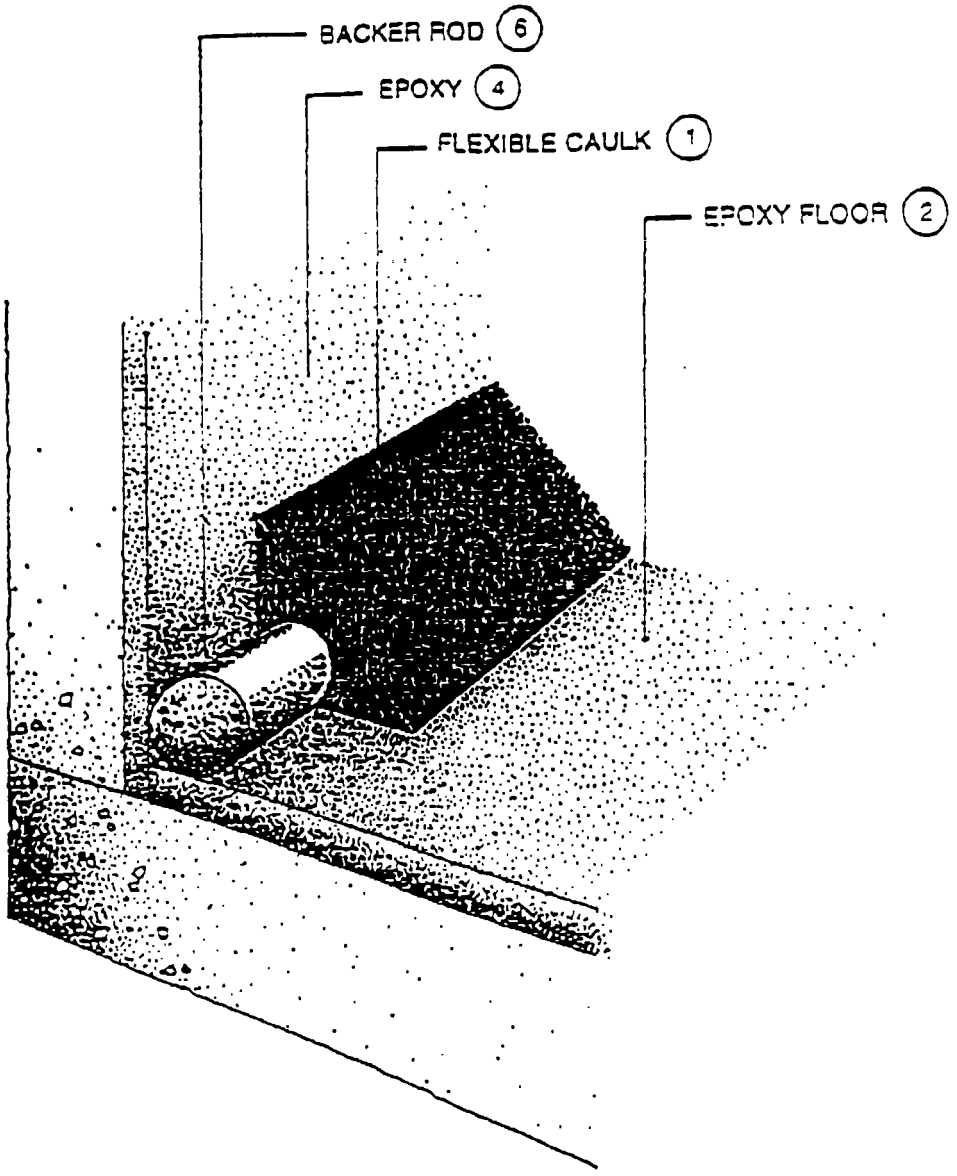

DRAWING DETAIL 8.

CORNER DETAIL – NO EXPANSION JOINT

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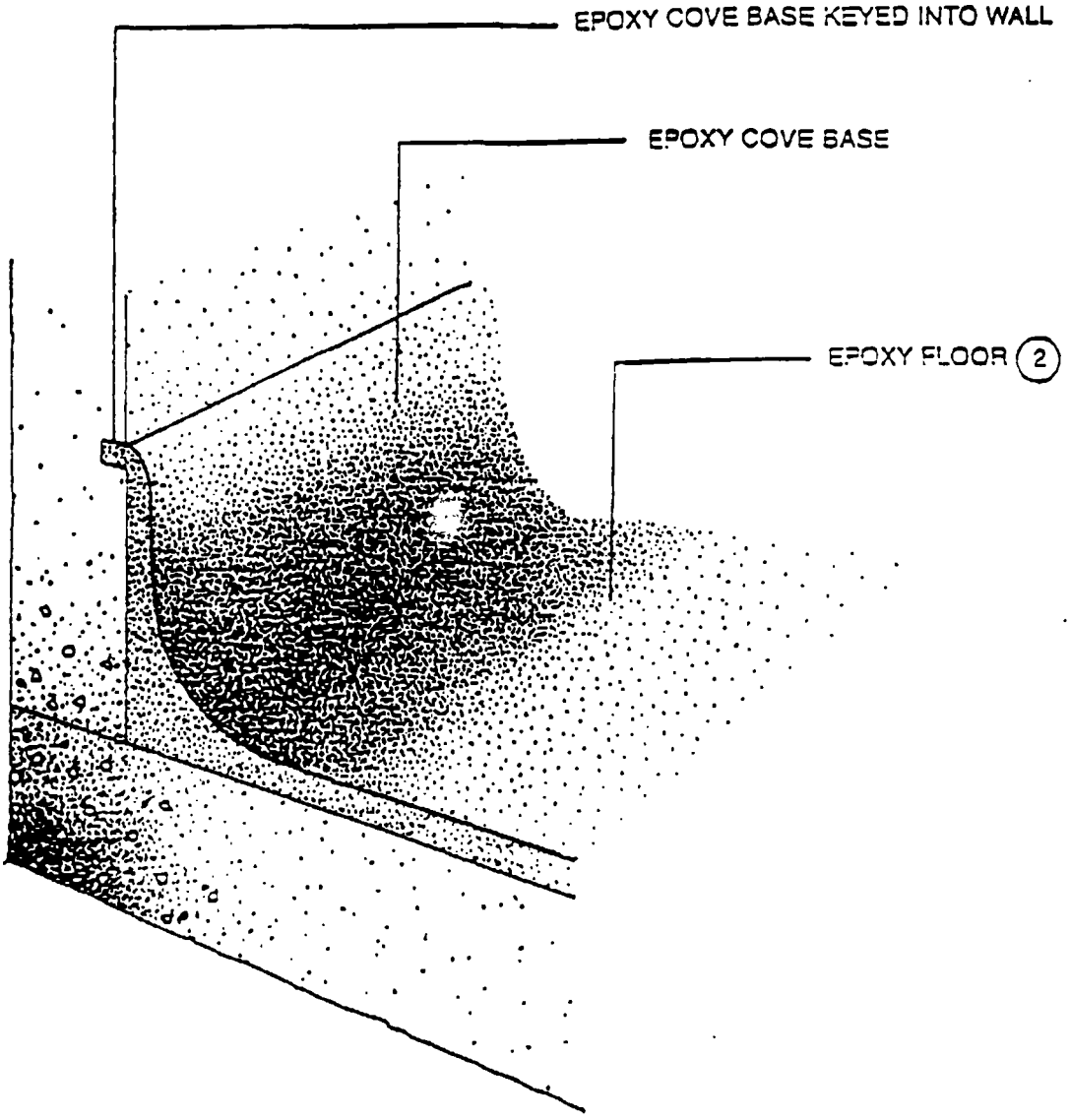

DRAWING DETAIL 9

COVE BASE

CORRO-SHIELD INTERNATIONAL, INC.
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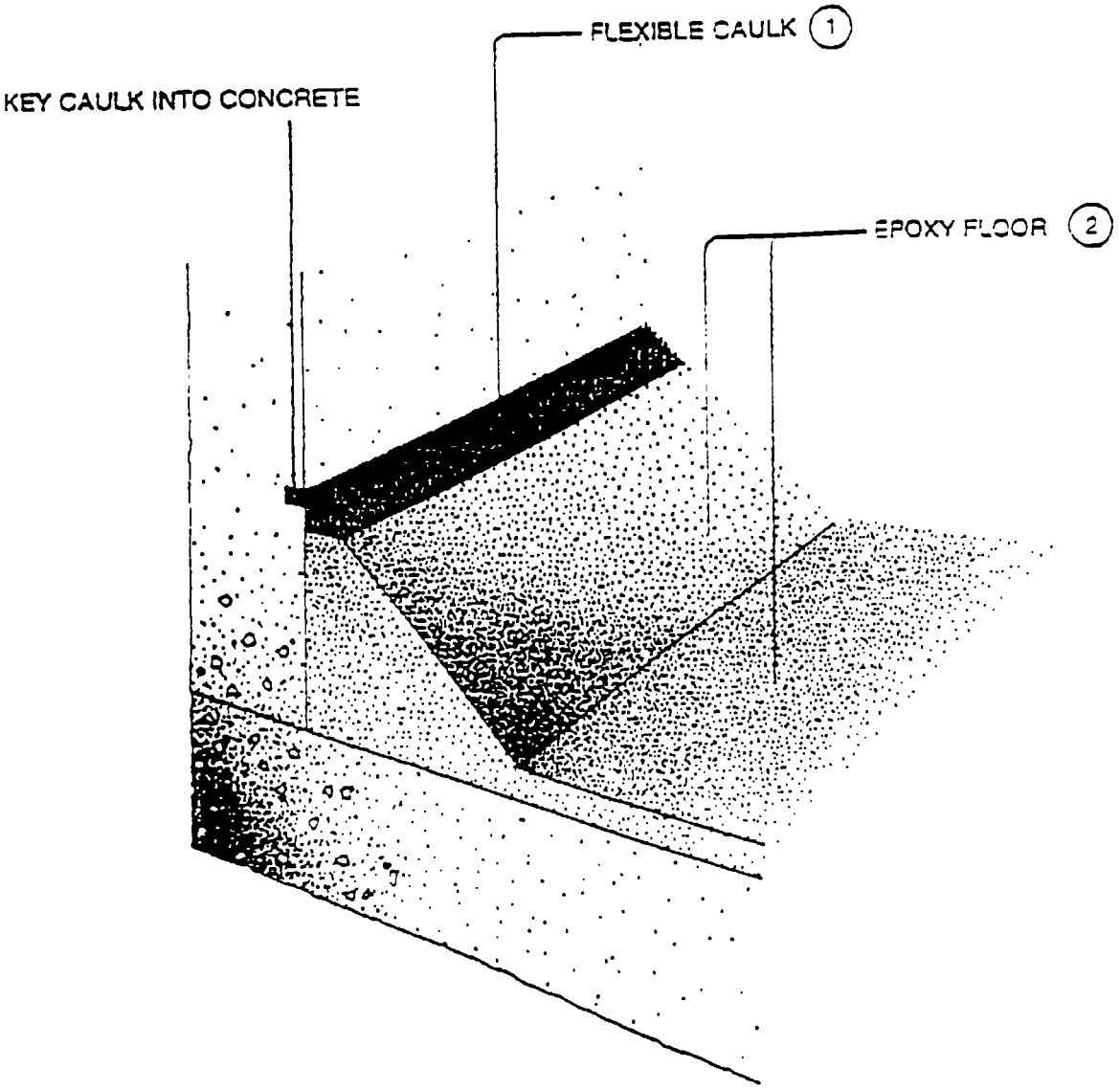

DRAWING DETAIL 10

CANT COVE BASE

ATTACHMENT D-7

SECONDARY CONTAINMENT VOLUME CALCULATIONS

ATTACHMENT D-7
SECONDARY CONTAINMENT VOLUME CALCULATIONS

The secondary containment systems include four separate hazardous waste container storage areas. The secondary containment volume calculations for each area are provided below. Dimensions of each area are presented on the drawings enclosed.

Containment Volume Calculations

Purpose: To determine the secondary containment capacity for each area.

Approach: Utilize standard area and volume calculations

Rectangle: $V = w \times l \times h$
Cylinder: $V = \Pi \times r^2 \times h$
Cone: $V = 1/3 \times \Pi \times r^2 \times h$

For right angle triangles
Tangent of an angle = Opposite side / Adjacent side
Sin of angle = Opposite side / Hypotenuse side

where:
w = width of floor area
l = length of floor area
h = height of curb
r = radius of drum (1.03 ft)

$1\ ft^3$ = 7.48 gallons
$1\ ft^3$ = 1 pallet (estimated)

ATTACHMENT D-7
SECONDARY CONTAINMENT VOLUME CALCULATIONS

Container Storage Area 7 & 8

(3 ½-inch high perimeter curbing)
3,520 gallons (64 x 55 gallon drums)

Floor Area	=	16 ft x 22 ft
	=	352 ft^2
Volume	=	352 ft^2 x (0.29 ft) = 102.1 ft^3
Less Volume of Pallets (2)	=	8 pallets x 1.35 ft^3
	=	10.8 ft^3
Less Volume of Ramp (3)	=	22 ft x 3.125 ft x 0.29 ft x ½
	=	10.0 ft^3
Remaining Volume	=	(102.1 - 10.8 - 10) ft^3 x 7.48 gal / ft^3
	=	608.1 gallons
∴ Secondary Containment Capacity	=	17.3 % of total volume
	=	110.6 % of largest container (550-gallon tote)

ATTACHMENT D-7
SECONDARY CONTAINMENT VOLUME CALCULATIONS

Container Storage Area 9 (& area 29)

NOTE: storage area 9 has a foot print of 20' x 16' for the actual storage of waste although it uses the containment structure of the facility itself excluding areas noted below (Facility has 9-inch high perimeter curbing. For calculations of secondary containment 3.5" is being used, as this is the height of curbing in areas 7 & 8).
5,830 gallons (*96 x 55 gallon drums in storage area #9* and *10 x 55 gallon drums in the staging area*)

Warehouse Floor Area	=	50 ft x 136 ft + ½ (50 ft x 23 ft) = 7,375 ft^2
Lab & boiler room	=	55 ft x 22 ft = 1,210 ft^2
Concrete Ramps	=	13 ft x 9 ft + 22 ft x 10 ft = 337 ft^2
Storage areas 7 & 8	=	33 ft x 22 ft = 1,100 ft^2
Secondary Containment Area	=	7,375 – 1,210 – 337 – 726 = 5,102 ft^2
Volume	=	5,102 ft^2 x (0.29 ft) = 1,479.6 ft^3
Less Volume of Pallets (2)	=	25 pallets x 1.35 ft^3
	=	33.75 ft^3
Less volume of Tank Pads	=	$(3\ ft)^2$ x 5 ft x Π = 14.1 ft^3
	=	(4 ft) 2 x 0.5 ft x Π = 25 1 ft^3
Less miscellaneous equipment (Estimate 5 % of total volume)	=	74 ft^3
Working Volume	=	(1,479.6– 33.75 - 14.1 - 25.1 - 74) ft^3
	=	1,332 x 7 48 gal / ft^3
	=	9,963.4 gallons
Storage tanks (see equipment list in attachment D-2)	=	2 x 600 + 2,300 +5,000 + 2,500 + 4,500 + 3,000
	=	18,500 gallons
Containers on floor (250 drums)	=	250 x 55
	=	13,750gallons
Total estimated volume of material	=	18,500 + 13,750 + 5,830 gallons
	=	38,080 gallons
∴ Secondary Containment Capacity	=	26.1 % of total volume
	=	199 3 % of largest container (5,000 gallons)

ATTACHMENT D-7
SECONDARY CONTAINMENT VOLUME CALCULATIONS

Container Storage Area 11

Flammable waste storage area (capacity = 128 drums = 7,040 gallons)

Trailer dimensions (see Attachment D-3)
45' length & 94" wide
Unit has a 12" internal containment wall
(Note: for maximum displacement volume containers on vehicle are assumed to be drums)

Dock dimensions:
52 feet long x 16 ½ " depth from beginning of slope x 21'-6" width
For a horizontal length of 52 feet there is a vertical drop of 1.375 feet. The slope is visible in the pictures presented in Attachment A-3. The slope of the dock can be calculated by using geometry.

Tan (angle) = opposite / adjacent = 1.375 / 52 = 0.02644
angle = $\tan^{-1}$ (0.02644) = 1.51^{0}

Impact of slope on containment volume
It is necessary to determine if the slope limits the containment of the trailer. Again geometry is used to calculate the rise for the length of the trailer.

sin (1.51)	=	x / 45'
0.026 x 45'	=	x
x	=	1.18'

This calculation denotes that for a length of 45', the rise would be 1.008 feet. Trailers have a containment wall of 1', therefore the containment capacity is not reduced due to the height of the containment wall.

Volume contained by trailer
½ x 45' length x 1' deep x 7.833' wide x 7.48 gal/ft^3 = 1,318.4 gallons

Volume displaced by containers
NOTE: the slope of the dock alters displacement volume. The displacement is ½ of the volume if it were on a level surface (64 drums / trailer)

½ x 64 drums x 1' x 1' x 3.1415 x 7.48 = 752 gallons

Remaining volume = 1,318.4 - 752gallons
= 566 gallons

∴ Secondary Containment Capacity is met = 16.1 % of total volume (3,520gallons)
for each trailer = 97 % of largest container (550-gallon tote)

ATTACHMENT D-8

SCHEDULE OF INSTALLATION

ATTACHMENT D-8
SCHEDULE OF INSTALLATION
EATON AVE.

ACTIVITY	MONTHS											
	1	2	3	4	5	6	7	8	9	10	11	12
Start Date (TBD)												
Move waste from storage area and prep floor												
Build forms for diking and pour concrete												
Curing of concrete & removal of forms												
Application of joint sealers and coating												

ATTACHMENT D-4

HAZARDOUS MATERIALS GUIDE

PACKAGING Specs

§172.101 HAZARDOUS MATERIALS TABLE, Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label codes	Special provisions	(8) Packaging (§173.***) Exceptions	Non-bulk	Bulk	(9) Quantity Limitations Passenger aircraft/rail	Cargo aircraft only	(10) Vessel Stowage Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Sulfuric acid *with more than 51 percent acid*	8	UN1830	II	8	A3 A7 B3 B83 B84 N34 T9 T27	154	202	242	1 L	30 L	C	14
	Sulfuric acid *with not more than 51% acid*	8	UN2796	II	8	A3 A7 B2 B15 N6, N34, T9, T27	154	202	242	1 L	30 L	B	
	Sulfuric and hydrofluoric acid mixtures, see Hydrofluoric and sulfuric acid mixtures												
	Sulfuric anhydride, see **Sulfur trioxide, inhibited**												
	Sulfurous acid	8	UN1833	II	8	B3 T8	154	202	242	1 L	30 L	B	40
+	**Sulfuryl chloride**	8	UN1834	I	8 6 1	1 A3 B6 B9 B10 B14, B30 B74 B77 N34 T38, T43 T44	None	226	244	Forbidden	Forbidden	C	40
	Sulfuryl fluoride	2 3	UN2191		2 3	4	None	304	314, 315	Forbidden	25 kg	D	40
	Tars, liquid *including road asphalt and oils, bitumen and cut backs*	3	UN1999	II	3	B13 T7, T30	150	202	242	5 L	60 L	B	
				III	3	B1 B13 T7 T30	150	203	242	60 L	220 L	A	
	Tear gas candles	6 1	UN1700	II	6 1 4 1		None	340	None	Forbidden	50 kg	D	40
	Tear gas cartridges, see **Ammunition, tear-producing,** *etc*												
D	**Tear gas devices** *with more than 2 percent tear gas substances, by mass*	6 1	NA1693	I	6 1		None	340	None	Forbidden	Forbidden	D	40
				II	6 1		None	340	None	Forbidden	Forbidden	D	40
	Tear gas devices, with not more than 2 percent tear gas substances, by mass, see **Aerosols,** *etc*												
	Tear gas grenades, see **Tear gas candles**												
G	**Tear gas substances, liquid, n.o.s.**	6 1	UN1693	I	6 1		None	201	None	Forbidden	Forbidden	D	40
				II	6 1		None	202	None	Forbidden	5 L	D	40
G	**Tear gas substances, solid, n.o.s.**	6 1	UN1693	I	6 1		None	211	None	Forbidden	Forbidden	D	40
				II	6 1		None	212	None	Forbidden	25 kg	D	40
	Tellurium compound, n.o.s.	6 1	UN3284	I	6 1		None	211	242	5 kg	50 kg	B	
				II	6 1	T14	None	212	242	25 kg	100 kg	B	
				III	6 1	T7	153	213	240	100 kg	200 kg	A	
	Tellurium hexafluoride	2 3	UN2195		2 3 8	1	None	302	None	Forbidden	Forbidden	D	40
	Terpene hydrocarbons, n.o.s.	3	UN2319	III	3	B1, T1	150	203	242	60 L	220 L	A	
	Terpinolene	3	UN2541	III	3	B1, T1	150	203	242	60 L	220 L	A	
	Tetraazido benzene quinone	Forbidden											
	Tetrabromoethane	6 1	UN2504	III	6 1	T7	153	203	241	60 L	220 L	A	
	Tetrachloroethane	6 1	UN1702	II	6 1	N36 T14	None	202	243	5 L	60 L	A	40
	Tetrachloroethylene	6 1	UN1897	III	6 1	N36 T1	153	203	241	60 L	220 L	A	40
	Tetraethyl dithiopyrophosphate	6 1	UN1704	II	6 1		None	212	242	25 kg	100 kg	D	40
D	**Tetraethyl lead, liquid**	6 1	NA1649	I	6 1, 3		None	201	None	Forbidden	Forbidden	E	40
D	**Tetraethyl pyrophosphate,** *liquid*	6 1	NA3018	I	6 1		None	201	243	Forbidden	1 L	A	40
D	**Tetraethyl pyrophosphate** *solid*	6 1	NA2783	I	6 1	N77	None	211	242	Forbidden	50 kg	A	40
	Tetraethyl silicate	3	UN1292	III	3	B1, T1	150	203	242	60 L	220 L	A	
	Tetraethylammonium perchlorate (dry)	Forbidden											
	Tetraethylenepentamine	8	UN2320	III	8	T2	154	203	241	5 L	60 L	A	
	1,1,1,2-Tetrafluoroethane or Refrigerant gas R 134a	2 2	UN3159		2 2		306	304	314 315	75 kg	150 kg	A	
	Tetrafluoroethylene, inhibited	2 1	UN1081		2 1		306	304	None	Forbidden	150 kg	E	40
	Tetrafluoromethane, compressed or Refrigerant gas R 14	2 2	UN1982		2 2		None	302	None	75 kg	150 kg	A	
	1,2,3,6-Tetrahydrobenzaldehyde	3	UN2498	III	3	B1 T1	150	203	242	60 L	220 L	A	

PACKAGING SPECS

§172.101 HAZARDOUS MATERIALS TABLE, Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label codes	Special provisions	(8) Packaging (§173 ***) Exceptions	Non-bulk	Bulk	(9) Quantity Limitations Passenger aircraft/rail	Cargo aircraft only	(10) Vessel Stowage Location	Other
(1)	(2)	3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	10B)
+	**Trichloroacetyl chloride**	8	UN2442	II	8, 6 1	2, A3, A7, B9, B14 B32, B74 N34 T38, T43 T45	None	227	244	Forbidden	Forbidden	D	40
	Trichlorobenzenes, liquid	6 1	UN2321	III	6 1	T7	153	203	241	60 L	220 L	A	
	Trichlorobutene	6 1	UN2322	II	6 1	T8	None	202	243	5 L	60 L	A	25 40
	1,1,1-Trichloroethane	6 1	UN2831	III	6 1	N36 T7	153	203	241	60 L	220 L	A	40
	Trichloroethylene	6 1	UN1710	III	6 1	N36, T1	153	203	241	60 L	220 L	A	40
	Trichloroisocyanuric acid, dry	5 1	UN2468	II	5 1		152	212	240	5 kg	25 kg	A	13
	Trichloromethyl perchlorate	Forbidden											
	Trichlorosilane	4 3	UN1295	I	4 3 3, 8	A7 N34 T24 T26	None	201	244	Forbidden	Forbidden	D	21, 28 40, 49 100
	Tricresyl phosphate *with more than 3 percent ortho isomer*	6 1	UN2574	II	6 1	A3, N33 N34 T8	None	202	243	5 L	60 L	A	
	Triethyl phosphite	3	UN2323	III	3	B1, T1	150	203	242	60 L	220 L	A	
	Triethylamine	3	UN1296	II	3 8	B101 T8	None	202	243	1 L	5 L	B	40
	Triethylenetetramine	8	UN2259	II	8	B2, T8	154	202	242	1 L	30 L	B	40
	Trifluoroacetic acid	8	UN2699	I	8	A3 A6 A7 B4 N3 N34 T18 T27	None	201	243	0 5 L	2.5 L	B	12 40
	Trifluoroacetyl chloride	2 3	UN3057		2 3 8	2, B7, B9 B14	None	304	314, 315	Forbidden	Forbidden	D	40
	Trifluorochloroethylene, inhibited	2 3	UN1082		2 3, 2 1	3, B14	None	304	314, 315	Forbidden	Forbidden	D	40
	1,1,1-Trifluoroethane, compressed *or* **Refrigerant gas R 143a**	2 1	UN2035		2 1		306	304	314, 315	Forbidden	150 kg	B	40
	Trifluoromethane *or* **Refrigerant gas R 23**	2 2	UN1984		2 2		306	304	314, 315	75 kg	150 kg	A	
	Trifluoromethane, refrigerated liquid	2 2	UN3136		2 2		306	None	314, 315	50 kg	500 kg	D	
	2-Trifluoromethylaniline	6 1	UN2942	III	6 1		153	203	241	60 L	220 L	A	
	3-Trifluoromethylaniline	6 1	UN2948	II	6 1	T14	None	202	243	5 L	60 L	A	40
	Triformoxime trinitrate	Forbidden											
	Triisobutylene	3	UN2324	III	3	B1 T7 T30	150	203	242	60 L	220 L	A	
	Triisopropyl borate	3	UN2616	II	3	T8 T31	150	202	242	5 L	60 L	A	
				III	3	B1 T8 T31	150	203	242	60 L	220 L	A	
D	**Trimethoxysilane**	6 1	NA9269	I	6 1 3	2 B9 B14 B32 B74 T38, T43 T45	None	227	244	Forbidden	Forbidden	E	40
	Trimethyl borate	3	UN2416	II	3	T14	150	202	242	5 L	60 L	B	
	Trimethyl phosphite	3	UN2329	III	3	B1, T1	150	203	242	60 L	220 L	A	
	1,3,5-Trimethyl-2,4,6-trinitrobenzene	Forbidden											
	Trimethylacetyl chloride	6 1	UN2438	I	6 1 8 3	2 A3 A6 A7 B3 B9 B14 B32 B74 N34 T38 T43 T45	None	227	244	Forbidden	Forbidden	D	25 40
	Trimethylamine, anhydrous	2 1	UN1083		2 1		306	304	314 315	Forbidden	150 kg	B	40
	Trimethylamine, aqueous solutions *with not more than 50 percent trimethylamine by mass*	3	UN1297	I	3, 8	T42	None	201	243	0 5 L	2 5 L	D	40, 41
				II	3 8	B1 T14	None	202	243	1 L	5 L	B	40 41
				III	3 8	B1	150	203	242	5 L	60 L	A	40 41
	1,3,5-Trimethylbenzene	3	UN2325	III	3	B1 T1	None	203	242	60 L	220 L	A	
	Trimethylchlorosilane	3	UN1298	II	3 8	A3 A7 B77 N34 T14 T26	None	202	243	1 L	5 L	E	40
	Trimethylcyclohexylamine	8	UN2326	III	8	T2	154	203	241	5 L	60 L	A	
	Trimethylene glycol diperchlorate	Forbidden											

Glass, porcelain or stoneware in solid or expanded plastic packaging. 6PH1 or 6PH2
Cylinders, specification, as prescribed for any compressed gas, except for Specifications 8 and 3HT

§173.202 Non-bulk packagings for liquid hazardous materials in Packing Group II.

(a) When §172.101 of this subchapter specifies that a liquid hazardous material be packaged under this section, only non-bulk packagings prescribed in this section may be used for its transportation. Each packaging must conform to the general packaging requirements of subpart B of part 173, to the requirements of part 178 of this subchapter at the Packing Group I or II performance level (unless otherwise excepted), and to the particular requirements of the special provisions of Column 7 of the §172.101 Table.

(b) The following combination packagings are authorized:

Outer packagings

Steel drum: 1A1 or 1A2
Aluminum drum: 1B1 or 1B2
Metal drum other than steel or aluminum: 1N1 or 1N2
Plywood drum: 1D
Fiber drum 1G
Plastic drum: 1H1 or 1H2
Wooden barrel: 2C2
Steel jerrican: 3A1 or 3A2
Plastic jerrican: 3H1 or 3H2
Aluminum jerrican: 3B1 or 3B2
teel box: 4A
luminum box: 4B
Natural wood box: 4C1 or 4C2
Plywood box: 4D
Reconstituted wood box: 4F
Fiberboard box: 4G
Expanded plastic box. 4H1
Solid plastic box: 4H2

Inner packagings

Glass or earthenware receptacles
Plastic receptacles
Metal receptacles
Glass ampoules

(c) Except for transportation by passenger aircraft, the following single packagings are authorized:

Steel drum: 1A1 or 1A2
Aluminum drum: 1B1 or 1B2
Metal drum other than steel or aluminum: 1N1 or 1N2
Plastic drum: 1H1 or 1H2
Fiber drum: 1G (with liner)
Wooden barrel. 2C1
Steel jerrican: 3A1 or 3A2
Plastic jerrican: 3H1 or 3H2
Aluminum jerrican. 3B1 or 3B2
Plastic receptacle in steel, aluminum, fiber or plastic drum. 6HA1, 6HB1, 6HG1 or 6HH1
Plastic receptacle in steel, aluminum, wooden, plywood or fiberboard box: 6HA2, 6HB2, 6HC, 6HD2 or 6HG2
Glass, porcelain or stoneware in steel, aluminum or fiber drum 6PA1 6PB1 or 6PG1
Glass, porcelain or stoneware in steel, aluminum, wooden or fiberboard box: 6PA2, 6PB2, 6PC or 6PG2
Glass, porcelain or stoneware in solid or expanded plastic packaging: 6PH1 or 6PH2
Plastic receptacle in plywood drum: 6HD1
Glass, porcelain or stoneware in plywood drum or wickerwork hamper: 6PD1 or 6PD2
Cylinders, specification, as prescribed for any compressed gas, except for Specifications 8 and 3HT

§173.203 Non-bulk packagings for liquid hazardous materials in Packing Group III.

(a) When §172.101 of this subchapter specifies that a liquid hazardous material be packaged under this section, only non-bulk packagings prescribed in this section may be used for its transportation. Each packaging must conforrn to the general packaging requirements of subpart B of part 173, to the requirements of part 178 of this subchapter at the Packing Group I, II or III performance level, and to the requirements of the special provisions of Column 7 of the §172.101 Table.

(b) The following combination packagings are authorized:

Outer packagings:

Steel drum 1A1 or 1A2
Aluminum drum: 1B1 or 1B2
Metal drum other than steel or aluminum. 1N1 or 1N2
Plywood drum: 1D
Fiber drum 1G
Plastic drum: 1H1 or 1H2
Wooden barrel: 2C2
Steel jerrican: 3A1 or 3A2
Plastic jerrican: 3H1 or 3H2
Aluminum jerrican: 3B1 or 3B2
Steel box 4A
Aluminum box. 4B
Natural wood box 4C1 or 4C2
Plywood box: 4D
Reconstituted wood box. 4F
Fiberboard box. 4G
Expanded plastic box: 4H1
Solid plastic box: 4H2

Inner packagings:

Glass or earthenware receptacles
Plastic receptacles
Metal receptacles
Glass ampoules

(c) The following single packagings are authorized:

Steel drum: 1A1 or 1A2
Aluminum drum: 1B1 or 1B2
Metal drum other than steel or aluminum: 1N1
Plastic drum: 1H1 or 1H2
Fiber drum: 1G (with liner)
Wooden barrel: 2C1
Steel jerrican: 3A1 or 3A2
Plastic jerrican: 3H1 or 3H2
Aluminum jerrican: 3B1 or 3B2
Plastic receptacle in steel, aluminum, fiber or plastic drum: 6HA1, 6HB1, 6HG1 or 6HH1
Plastic receptacle in steel, aluminum, wooden, plywood or fiberboard box: 6HA2, 6HB2, 6HC, 6HD2 or 6HG2
Glass, porcelain or stoneware in steel, aluminum or fiber drum: 6PA1, 6PB1, or 6PG1
Glass, porcelain or stoneware in steel, aluminum, wooden or fiberboard box: 6PA2, 6PB2, 6PC or 6PG2
Glass, porcelain or stoneware in solid or expanded plastic packaging: 6PH1 or 6PH2
Plastic receptacle in plywood drum: 6HD1
Glass, porcelain or stoneware in plywood drum or wickerwork hamper: 6PD1 or 6PD2
Cylinders, as prescribed for any compressed gas, except for Specifications 8 and 3HT

§173.204 Non-bulk, non-specification packagings for certain hazardous materials.

When §172.101 of this subchapter specifies that a liquid or solid hazardous material be packaged under this section, any appropriate non-bulk packaging which conforms to the general packaging requirements of subpart B of part 173 may be used for its transportation. Packagings need not conform to the requirements of part 178 of this subchapter.

§173.205 Specification cylinders for liquid hazardous materials.

When §172.101 of this subchapter specifies that a hazardous material be packaged under this section, any specification cylinder, except those specified for acetylene, is authorized. Cylinders used for poisonous materials (Division 6.1 or 2.3) must conform to the requirements of §173.40.

§173.211 Non-bulk packagings for solid hazardous materials in Packing Group I.

(a) When §172.101 of this subchapter specifies that a solid hazardous material be packaged under this section, only non-bulk packagings prescribed in this section may be used for its transportation. Each package must conform to the general packaging requirements of subpart B of part 173, to the requirements of part 178 of this subchapter at the Packing Group I performance level, and to the requirements of the special provisions of Column 7 of the §172.101 Table.

(b) The following combination packagings are authorized:

Outer packagings:

Steel drum: 1A1 or 1A2
Aluminum drum: 1B1 or 1B2
Metal drum other than steel or aluminum: 1N1 or 1N2
Plywood drum: 1D
Fiber drum: 1G
Plastic drum: 1H1 or 1H2
Wooden barrel: 2C2
Steel jerrican: 3A1 or 3A2
Plastic jerrican: 3H1 or 3H2
Aluminum jerrican: 3B1 or 3B2
Steel box: 4A
Aluminum box: 4B
Natural wood box: 4C1 or 4C2
Plywood box: 4D
Reconstituted wood box: 4F
Fiberboard box: 4G
Solid plastic box: 4H2

Inner packagings:

Glass or earthenware receptacles
Plastic receptacles
Metal receptacles
Glass ampoules

(c) Except for transportation by passenger aircraft, the following single packagings are authorized:

Steel drum: 1A1 or 1A2
Aluminum drum: 1B1 or 1B2
Metal drum other than steel or aluminum: 1N1 or 1N2
Plastic drum: 1H1 or 1H2
Fiber drum: 1G
Steel jerrican: 3A1 or 3A2
Plastic jerrican: 3H1 or 3H2
Aluminum jerrican: 3B1 or 3B2
Steel box with liner: 4A
Aluminum box with liner: 4B
Natural wood box, sift proof: 4C2
Plastic receptacle in steel, aluminum, plywood, fiber or plastic drum: 6HA1, 6HB1, 6HD1, 6HG1 or 6HH1
Plastic receptacle in steel, aluminum, wooden, plywood or fiberboard box: 6HA2, 6HB2, 6HC, 6HD2 or 6HG2
Glass, porcelain or stoneware in steel, aluminum, plywood or fiber drum: 6PA1, 6PB1, 6PD1 or 6PG1
Glass, porcelain or stoneware in steel, aluminum, wooden or fiberboard box: 6PA2, 6PB2, 6PC or 6PG2
Glass, porcelain or stoneware in expanded or solid plastic packaging: 6PH1 or 6PH2

§173.212 Non-bulk packagings for solid hazardous materials in Packing Group II.

(a) When §172.101 of this subchapter specifies that a solid hazardous material be packaged under this section, only non-bulk packagings prescribed in this section may be used for its transportation. Each package must conform to the general packaging requirements of subpart B of part 173, to the requirements of part 178 of t

ATTACHMENT D-7

SECONDARY CONTAINMENT VOLUME CALCULATIONS

ATTACHMENT D-7
SECONDARY CONTAINMENT VOLUME CALCULATIONS

The secondary containment systems include four separate hazardous waste container storage areas. The secondary containment volume calculations for each area are provided below. Dimensions of each area are presented on the drawings enclosed.

Containment Volume Calculations

Purpose: To determine the secondary containment capacity for each area.

Approach: Utilize standard area and volume calculations

Rectangle: $V = w \times l \times h$
Cylinder: $V = \prod \times r^2 \times h$
Cone: $V = 1/3 \times \prod \times r^2 \times h$

For right angle triangles
Tangent of an angle = Opposite side / Adjacent side
Sin of angle = Opposite side / Hypotenuse side

where:
w = width of floor area
l = length of floor area
h = height of curb
r = radius of drum (1.03 ft)

$1\ ft^3$ = 7.48 gallons
$1\ ft^3$=1 pallet (estimated)

ATTACHMENT D-7
SECONDARY CONTAINMENT VOLUME CALCULATIONS

Container Storage Area # 3

(3 1/2-inch high perimeter curbing)

1,430 gallons (26 drums)

Floor Area	=	9 ft x 22 ft
	=	198 ft^2
Volume	=	198 ft^2 x (0.29 ft) = 57.4 ft^3
Less Volume of Pallets (2)	=	4 pallets x 1.35 ft^3
	=	5.4 ft^3
Less Volume of Ramp (3)	=	9 ft x 3.125 ft x 0.29 ft x ½
	=	4.1 ft^3
Remaining Volume	=	(57.4 - 5.4 - 4.1) ft^3 x 7.48 gal / ft^3
	=	358.3 gallons
∴ Secondary Containment Capacity	=	25.1 % of total volume
	=	65.1 % of largest container (550 gallon tote)

ATTACHMENT D-7
SECONDARY CONTAINMENT VOLUME CALCULATIONS

Container Storage Area # 5

Flammable waste storage area (capacity = 64 drums = 3,520 gallons)

Trailer dimensions (see Attachment D-3)
45' length & 94" wide
Unit has a 12" internal containment wall
(Note: for maximum displacement volume containers on vehicle are assumed to be drums)

Dock dimensions:
52 feet long x 16 ½ " depth from beginning of slope x 21'-6" width
For a horizontal length of 52 feet there is a vertical drop of 1.375 feet. The slope is visible in the pictures presented in Attachment A-3. The slope of the dock can be calculated by using geometry.

Tan (angle) = opposite / adjacent = 1.375 / 52 = 0.02644
angle = $\tan^{-1}$ (0.02644) = 1.51^0

Impact of slope on containment volume
It is necessary to determine if the slope limits the containment of the trailer. Again geometry is used to calculate the rise for the length of the trailer.

sin (1.51)	=	x / 45'
0.026 x 45'	=	x
x	=	1.18'

This calculation denotes that for a length of 45', the rise would be 1.008 feet. The trailer has a containment wall of 1', therefore the containment capacity is not reduced due to the height of the containment wall.

Volume contained by trailer
½ x 45' length x 1' deep x 7.833' wide x 7.48 gal/ft^3 = 1,318.4 gallons

Volume displaced by containers
NOTE: containers are also within the slope of the dock area and therefore the displacement volume, when averaged, is ½ of the displacement volume if it was on a level surface (60 drums / truck).

½ x 64 drums x 1' x 1' x 3.1415 x 7.48 = 752 gallons

Remaining volume
1,318.4 - 752gallons = 566 gallons

∴ Secondary Containment Capacity is met = 16.1 % of total volume (3,520gallons)
= 97 % of largest container (550 gallons)

ATTACHMENT D-8

SCHEDULE OF INSTALLATION

ATTACHMENT D-8
SCHEDULE OF INSTALLATION
EATON AVE.

ACTIVITY	MONTHS											
	1	2	3	4	5	6	7	8	9	10	11	12
Start Date (TBD)												
Move waste from storage area and prep floor												
Build forms for diking and pour concrete												
Curing of concrete & removal of forms												
Application of joint sealers and coating												

RECEIVED

APR 1 0 2000

Waste Management
Division

SECTION E

ENVIRONMENTAL MONITORING

SECTION E
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SECTION E

ENVIRONMENTAL MONITORING

This section of the operating license application provides a hydrogeologic report pertaining to the Detrex Corporation facility in Detroit, Michigan as required by Michigan Act 451 Rule 299.9506(1) and (2). This section also provides a justification for waiver for a groundwater monitoring program and for an annual soil monitoring program pursuant to Rule 299.9611(3) and Rule 299.9611(4), respectively.

It should be noted that this section has been reproduced from the previous submission dated June 24, 1991, with minor modifications to it to accommodate the changes to the operations at the Facility.

E-1 HYDROGEOLOGIC REPORT
[Rule299.9506]

A hydrogeologic investigation was conducted at the Detrex Corporation Facility in Detroit, Michigan. A hydrogeologic report which details the field activities of the investigation and summarizes all the data collected is presented in Attachment E-1. Attachment E-2 provides a Plan of Survey completed and certified by Warner Cantrell & Padmos, Inc. The location of the monitoring well and boreholes are shown. The Facility Plan presented in Attachment E-3 locates all hazardous waste management units. In addition to the hydrogeologic report presented in Attachment E-1, the following information is presented to satisfy the requirements of Rule 299.9506(1).

E-1a Interim Status Period Groundwater Monitoring
[Rule299.9506(1)(a)]

No interim status groundwater monitoring was required for the hazardous waste container and tank storage areas

E-1b Identification of Uppermost Aquifer [Rule299.9506(1)(b)]

As discussed in the engineering report presented in Attachment E-1, the uppermost aquifer beneath the Facility property was located at approximately 100 feet below ground surface (557 feet AMSL). The uppermost aquifer consisted of a confined, unconsolidated, sand aquifer with a hydraulic conductivity of approximately 1×10^{-3} cm/sec. The aquifer is overlain by approximately 100 feet of unsaturated lacustrine silty clay/clayey silt with a hydraulic conductivity of less than 1×10^{-7} cm/sec.

As discussed in Section 1.0 of the engineering report presented in Attachment E-1, it was agreed with the MDNR, prior to and during the hydrogeologic investigation field activities, that due to the hydrogeologic conditions at the Site, only one borehole would be required to be advanced to the underlying aquifer and instrumented as a monitoring well. As such groundwater flow direction and rate were not determined during the hydrogeologic investigation. Groundwater flow in the confined aquifer, however, is assumed to be east-southeast towards Lake St. Clair.

E-1c Identification of Aquifers Utilized
[Rule299.9506(1)(c) and (f)]

A well survey was conducted by McDowell and Associates of Ferndale, Michigan. There are no available records of any domestic, municipal, industrial, oil and gas wells and soil borings within a one-mile radius of the Site on record with the MDNR.

As discussed in Section J-2 of this operating license application, the City of Detroit covers much of Wayne County. Detroit derives its water from surface sources. As such, very little groundwater is exploited in Wayne County. Of the 42 communities in Wayne County, 38 of these communities purchased water from another community, and four of these communities were supplied by surface water (EPA, 1981).[1] No community in the County reported the use of groundwater as a municipal supply source. Within five miles of the Site, no major water course or water body exists.

E-1d Other Aquifers [Rule 299.9506(d)]

As discussed in Section K-2 of this operating license application, material in Wayne County consists primarily of silts and clays with the occasional glacial moraine deposits. This thick layer of lacustrine material mantles a bedrock of sandstones, limestones, shales and dolomites. The downward sequence of the various bedrock formations beneath Wayne County includes the following:

Mississippian

Coldwater Shale - This unit exists at the northwest corner of Wayne County. The unit outcrops and subcrops in this area. The unit generally has low permeability.

Devonian

Berea Sandstone - This moderately fine grained sandstone can be 100 feet in thickness in spots.

Traverse Group - This alternating sequence of shales and limestones outcrops in the central portions of Wayne County.

Dundee Limestone - This unit is a fossiliferous limestone with high permeability.

Detroit River Group - This group includes sandstones, limestones and dolomite.

Sylvania Sandstone - This unit outcrops in the southeast reaches of Michigan.

Silurian

Bass Leland Group - This group is composed of fine grained dolomites.

Of the formations listed above, the following formations are reported to be used as a water supply source in Wayne County: Berea Sandstone, Traverse Group, Dundee Limestone, Detroit River Group, and the Sylvania Sandstone.

---

(1) "Hydrogeology for Underground Injection Control in Michigan: Part 1, 1981" USEPA.

Several injection wells are located within Wayne County. Six Class I injection wells are used to inject industrial, nuclear or municipal wastes beneath the deepest stratum containing an underground drinking water source. Eight injection wells used for injecting fluids for solution mining, oil shale gasification or geothermal energy recovery are also reported for Wayne County. Thirty wells are reported to be used for Liquefied Petroleum Gas storage. No brine injection wells are recorded in Wayne County.

As discussed in Section E-1c, no community reported the use of groundwater as a municipal supply source. A number of non-community sources outside the Detroit City limits however have been recorded. T hose geologic units capable of supplying water are summarized above. The table below summarizes the information as provided by the EPA (1981). [1]

Aquifer System	*# of Wells*	*Depth (ft)*	*Capacity (gpm)*
Glacial Drift Aquifer	15	62 - 122	13 - 4,000
Berea Sandstone	2	207 - 234	5 - 30
Traverse Group	1	126	100
Dundee Limestone	1	183	110
Detroit River Group	5	28 - 102	15 - 41
Sylvania Sandstone	2	66 - 135	50 - 300
Silurian-Devonian	1	475	40

The water quality from the bedrock aquifers is normally good. Water which is extracted from greater depths tends to have higher sulfate concentrations due to the presence of gypsum at depth. Limestone bedrock aquifers also tend to have increases in total dissolved solids. In general, however, natural groundwaters in Wayne County have inorganic concentration measurements below EPA established guidelines.

E-1e Hazardous Waste Management Area [Rule 299.9506(1)(e)]

The hazardous waste container storage area, the drum loading/unloading area and product drum storage area are located on the figure presented as Attachment E-3. As well, the Transfer Facility operated outside on the northeast corner of the building is shown. As is discussed subsequently in Section E-2, Detrex Corporation requests a waiver from groundwater monitoring. Therefore, the point of compliance, as defined under the provisions of 40 CFR § 264 95, and the location of groundwater monitoring wells as required under the provisions of 40 CFR § 264.97 are not applicable. The information, to the extent possible, required under the provisions of 40 CFR § 270.14(c)(2) was presented and discussed in Section E-1(b).

E-1f Contaminant Plume Description
[Rule 299.9506(g)]

As stated in Section E-1(a) no interim status groundwater monitoring was required for the hazardous waste container and tank storage areas.

E-2 GROUNDWATER MONITORING PROGRAM WAIVER
[Rule 299.9611(3)]

Detrex Corporation requests a waiver from the Director pursuant to Rule 299.9611(3) from the requirement under Rule 299.9611(2)(a) for a detection monitoring program which meets the requirements of Rule 299.9612 and the provisions of 40 CFR § 264.98.

As discussed in Section D-1, the hazardous waste container storage area, for which this operating license is being applied for, are located inside a totally enclosed building. The building provides protection from precipitation and run-on into the secondary containment system. The building floor, which encompasses the entire Facility, is constructed of concrete with peripheral concrete curbing to provide secondary containment. All doorways are diked with concrete ramps. The peripheral concrete curbing is coated with a coating which is impervious to the wastes to be stored in the area. There are no floor drains or other such openings in the secondary containment area.

All existing expansion joints and any cracks, if identified, in the building floor will be cleaned out and saw cut if necessary to provide a clean opening. Subsequently, all expansion joints and any cracks will be filled with a compatible chemically resistant flexjoint sealant. The selected sealant will be installed in accordance with the manufacturer's specifications. The concrete slab and perimeter diking, with sealed joints, will serve as an impervious containment structure, thus eliminating the potential for the release of spilled liquids from within the Facility.

The Facility no longer accepts the shipment of wastes via tanker trucks.

In summary, the management of the hazardous wastes container storage area, limits the impact of potential spills to a properly designed and maintained secondary containment system within the building. A program to ensure secondary containment of the loading/unloading area is being conducted. No ignitable, reactive or incompatible wastes are stored within the same storage area within the Facility. The outdoor Transfer Facility which is operated at the Facility is permitted to receive flammable and other categories of wastes, however it is operated independently of the TSDF operation and the secondary containment systems do not overlap, preventing a potential mixing of different wastes

In the unlikely event of a release of hazardous waste, clean-up procedures as detailed in the Contingency Plan (see Section G) and presented below would be immediately implemented.

a) Clean-up of released waste: The waste will be collected via use of absorbent material for small spills. The contaminated material will then be placed in open-top steel drums and transported off site for treatment/disposal at permitted facilities. For large spills, the waste will be collected with a pump and placed into steel drums or a tank truck if large enough in nature. The balance shall be cleaned up with absorbent material as stated above.

b) Decontamination: Following cleanup with absorbent material, the affected area of the secondary containment area will be swept and all sweepings will be drummed. The pad may be subsequently decontaminated by steam cleaning. Any wash waters generated will be collected in drums and transported off site for treatment/disposal at permitted facilities.

c) Cleanup of Contamination Soil: Should the spill or release occur outside the secondary containment area (i.e. external to the building or loading/unloading area), cleanup will be accomplished by a firm specializing in such procedures. All visually contaminated soils, where practical (i.e., excavations may be restricted by building foundations), will be excavated and disposed of as appropriate, at a permitted hazardous waste facility.

The potential for a release to soil, discussed above, will be effectively eliminated by the provisions of secondary containment for the loading/unloading area. Nevertheless, as discussed in Section E-1b and in the hydrogeologic report presented in Attachment E-1, the uppermost aquifer beneath the Facility property is located at approximately 100 feet below ground surface (557 feet AMSL). The uppermost aquifer is overlain by approximately 100 feet of unsaturated lacustrine silty clay/clayey silt with a hydraulic conductivity of less than 1×10^{-7} cm/sec. There is approximately three to four feet of sand and gravel fill and native material overlying the clay. There were no perched zones noted in or above the clay. There were no fractures noted in the clay and the average moisture content of the clay being at 15 percent, would preclude the potential of fractures with the exception of desiccation cracks at the upper clay surface, during dry months.

Therefore, it can be concluded that, in the extremely unlikely event of a spill or release occur to the soils underlying or surrounding the secondary containment area, the 100 feet of low permeability clay would mitigate the release of any hazardous constituents to the uppermost aquifer. The solvents stored at the Facility include those materials stored in Attachment E-4. For these compounds to enter the clay, they must overcome the capillary or breakthrough pressure that would exist at the compound-clay interface. Clay has historically been shown to provide a barrier to the downward migration of non-aqueous phase liquids. Moreover, any aqueous phase contaminant that may result from dissolution processes, will be taken up as part of the porous medium through adsorption. This process of adsorption in conjunction with the unsaturated nature of the clay, will severely retard the migration of the aqueous phase contaminant.

E-3 ANNUAL SOIL MONITORING PROGRAM WAIVER

Detrex Corporation requests a waiver from the Director pursuant to Rule 299.9611(4) from the requirement under Rule 299.9611(2)(c) for an annual soil monitoring program.

Hazardous waste handling, associated with the container storage area that is conducted outside the totally enclosed building structure, is the unloading of drummed waste. Wastes are delivered to the Facility by truck in DOT approved containers. The truck backs up to the loading dock along the east side of the building (see Attachment E-3). Waste drums are transferred with a forklift from the truck directly to the container storage area.

The Facility no longer accepts the shipment of wastes via tanker trucks. Therefore there is no chance of any release of hazardous wastes from storage tanks.

A concrete pad directly underlies the loading/unloading area where the truck sits during the unloading operation. Peripheral drive-over concrete curbing is installed around the concrete pad. All expansion joints and any existing cracks in the concrete pad have been cleaned out and saw cut if necessary to provide a clean opening. Subsequently, all expansion joints and any cracks have been filled with a compatible chemically resistant flexjoint sealant. The selected sealant has been installed in accordance with the manufacturer's specifications. The concrete pad and peripheral concrete curbing, with sealed joints, provide control against the contact of any potentially spilled liquids with the surrounding ground surface. A certification from Robert Davis on the installation of the concrete curbing is found in Attachment E-5.

To date there have been no recorded spills of hazardous waste on the unloading area or surrounding soils.

Absorbent material is currently present and will continue to remain present to collect spillage from the concrete pad if it should occur during any hazardous waste transfer operations.

In addition, all unloading operations are conducted under the supervision of Detrex personnel. The area is inspected at the conclusion of unloading operations to ensure no spillage has occurred.

ATTACHMENT E-1

HYDROGEOLOGIC REPORT

DETREX CORPORATION
EATON AVENUE FACILITY
DETROIT, MICHIGAN

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1.0 INTRODUCTION

In April, 1989, Conestoga-Rovers and Associates (CRA), on behalf of Detrex Corporation (Detrex), conducted a hydrogeological investigation for the facility located at 12886 Eaton Avenue in Detroit, Michigan. Figure 1.1 locates the facility and Figure 1.2 presents a facility plan.

In August, 1988, CRA submitted, on the behalf of Detrex, an Act 64 Operating License Application for the facility to the Michigan Department of Natural Resources (MDNR). In December, 1988, the MDNR completed a review of the operating license application and determined that a hydrogeologic report was necessary.

The requirements of the hydrogeologic investigation are specified in Act 64, Rule 229.9506(1) and (2). During a meeting with the MDNR on March 27, 1989, it was agreed that due to the size of the facility (approximately 1 acre), three soil borings would be adequate to define soil conditions at the facility. It was also discussed and agreed to by the MDNR that due to the hydrogeologic conditions expected at the facility (extensive clay deposits extending to depth, only one borehole would be advanced to the underlying aquifer and instrumented as a monitoring well. The other two borings would only be required to be completed to a minimum depth of 30 feet and subsequently backfilled with cement/bentonite grout. The above conditions, were in fact encountered at the facility, and during the active drilling program, communication with the MDNR (via telephone conversations) confirmed the requirements of the hydrogeologic investigation field activities.

1.1 OBJECTIVES

The objectives of the hydrogeologic investigation were as follows:

1. identify the uppermost aquifer beneath the facility property; and

2. define soil and groundwater conditions beneath the facility which includes the geotechnical and hydraulic properties of the subsurface geology.

This report presents all pertinent information required under Act 64, Rule 299,9506(1) and discusses the field activities and results of the hydrogeological investigation pursuant to Act 64, Rule 299.9506(2).

2.0 FIELD ACTIVITIES

During the week of April 3, 1989, CRA conducted a hydrogeologic investigation. The investigation involved the installation of one monitoring well and two soil borings to characterize the geology and hydrogeology at the facility. Drilling was performed by McDowell and Associates, Ferndale, Michigan using a CME 55 drill rig.

The following sections of this report describe the field activities conducted during the investigation. In general, all field activities were done in accordance with CRA's Work Plan dated March 1989.

2.1 MONITORING WELL INSTALLATION

One monitoring well (BH-MW1-89) was installed east of the building to define the uppermost aquifer and groundwater elevation. Figure 1.2 locates the monitoring well.

The borehole was advanced using 4 1/4 inch I.D. hollow stem augers to a depth of 60 feet below the ground surface. At this depth, augering became inefficient due to the clay rich sediment. The drilling method was then switched to mud rotary using a 3 7/8 inch tricone drilling bit.

Continuous soil samples were collected for subsequent geotechnical analysis from ground surface to 30 feet below grade with prec-leaned, 2-inch diameter stainless steel split spoons. Soil samples were then collected at five foot intervals until the uppermost aquifer was encountered at a depth of 99 feet below the ground surface. Two shelby tubes were also collected from this borehole for vertical permeability analysis at depths of 30 to 32 feet and 54 to 56 feet below grade. Perched groundwater was not encountered during drilling.

Upon completion of the borehole, a monitoring well was installed approximately 12 feet into the sand aquifer at a depth of 111 feet below the ground surface. The well was constructed of 10 feet, 0.010 inch slotted, schedule 80, 2-inch diameter flush threaded PVC, joined to 2-inch diameter schedule 80 flush threaded PVC riser pipe A sand pack of quartz sand (No. 20) was placed around and 20 feet above the well screen. A 5-foot bentonite pellet seal was placed over the sand pack. The remaining annulus was tremie grouted to surface with a bentonite/cement grout. The well was completed below grade with a lockable cap and a flush mounted protective casing

A Stratigraphic and instrumentation log for BH-MW1-89 is provided in Appendix A.

2.2 SOIL BORING INVESTIGATION

Two soil borings (BH2-89 and BH3-89) were performed south and west of the building, respectively. Figure 1.2 locates the borings. The boreholes were advanced using 4 1/4-inch hollow stem augers. Continuous soil samples were collected using pre-cleaned stainless steel spoons to a depth of 30 feet below grade with one additional soil sample collected at 35 feet below grade. During the soil boring investigation perched groundwater was not encountered. Selected soil samples were submitted for moisture content, grain size distribution and Atterberg limits analysis.

Upon completion of the boreholes, the boreholes were backfilled to ground surface with bentonite/cement grout.

Stratigraphic logs for BH2-89 and BH3-89 are presented in Appendix A.

2.3 GEOTECHNICAL ANALYSIS

Soil samples were collected for moisture content, grain size distribution, Atterberg limits and permeability analysis. The analyses were performed by McDowell and Associates.

Table 2.1 lists the samples collected, their location, depth and analyses performed. The resulting lab reports are presented in Appendix B.

2.4 EQUIPMENT CLEANING

Prior to drilling and between boreholes the drill rig, augers, drill rods and associated equipment were cleaned with a high pressure-low volume hot water wash.

The split spoons and monitoring well screen and riser pipe were cleaned further with an isopropanol and distilled water rinse.

2.5 WELL DEVELOPMENT

Monitoring well BH-MW1-89 was developed and stabilized using a "Geoguard" oil-less air lift bladder pump. Approximately 58 gallons were removed in an attempt to bring the well to a silt free condition. After 52 gallons were removed, the evacuated

water was measured for pH and conductivity until three consecutive and consistent readings were obtained.

A well development summary is presented on Table 2.2.

2.6 HYDRAULIC RESPONSE TESTING

After well development, a single well response test was performed on BH-MW1-89 to determine hydraulic conductivity of the aquifer at the well screen. A falling head response test was performed by introducing a pre-cleaned (isopropanol and distilled water rinse) PVC rod into the well. Water level response was measured using a electric water level tape.

The data were analyzed by the method described in Hvorslev, 1951. The data and subsequent graph are presented in Appendix C.

2.7 GROUND SURVEY

Upon completion of the hydrogeologic investigation the monitoring well and two boreholes were surveyed by Warner, Cantrell and Padmos, Inc. of Farmington Hills, Michigan on April 10, 1989. Ground elevations and top of well casing elevation were measured and corrected to U.S.G.S. datum. The U.S.G.S. datum elevations are presented on the Stratigraphic and instrumentation logs.

3.0 RESULTS

3.1 GEOLOGY

The Detrex facility is located in an area of low topographic relief which is defined as a lacustrine plain deposit. The facility appears to be within the lacustrine plain based on the grain size distribution of the subsurface sediments (Appendix B).

The facility is underlain with approximately 100 feet of lacustrine silty clay/clayey silt. The lacustrine sediment can be described as brown to gray, hard to stiff silty-clay with little sand and a trace of gravel. The upper four feet of sediment is poorly graded sand/silty sand fill.

Table 3.1 presents the moisture content of samples collected from BH-MW1-89, BH2-89 and BH3-89. The moisture content of 31 sediment samples ranges from 27% to 4% with a mean of 15%.

Four lacustrine sediment samples were analyzed to determine the Liquid and Plastic Limits, and Plasticity Index. The results are presented on Table 3.2. Based on the results of the Atterberg limits test, the lacustrine sediment is classified as an inorganic silty clay to clayey silt with slight to low plasticity.

The lacustrine sediment is underlain by a glacio-fluvial deposit of poorly graded sand/silty sand of an undetermined thickness. The sand has a moisture content of 12% to 13% (Table 3.1). Atterberg limits were not performed on the sand sediment.

3.2 HYDROGEOLOGY

The uppermost aquifer encountered beneath the facility is the unconsolidated sand aquifer which was encountered at an elevation of approximately 557 feet AMSL. The sand aquifer is classified as a confined aquifer with the lacustrine sediment acting as the confining layer. The groundwater potentiometric surface is at an elevation of approximately 605.18-feet AMSL. Therefore, the potentiometric surface of the sand aquifer is approximately 47-feet higher than the clay/sand boundary.

The hydraulic conductivity of the sand aquifer at the well screen was determined, by the single well response test, to be approximately 1×10^{-3} cm/sec. (Appendix C).

Groundwater flow direction was not determined during this investigation since only one well was installed. However, it is reasonable to assume that the regional groundwater flow is east-southeast towards Lake St. Clair.

The vertical permeability of the lacustrine sediment was determined by a constant head permeameter test. Two tests were performed on samples collected at depths of 30-32 and 54-56 feet below the ground surface in BH-MW1-89. Based on the these tests the vertical permeability of the lacustrine sediment ranges from 5.0×10^{-7} cm/sec to 2.6×10^{-8} cm/sec (Appendix B).

4.0 CONCLUSIONS

Based on the hydrogeologic investigation, the following conclusions are presented:

1) The facility is underlain with approximately 100 feet of lacustrine silty clay/clayey silt with a vertical hydraulic conductivity of less than 1×10^{-7} cm/sec.

2) The uppermost aquifer beneath the site is a confined, unconsolidated, sand aquifer, which was encountered at approximately 100 feet below ground surface (557 feet AMSL). The hydraulic conductivity of the uppermost aquifer is approximately 1×10^{-3} cm/sec.

figure 1.1
SITE LOCATION
Detrex Corporation
Eaton Avenue Facility, Detroit

2471-28/07/88-1-D-1

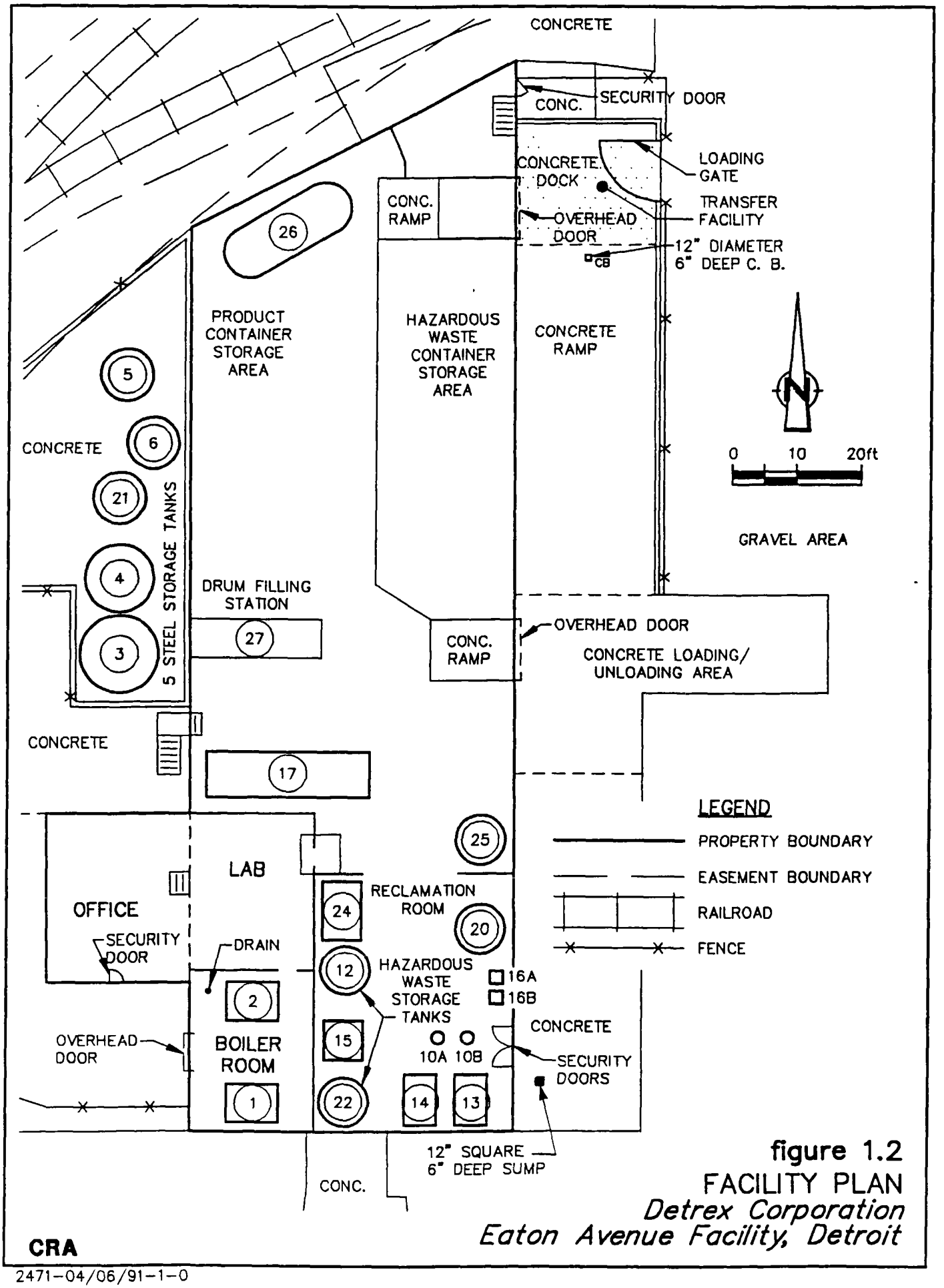


figure 1.2
FACILITY PLAN
Detrex Corporation
Eaton Avenue Facility, Detroit

CRA

2471-04/06/91-1-0

TABLE 2.1

GEOTECHNICAL SOIL SAMPLING SUMMARY
EATON AVENUE FACILITY, DETROIT, MICHIGAN

Location	*Depth (ft.bgs)*	*Analysis*
BH-MW1-89	2-4	Moisture Content
	6-8	Moisture Content
	10-12	Moisture Content
	14-16	Moisture Content
	18-20	Moisture Content
	22-24	Moisture Content
	26-28	Moisture Content
	30-32	Permeability, Grain-Size Distribution, Atterburg Limits and Moisture Content
	39-41	Moisture Content
	49-51	Moisture Content
	54-56	Permeability, Grain-Size Distribution, Atterburg Limits and Moisture Content
	59-61	Moisture Content
	69-71	Moisture Content
	79-81	Moisture Content
	89-91	Moisture Content
	99-101	Moisture Content
	109-111	Grain-Size Distribution
BH2-89	2-4	Moisture Content; Grain-Size Distribution
	6-8	Moisture Content
	10-12	Moisture Content
	14-16	Moisture Content
	18-20	Moisture Content
	22-24	Moisture Content; Atterberg Limits
	26-28	Moisture Content
	34-36	Moisture Content; Grain-Size Distribution
	22-24	Moisture Content; Atterberg Limits
	26-28	Moisture Content
	34-36	Moisture Content; Grain-Size
BH3-89	2-4	Moisture Content
	6-8	Moisture Content
	10-12	Moisture Content
	14-16	Moisture Content
	18-20	Moisture Content
	22-24	Moisture Content; Atterberg Limits
	26-28	Moisture Content
	34-36	Moisture Content; Grain-Size Distribution

Notes:

Moisture Content according to ASTM D 422-63
Permeability according to ASTM D2434-68
Grain-Size Distribution according to ASTM D422-63
Atterberg Limits according to ASTM D423-66 and ASTM D424-59

TABLE 2.2

WELL DEVELOPMENT SUMMARY
EATON AVENUE FACILITY, DETROIT, MICHIGAN

Well	*Gallons Removed*	*pH*	*Conductivity (µhmos)*	*Clarity*
BH-MW1	52	9.4	600	silty
	53	9.1	500	silty
	55	9.0	500	silty
	56	8.9	500	silty
	57	8.9	500	cloudy
	58	8.9	500	slightly cloudy

TABLE 3.1

MOISTURE CONTENT SUMMARY
EATON AVENUE FACILITY, DETROIT, MICHIGAN

Location	*Depth (ft. bgs.)*	*Moisture %*
BH-MW1	2-4	27.0
	6-8	14.0
	10-12	13.0
	14-16	14.0
	18-20	14.0
	22-24	15.0
	26-28	15
	30-32	12
	39-41	13
	49-51	15
	54-56	10
	59-61	23
	69-71	12
	79-81	14
	89-91	4
	99-101	13
	109-111	12
BH2	2-4	16
	6-8	14
	10-12	13
	14-16	14
	18-20	14
	22-24	14
	26-28	15
	34-36	15
BH3	2-4	17
	6-8	12
	10-12	13
	14-16	13
	18-20	14
	22-24	13
	26-28	12
	34-36	12

TABLE 3.2

ATTERBERG LIMITS SUMMARY
EATON AVENUE FACILITY, DETROIT, MICHIGAN

Location	*Depth (ft. bgs)*	*Liquid Limit*	*Plastic Limit*	*Plasticity Index*
BH-MW1	30-22	23.2	14.8	8.4
MW1	54-56	23.4	14.6	8.8
BH2	22-24	23.5	12.7	10.8
BH3	22-24	24.0	12.8	11.2

APPENDIX A

STRATIGRAPHIC AND INSTRUMENTATION LOGS

STRATIGRAPHIC AND INSTRUMENTATION LOG
(OVERBURDEN)

(L-1)

PROJECT NAME: ~~COLDSHIELD~~ – DETROIT

PROJECT NO.: 2471

CLIENT: DETREX CORPORATION

LOCATION: EAST SIDE OF BUILDING

HOLE DESIGNATION: BH–MW1–89 (Page 1 of 2)

DATE COMPLETED: APRIL 5, 1989

DRILLING METHOD: 4–1/4" ID HSA/ 3–7/8" MR

CRA SUPERVISOR: B. SANDBERG

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEVATION ft AMSL	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE STATE	SAMPLE 'N' VALUE
	GROUND SURFACE	656.3				
	REFERENCE ELEVATION (Top of Riser)	656.09	ROAD BOX	1SS		18
	Dark gray sand and gravel with some clay, wet, FILL	653.3		2SS		20
5.0	SM (SAND), fine grained, silty, trace clay, dry to moist	651.3	CEMENT/ BENTONITE GROUT	3SS		20
	CL (CLAY), little silt, trace gravel, mottled blue–brown, stiff, dry			4SS		41
10.0	Moist		8.0"ø BOREHOLE	5SS		58
				6SS		78
	Little silt, trace sand and gravel, blue, moist			7SS		37
15.0				8SS		30
				9SS		23
20.0				10SS		23
				11SS		11
				12SS		31
25.0				13SS		27
			2"ø PVC PIPE	14SS		25
30.0	Collected Shelby tube			15SS		26
				1ST		
35.0				16SS		28
40.0				17SS		31
45.0				18SS		31
50.0		605.2		19SS		38
	Collected Shelby tube					
55.0				2ST		
60.0		596.3		20SS		16
65.0	CL (CLAY), trace sand and gravel, gray, stiff, moist		4.0"ø BOREHOLE	21SS		17
				22SS		23

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

GRAIN SIZE ANALYSIS ◯ WATER FOUND ▽ STATIC WATER LEVEL ▼

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(L-1)

PROJECT NAME: ~~GOLDSHIELD~~ – DETROIT
PROJECT NO.: 2471
CLIENT: DETREX CORPORATION
LOCATION: EAST SIDE OF BUILDING

HOLE DESIGNATION: BH–MW1–89 (Page 2 of 2)
DATE COMPLETED: APRIL 5, 1989
DRILLING METHOD: 4–1/4" ID HSA/ 3–7/8" MR
CRA SUPERVISOR: B. SANDBERG

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEVATION ft AMSL	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE STATE	SAMPLE 'N' VALUE
70.0	CL (CLAY), gray, soft, wet		CEMENT/ BENTONITE GROUT; 4.0"ø BOREHOLE	21SS		17
75.0				22SS		23
80.0			BENTONITE PELLET SEAL	23SS		20
85.0				24SS		24
90.0			SAND PACK	25SS		24
95.0				26SS		14
	6" gravel seam @ 558.3' AMSL			27SS		14
100.0	SM (SAND), fine to very fine grained, silty, trace gravel, gray, dense, wet	557.3		28SS		83
105.0			WELL SCREEN			
110.0				29SS		100
	END OF HOLE @ 111.0 FT. BGS	545.3				
115.0	NOTES: 1. Borehole advanced to 596.3 ft. AMSL using 4–1/4" ID hollow stem auger. 2. Drilling was advanced beyond this depth using 3–7/8" dia. Tricone bit.		SCREEN DETAILS: Screened Interval: 555.3' to 545.3' AMSL; Length – 10'; Diameter – 2"; Slot # – 10; Material – PVC; Sand Pack Interval: 575.3' to 545.3' AMSL; Material – Sand			
120.0						
125.0						
130.0						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

GRAIN SIZE ANALYSIS ◯ WATER FOUND ▽ STATIC WATER LEVEL ▼

STRATIGRAPHIC AND INSTRUMENTATION LOG
(OVERBURDEN)

(L-2)

PROJECT NAME: GOLDSHIELD – DETROIT
PROJECT NO.: 2471
CLIENT: DETREX CORPORATION
LOCATION: SOUTH SIDE OF BUILDING

HOLE DESIGNATION: BH2-89
DATE COMPLETED: APRIL 5, 1989
DRILLING METHOD: 4-1/4" ID HSA
CRA SUPERVISOR: B. SANDBERG

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEVATION ft AMSL	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE STATE	SAMPLE 'N' VALUE
	GROUND SURFACE	654.6				
	Sand, clay and gravel mixture, discolored, no odor		8.0ø BOREHOLE	1SS		14
3.0				2SS		8
	CL (CLAY), some silt, little gravel, mottled texture, brown-blue, stiff, damp	650.6	CEMENT/ BENTONITE GROUT	3SS		36
6.0	Brown			4SS		59
9.0				5SS		64
				6SS		67
12.0				7SS		44
	CL (CLAY), silty, trace gravel, gray-blue, moist, stiff					
15.0				8SS		33
				9SS		33
18.0				10SS		35
21.0				11SS		31
				12SS		42
24.0				13SS		27
27.0				14SS		29
				15SS		29
30.0						
33.0	Sandy					
				16SS		23
36.0	END OF HOLE @ 36.0 FT. BGS	618.6				
39.0						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

GRAIN SIZE ANALYSIS ◯ WATER FOUND ▽ STATIC WATER LEVEL ▼

STRATIGRAPHIC AND INSTRUMENTATION LOG
(OVERBURDEN)

(L-3)

PROJECT NAME: ~~GOLDSHIELD~~ – DETROIT
PROJECT NO.: 2471
CLIENT: DETREX CORPORATION
LOCATION: WEST SIDE OF BUILDING

HOLE DESIGNATION: BH3–89
DATE COMPLETED: APRIL 6, 1989
DRILLING METHOD: 4 1/4" ID HSA
CRA SUPERVISOR: B. SANDBERG

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEVATION ft AMSL	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE STATE	SAMPLE 'N' VALUE
	GROUND SURFACE	655.5				
	Six inch concrete driveway Sand, gravel, brick, discolored, organic odor, wet, FILL Sand and gravel mixture, black, wet		8.0"ø BOREHOLE	1SS 2SS		
3.0						
	CL (CLAY), some silt, trace sand and gravel, brown, moist	651.0	CEMENT/ BENTONITE GROUT	3SS		27
6.0				4SS		54
9.0				5SS		65
	Blue clay			6SS		82
12.0				7SS		53
15.0				8SS		42
				9SS		30
18.0				10SS		37
21.0	Some silt, little sand			11SS		27
				12SS		41
24.0				13SS		30
27.0				14SS		33
				15SS		33
30.0						
33.0						
36.0	END OF HOLE @ 36.0 FT. BGS	619.5		16SS		35
39.0						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

GRAIN SIZE ANALYSIS ◯ WATER FOUND ▽ STATIC WATER LEVEL ▼

APPENDIX B

LABORATORY DATA REPORTS

McDOWELL & ASSOCIATES
21355 Hatcher Avenue
Ferndale, Michigan 48220

Phone: (313) 399-2066
Fax: (313) 399-2157

Rec'd CRA
MAY

April 24, 1989

Conestoga-Rovers & Associates, Ltd.
651 Colby Drive Waterloo
Ontario, Canada N2V1C2

Job No. 89-171

Attention: Mr. Steve Crossman

Subject: Laboratory Test Data
Goldshield Solvents
Detroit, Michigan

Gentlemen:

In accordance with your request we have performed laboratory tests on the soil samples from the subject project. The results are shown on the attached Gradation Curves, summary sheet of Moisture Contents and summary sheet of Atterberg Limit Test Results. Permeability tests are in progress and results will be forwarded as soon as they are completed.

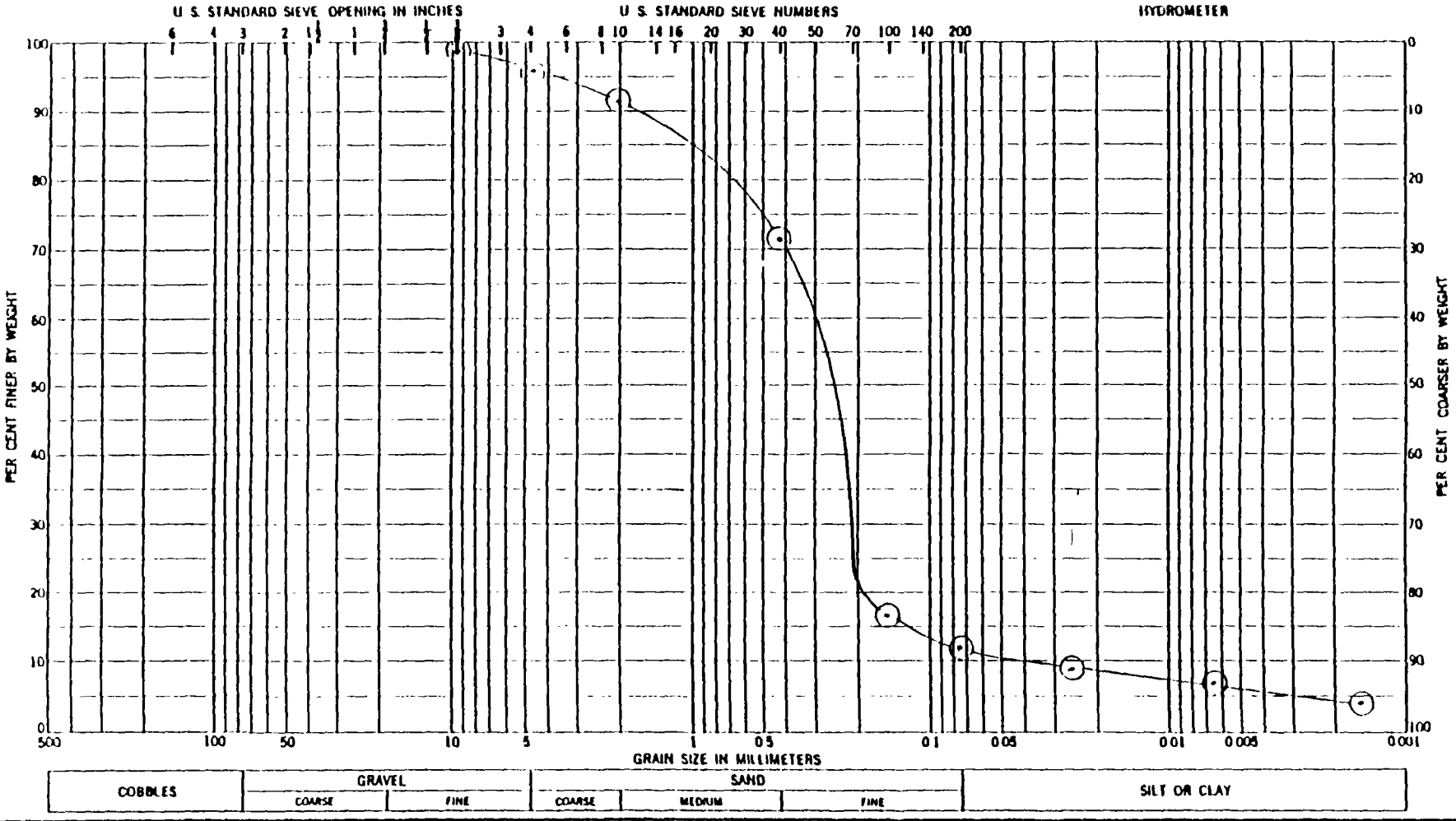
If you have any questions, or if we can be of further service, please feel free to call.

Very truly yours,

McDOWELL & ASSOCIATES

Jack F. Geerlings, P.E.

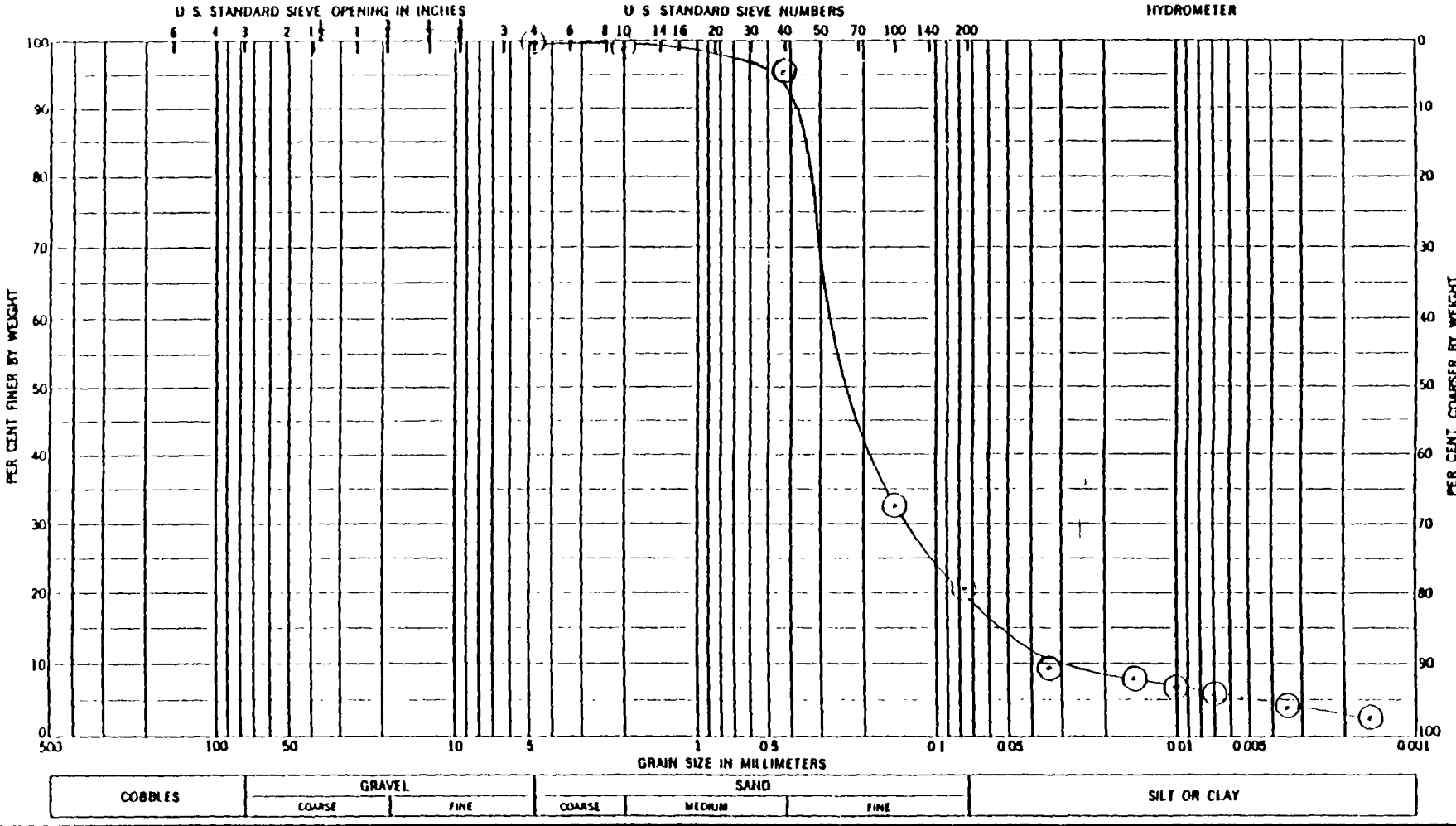
JFG:jc



Sample No.	Elev or Depth	Classification	Nat w %	LL	PL	PI
MW1-EE	110'	SM	12			

Goldshield Solvents
89-171

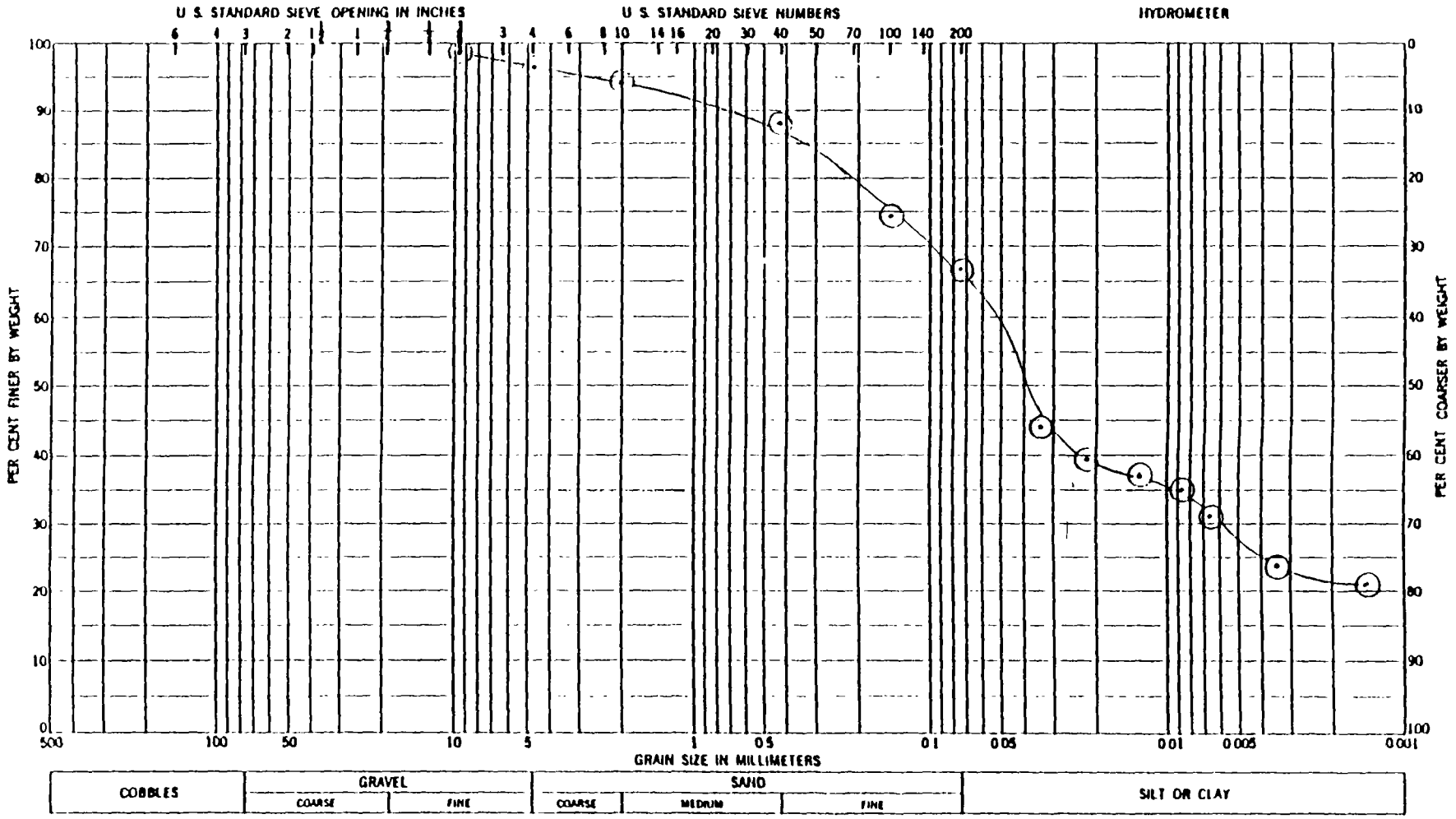
GRADATION CURVES



Sample No.	Elev or Depth	Classification	Nat w %	LL	PL	PI
BH-3B	3'	SP-SM	17			

Goldshield Solvents
89-171

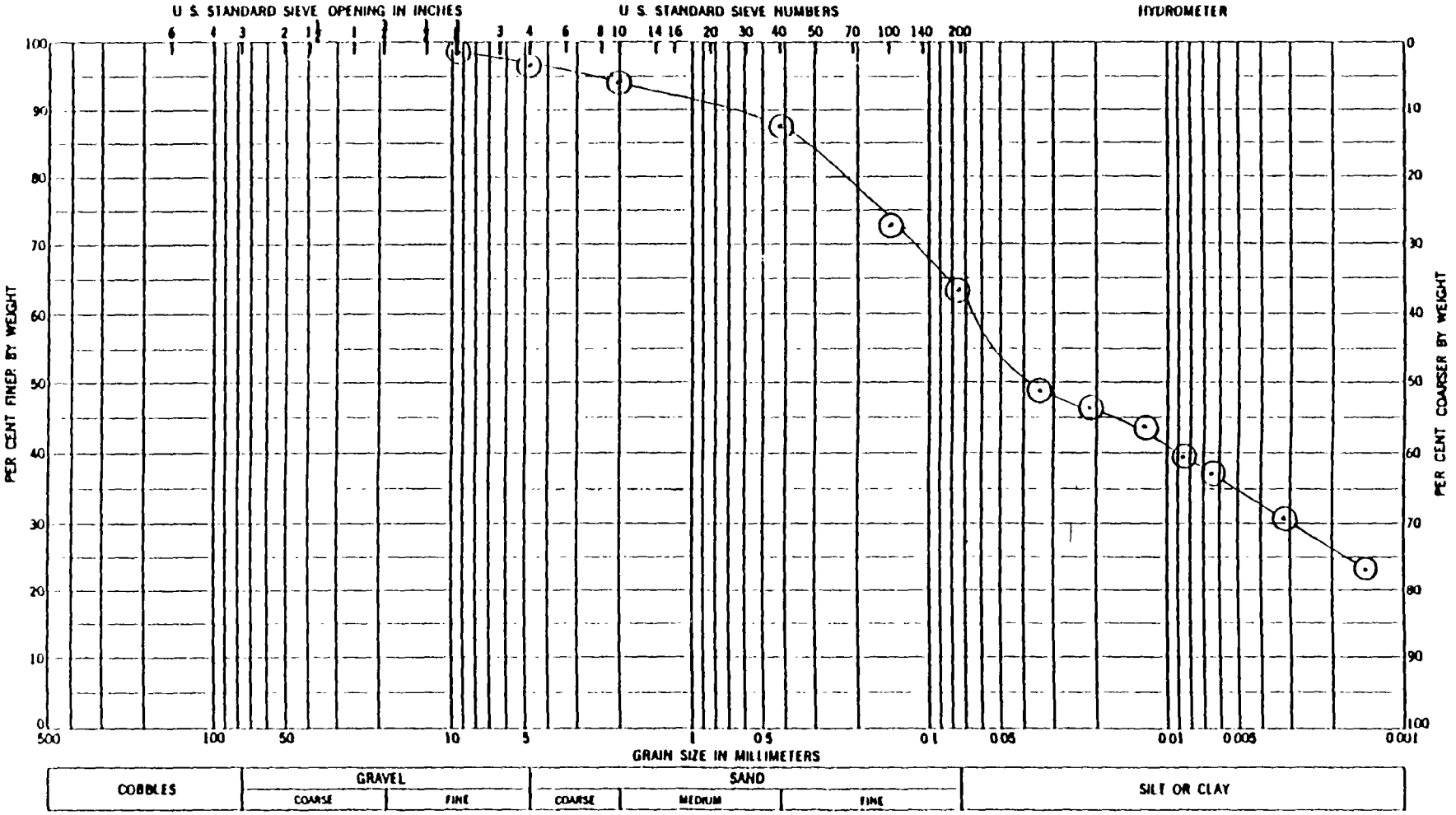
GRADATION CURVES



Sample No.	Elev or Depth	Classification	Nat w %	LL	PL	PI
BH-2P	35'	SM	15			

Goldshield Solvents
89-171

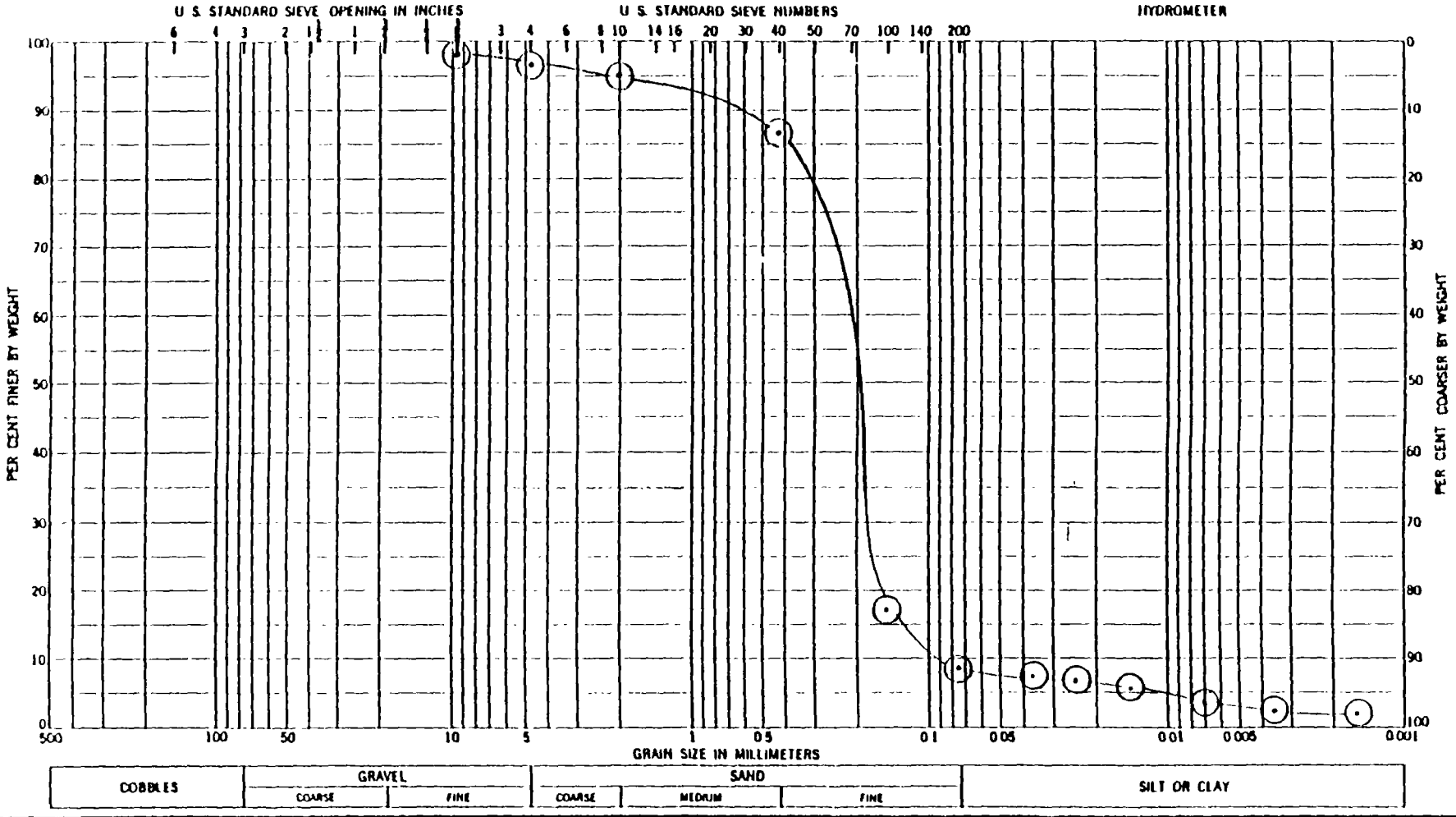
GRADATION CURVES



Sample No.	Elev or Depth	Classification	Nat w %	LL	PL	PI
BH-3P	35'	SM	12			

Goldshield Solvents
89-171

GRADATION CURVES



Sample No.	Elev or Depth	Classification	Nat w %	LL	PL	PI
2B	3'	SP-SM	16			

Goldshield Solvents
89-171

GRADATION CURVES

Job No. 89-171

MOISTURE CONTENTS

Sample No.	Depth	% Moisture
MW-1	B	27
	D	14
	F	13
	H	14
	J	14
	L	15
	N	15
	P	12
	R	13
	T	15
	U	10
	V	23
	X	23
	Z	24
	BB	4
	DD	13
	EE	12
BH-2	B	16
	D	14
	F	13
	H	14
	J	14
	L	14
	N	15
	P	15
BH-3	B	17
	D	12
	F	13
	H	13
	J	14
	L	13
	N	12
	P	12

JOB NO. 89-171

ATTERBERG LIMITS RESULTS

BORING/SAMPLE	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
MW1P	23.2	14.8	8.4
MW1U	23.4	14.6	8.8
BH2L	23.5	12.7	10.8
BH3L	24.0	12.8	11.2

McDOWELL & ASSOCIATES
21355 Hatcher Avenue
Ferndale, Michigan 48220
Phone: (313) 399-2066
Fax: (313) 399-2157

Rec'd CRA
MAY 5 1989

May 4, 1989

Conestoga-Rovers & Associates, Ltd.
651 Colby Drive
Waterloo, Ontario, Canada N2V1C2

Job No. 89-171

Attention: Mr. Steve Crossman

Subject: Water Well Record Survey and
Permeability Test Results
Goldshield Solvents
Detroit, Michigan

Gentlemen:

We have requested from the Michigan Department of Natural Resources all available well water records for the subject site area. They have only two (2) well records for the entire township T1S, R11E known as Greenfield Township. A copy of each well is attached herein for your use.

Triaxial Permeability Test Results are listed on the table below:

1P	5.0×10^{-7} cm/sec
1C	2.6×10^{-8} cm/sec

If you have any questions, or if we can be of any further service, please feel free to call.

Very truly yours,

McDOWELL & ASSOCIATES

Daniel A. Kaniarz, P.E.

DAK:jc

WAYNE COUNTY
INDUSTRIAL WATER SUPPLY

November 6, 1947

Mr. Andrew Mozola
5086 Talbot Avenue
Detroit 12, Michigan

Dear Andy:

I was sorry to miss you in Detroit, November 1. I was not armed with your telephone number and could not find the name in the directory or I would have telephoned you in the afternoon.

The well being drilled at the Parke, Davis and Company Warehouse, 3220 Bellevue Avenue, just south of Mack Avenue, is for cooling water, and they require 400 GPM. Their log so far is as follows:

Blue clay	14'	-	120'
Hardpan	123'	-	146'
Quicksand, almost dry	146'	-	151'
Hardpan	151'	-	156'
Water sand	156'	-	157'
Gray Traverse sand rock	157'	-	158'
Gray Traverse sand rock	158'	-	200'

This log appears very similar to the log of the well at the Stroh's Brewery on Gratiot Avenue, of which you have a copy. They do not care about the quality of the water, and I advised that they go down to the Sylvania at approximately 700 feet. They intend to case off the Monroe black water, and this will afford a sample of uncontaminated Sylvania water, which will be quite an addition to our knowledge. If you can drop in on them occasionally during the drilling, we shall appreciate it.

Very truly yours

GEOLOGICAL SURVEY DIVISION
John G. Rulison
Hydrogeologist

JGR:aos

Highland Park (Wayne County)

Ford Motor Company Well

Location: T. 1 S., R. 11 E., 48 feet south of north property line and 6 feet west of West Brush Street-line of Ford Motor Company, Woodward Avenue, Highland Park.

Elevation: About 633 feet above sea level.

Record by: R. A. Smith from samples furnished by W. H. Smith of Ford Motor Company

	Thickness (Feet)	Depth (Feet)
No record	230	230
Devonian:		
Traverse:		
Gray, soft, shale calcareous and fossiliferous between 270 and 280 feet	70	300
Hard gray limestone, some gray shale or "soapstone"	5	305
Hard gray crystalline limestone	5	310
Bell:		
Soft, calcareous, light gray shale or "soapstone", very smooth grained	40	350
Dundee:		
Hard, light gray, crystalline limestone. Sample 350 to 355 badly rusted	10	360
Hard, white to light gray and buff crystalline limestone with dark brown and black streaks and laminae of bituminous matter. Two to three per cent of pure white sand, grains very rounded in samples 470 to 475 feet.	115	475
Very hard, crystalline, light gray pyritic and sandy limestone. Many very small crystals of pyrite and 5% or more of pure white quartz sand with rounded grains of uniform size similar to Sylvania	5	480
Buff bituminous and white to light grayish buff limestone. Buff limestone is very sandy appearing, but contains very little sand. Crinoidal from 485 to 490 feet	10	490
Detroit River:		
Chiefly white, earthy looking dolomite, with fine laminae of pyritic and black bituminous matter. A little buff bituminous limestone apparently from Dundee above	5	495
Buff bituminous limestone and native sulphur	10	505
White, light gray, and buff bituminous limestone and native sulphur	5	510
Light gray dolomite	5	515
Light gray to buff dolomite	5	520
Light grayish buff to dark buff dolomite and dolomitic limestone	10	530
White and buff dolomite and dolomitic limestone	5	535
Hard buff granular dolomite and dolomitic limestone	5	540

(over)

	Thickness (Feet)	Depth (Feet)
Detroit River, continued		
Hard, light buff dolomite	15	555
Buff bituminous dolomite	15	170
White and light buff dolomite	5	575
Light buff and buff dolomite, and some black shale	5	580
Light buff dolomite, pure white anhydrite and gypsum	5	585
Light buff to buff dolomite and much pure white anhydrite	15	600
Dark buff dolomite	5	605
Light buff dolomite	5	610
Chiefly white dolomite, some light buff	10	620
Light gray, earthy looking dolomite	5	625
Buff crystalline dolomite	5	630
Light buff crystalline dolomite, sandy-about 5% of pure white quartz sand, grains rounded	15	645
White and very light buff dense grained dolomite	10	655
Light buff dolomite	5	660
Buff gray argillaceous dolomite with streaks and laminae of black bituminous shale	5	665
Light buff and white finely crystalline dolomite	15	680
Light buff dolomite and pure white anhydrite-25% anhydrite	10	690
Light grayish buff fine grained dolomite with black bituminous laminae	5	695
Very light gray grayish buff, and white dolomite	5	700
Buff dolomite with black bituminous streaks and soft white chalky limestone	5	705
Dark grayish buff dolomitic limestone	5	710
Grayish buff limestone. The limestone from about 705 to 730 feet may be the Anderdon beds	5	715
Buff limestone with much white chalky limestone	5	720
Light buff limestone	5	725
Light buff to buff limestone and dark buff bituminous dolomite	5	730
Dark gray dolomite and some light buff limestone	5	735
Sample from 735 to 745 missing-very probably dolomite	10	745
Grayish buff dolomite and considerable shaly white limestone	5	750
Grayish buff dolomite and dolomitic limestone	25	775
Buff gray dolomite	10	785
Sylvania:		
Pure white sandstone of uniform sized grains of white or colorless quartz. A little mixture of buff dolomite from above	5	790
Pure white sandstone-sample badly rusted from fragments of the drill	30	820
White dolomitic sandstone. 80% pure white quartz sand	5	825
Pure white sandstone	25	850
Pure white sandstone and gray sandy dolomite	5	855
Gray sandy dolomite-pure white rounded sand grains embedded in a dolomitic matrix	5	860

APPENDIX C

WELL RESPONSE TEST DATA

SINGLE WELL RESPONSE TEST

WELL NO:	MW-1	DATE:	04-06-89
JOB #:	2471	SLUG LT:	5 FT
CLIENT:	GOLD SHIELD,DET.	SCREEN LT:	10 FT
SWL:	50.91 b. T.O.C.	SCREEN DIA:	0.17 FT

FALLING TIME (SEC)	W/L	dH	LOG dH
0.00	50.91	1.00	0.00
12.00	50.00	0.73	-0.14
44.00	50.40	0.41	-0.39
88.00	50.60	0.25	-0.61
133.00	50.70	0.17	-0.77
200.00	50.80	0.09	-1.06
298.00	50.85	0.05	-1.32
420.00	50.90	0.01	-2.10

Regression Output:FALLING

Constant	0.00
Std Err of Y Est	0.14
Squared	0.95
No. of Observations	6.00
Degrees of Freedom	5.00

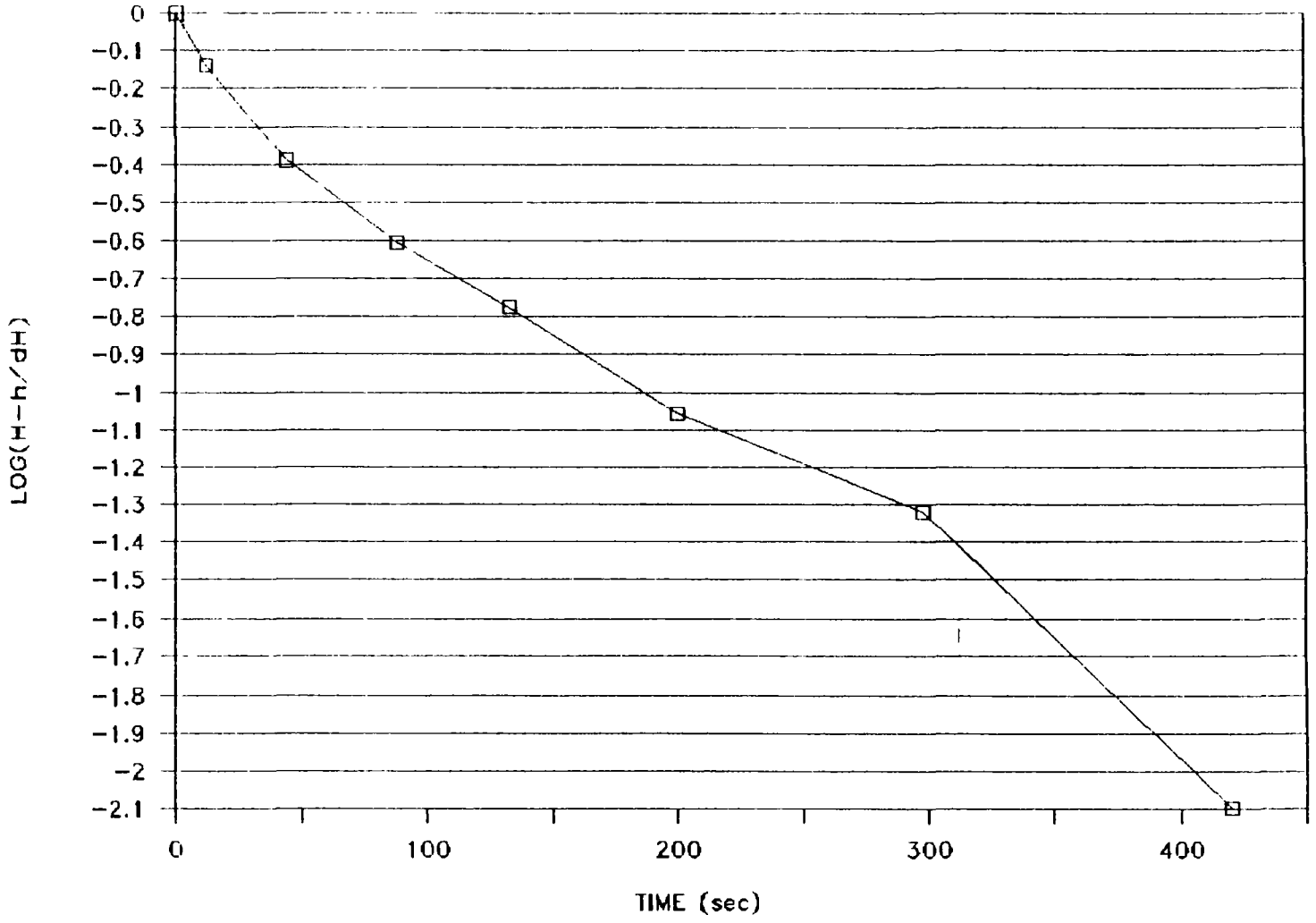
X Coefficient(s)	-0.00
Std Err of Coef.	0.00

HVORSLEV LAG TIME = 86.60

K= 9.94E-04 cm/sec

SINGLE WELL RESPONSE TEST FOR WELL MW-1

REF NO. 2471 (04/06/89) FALLING



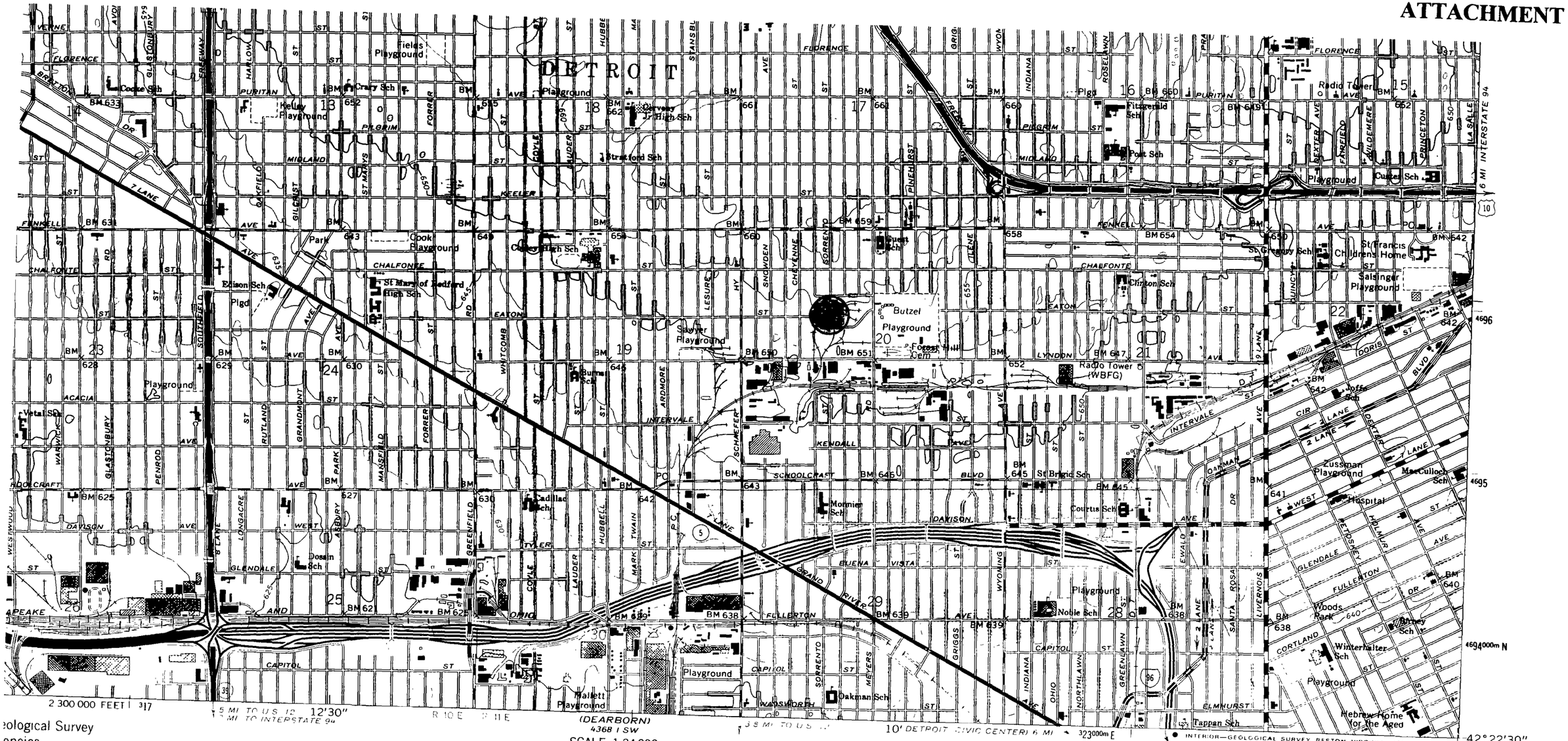
APPENDIX D

LIST OF HAZARDOUS WATSES

ATTACHMENT E-2

TOPOGRAPHIC MAP

ATTACHMENT



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MN
GN
5°
89 MILS
1°29'
26 MILS

SCALE 1 24 000

1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 KILOMETER

CONTOUR INTERVAL 5 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

INTERIOR—GEOLOGICAL SURVEY RESTON VIRGINIA—1981

(DETROIT)
4368 I SE

ROAD CLASSIFICATION

Primary highway, all weather, hard surface

Light-duty road, all weather, improved surface

Secondary highway, all weather, hard surface

Unimproved road, fair or dry weather

Interstate Route

U S Route

State Route

ATTACHMENT E-3

FACILITY PLAN

ATTACHMENT E-3
PROPOSED FACILITY LAYOUT

ID #	Equipment Name	Description
1.	Clayton Model E-100 Steam Generator	Out of service, slated for eventual removal
2.	Air Compressor	In use
3	20,000 gal. Carbon steel Tank	Storage tank for Trichloroethylene
4.	10,000 gal. Carbon Steel Tank	This tank is currently out of service
5.	4,500 gal. Carbon Steel Tank	This tank is currently out of service
6.	4,500 gal. Carbon Steel Tank	Storage tank for Trichloroethylene
7-9	Interior Hazardous Waste Storage	Active
10 A/B	2 – 600 gal. Receiver Tanks	Product storage
11	Exterior Hazardous Waste Storage	Storage of Flammables
12.	2,300 gal. Carbon Steel Tank	Storage of Non-Hazardous Wastes
13.	Detrex Model S-350 Still	Out of service, slated for eventual removal
15.	DCI Model Dyna-1-100 Still	Out of service, slated for eventual removal
16 A/B	Drying Columns	Out of service, slated for eventual removal
17	5,000 gal. Carbon Steel Tank	Storage of Non-Hazardous Wastes.
20	2,500 gal. 316 Stainless Steel Tank	Storage of Non-Hazardous Wastes
21	4,500 gal Carbon steel tank	Storage of Non-Hazardous Wastes
22	4,500 gal. Carbon Steel Tank	Storage of Non-Hazardous Wastes
25	3,000 gal 316 stainless steel Tank	Storage of Non-Hazardous Wastes
27	Drum Filling Station	Product Drumming Station
28	Product Blending Vessel	550 gal Carbon steel vessel utilized for product blending
29	Staging area	Sampling (containers weighed as needed)

ATTACHMENT E-3
EXISTING FACILITY LAYOUT

		per hour and is operated as necessary
28	Product Blending Vessel	550 gal. Carbon steel vessel utilized for product blending.
29	Temporary Storage Area	Roller conveyor used as temporary storage of up to 18 x 55 gallon drums.
30	Staging Area / Hazardous Waste Storage Area	Area used to store containerized waste (less than 500 gallon DOT approved containers) that has not yet received full waste screening.
31	Hazardous Waste Storage Area	Storage area for wastes that have full waste screening performed.
32	Transfer Facility	Active

ATTACHMENT E-3
EXISTING FACILITY LAYOUT

I.D. No.	Equipment Name	Description
1.	Clayton Model E-100 Steam Generator	This unit is no longer in service
2.	Air Compressor	In use
3.	20,000 gal. Carbon steel Tank	Storage tank for Trichloroethylene
4.	10,000 gal. Carbon Steel Tank	This tank is currently out of service
5.	4,500 gal. Carbon Steel Tank	This tank is currently out of service
6.	4,500 gal. Carbon Steel Tank	Storage tank for Trichloroethylene
10 A/B	2 – 600 gal. Receiver Tanks	Product Storage Tanks
12.	2,300 gal. Carbon Steel Tank	Used for storage of Non-Hazardous Wastes.
13.	Detrex Model S-350 Still	This unit is currently out of service
15.	DCI Model Dyna-1-100 Still	This unit is currently out of service
16 A/B	Drying Columns	These units are currently out of service
17	5,000 gal. Carbon Steel Tank	Used for storage of Non-Hazardous Wastes.
20	2,500 gal. 316 Stainless Steel Tank	Used for storage Product
21	4,500 gal Carbon steel tank	Used for storage of Non-Hazardous Waste
22	4,500 gal Carbon Steel Tank	Used for storage of Non-Hazardous Wastes.
25	3,000 gal. 316 stainless steel Tank	Used for storage of Non-Hazardous Wastes.
27	Drum Filling Station	Product Drumming Station. Used for filling 55- gallon drums with product Unit can fill approximately 30 drums per hour and is operated as necessary
28	Product Blending Vessel	550 gal. Carbon steel vessel utilized for product blending.
29	Roller conveyor	Used to weigh-in containers of waste
30	Staging Area / Hazardous Waste Storage Area	Area used to store containerized waste that has not yet received full waste screening.
31	Hazardous Waste Storage Area	Storage area for wastes that have full waste screening performed.
32	Transfer Facility	Active

E-3 ANNUAL SOIL MONITORING PROGRAM WAIVER

Detrex Corporation requests a waiver from the Director pursuant to Rule 299.9611(4) from the requirement under Rule 299.9611(2)(c) for an annual soil monitoring program.

Hazardous waste handling, associated with the container storage area that is conducted outside the totally enclosed building structure, is the unloading of drummed waste. Wastes are delivered to the Facility by truck in DOT approved containers. The truck backs up to the loading dock along the east side of the building (see Attachment E-3). Waste drums are transferred with a forklift from the truck directly to the container storage area.

The Facility no longer accepts the shipment of wastes via tanker trucks. Therefore there is no chance of any release of hazardous wastes from storage tanks.

A concrete pad directly underlies the loading/unloading area where the truck sits during the unloading operation. Peripheral drive-over concrete curbing is installed around the concrete pad. All expansion joints and any existing cracks in the concrete pad have been cleaned out and saw cut where necessary to provide a clean opening. Subsequently, all expansion joints and any cracks have been filled with a compatible chemically resistant flexjoint sealant. The selected sealant has been installed in accordance with the manufacturer's specifications. The concrete pad and peripheral concrete curbing, with sealed joints, provide control against the contact of any potentially spilled liquids with the surrounding ground surface. A certification from Robert Davis on the installation of the concrete curbing is found in Attachment E-5

To date there have been no recorded spills of hazardous waste on the unloading area or surrounding soils

Absorbent material is currently present and will continue to remain present to collect spillage from the concrete pad if it should occur during any hazardous waste transfer operations.

In addition, all unloading operations are conducted under the supervision of Detrex personnel. The area is inspected at the conclusion of unloading operations to ensure no spillage has occurred

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EQUIPMENT LIST

1. GENERATOR
2. AIR COMPRESSOR
3. 20,000 GAL.-PRODUCT TANK
4. 10,000 GAL.-PRODUCT TANK
5. 4,500 GAL.-PRODUCT TANK
6. 4,500 GAL.-PRODUCT TANK

10A 600 GAL.-RECEIVER TANK

10B 600 GAL.-RECEIVER TANK

12 2,300 GAL.-WASTE TANK F001 & F002

13 350 GAL.-DETREX STILL

14 350 GAL.-DETREX STILL

15 DCI STILL

16A DRYING COLUMN

16B DRYING COLUMN

17 5,000 GAL.-STILL BOTTOM TANK F002

20 2,500 GAL.-PRODUCT TANK

21 4,500 GAL.-PRODUCT TANK

22 4,500 GAL.-WASTE TANK F001&F002

24 DCI STILL

25 3,000 GAL.-PRODUCT TANK

26 SVRM-CARBON ABSORPTION

27 DRUM FILLING STATION

28 PRODUCT BLENDING VESSEL

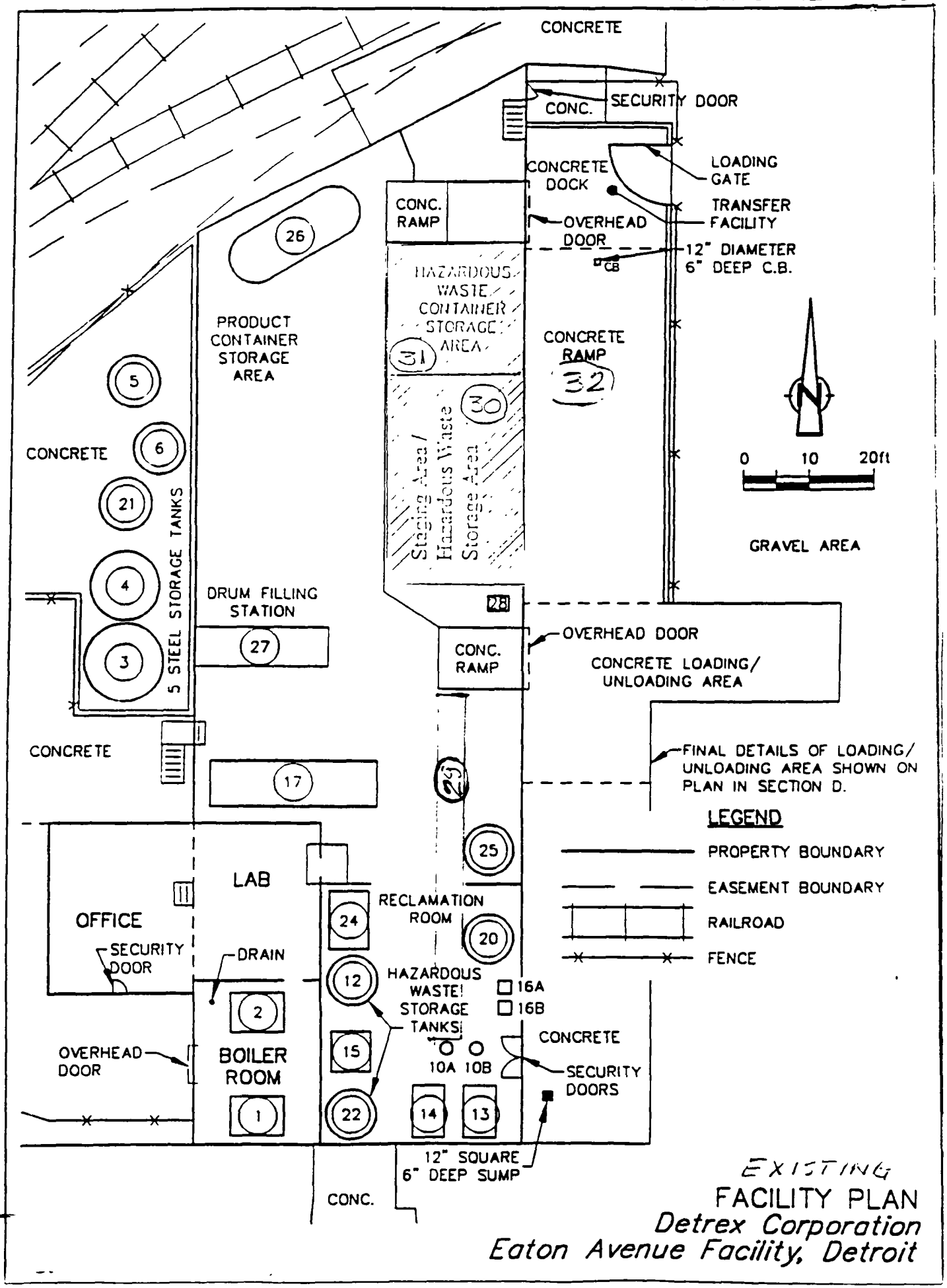
KEY DECONTAMINATED EQUIPMENT

NOTES:

1) ALL FENCING IS TOPED BY BARB WIRE
2) ALL SECURITY AND OVERHEAD DOORS REMAIN LOCKED WHEN THE FACILITY IS UNATTENDED
3) ALL FENCE GATES REMAIN LOCKED AT ALL TIMES

FACILITY PLAN
E-3

ATTACHMENT E3



EXISTING
FACILITY PLAN
Detrex Corporation
Eaton Avenue Facility, Detroit

ATTACHMENT E-4

LIST OF HAZARDOUS WASTES

ATTACHMENT E-4

LIST OF HAZARDOUS WASTES

Waste	*EPA Hazardous Waste Number and Hazard Code*

Note: Hazard Code based on 40 CFR 261. Wastes may be liquid or solid.

I - Ignitable Waste
H - Acute Hazardous Waste
* - Extremely Hazardous Waste
T - Toxic Waste
C - Corrosive Waste

ATTACHMENT E-5
ENGINEER'S CERTIFICATION

A-Hach E-5

ROBERT J. DAVIS, P.E.
CONSULTING ENGINEER
2410 BOOK TOWER
DETROIT, MICHIGAN 48226
TELEPHONE 965-7474

CERTIFICATION

FACILITY NAME:

DEPA SITE CODE:

U.S. EPA ID NO.: MID 091605972

PART B PERMIT LOG #113

PERMIT (OR MODIFICATION) ISSUANCE DATE: 06/29/92

PERMIT CONDITION NO. REQUIRING CERTIFICATION:

For purposes of meeting Act 64 Permit Requirements, the Detrex Corporation has installed a coating system covering their truck load-unload area at the Eaton Avenue Facility. The following operations were performed:

Installation of New Curb - Concrete Work:
Installed 1/2" x 4-1/2" expansion type anchor bolts 18" on center and tied a continuous #4 rebar to the anchor bolts. A new 4" high by 12" wide curb was placed with the rebar in the center. The concrete used was 7 bag mix (4000 psi nominal). A broom finish was given to the concrete to promote traction of truck traffic.

The existing curbing was saw cut as necessary to provide a smooth edge which could be sealed.

Coating Work:
The cracks, control, and expansion joints were routed out to 1/2" wide x 1" deep with a Windsor Model JAW-1A crack router. All concrete surfaces were sandblasted with 12 x 40 quartz. After removal of remaining spent abrasive, all concrete surfaces were water blasted with 2500 psi pressure to remove any remaining particulate matter. High pressure air was used to promote drying of the slabs and to insure complete removal of any particulate matter.

Once completely dry, the cracks in the interior of the structure were sealed with ICO Fill Patch material (an epoxy sealant). The cracks around the perimeter where little or no truck traffic is present were filled with ICO Caulk X. A backer rod was used in the crack next to the building. All sealants were allowed to cure 24 hours prior to the application of the ICO Guard Coating.

ICO Guard Coating was applied to all concrete surfaces as a base/adhesive coat. It was applied at 6-8 mils in thickness. The ICO Guard Coating was allowed to cure for 24 hours prior to the application of the Seibert-Oxidenmo VIC Coating. After 24 hours, the VIC Coating was applied to all concrete surfaces at approximately 8 mils thickness. 12 x 40 quartz was broadcast onto the surface to provide a non-skid finished surface. The coating was allowed to tack up as per manufacturer's instructions prior to the next application. After approximately 2 - 3 hours time elapsed, the coating was sufficiently tacky to apply the second coat in the same fashion as the preceding. The following day the same procedure was utilized. The finished system consists of approximately 6-8 mils of epoxy with approximately 32 mils of urethane top coat.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature of Owner/Operator

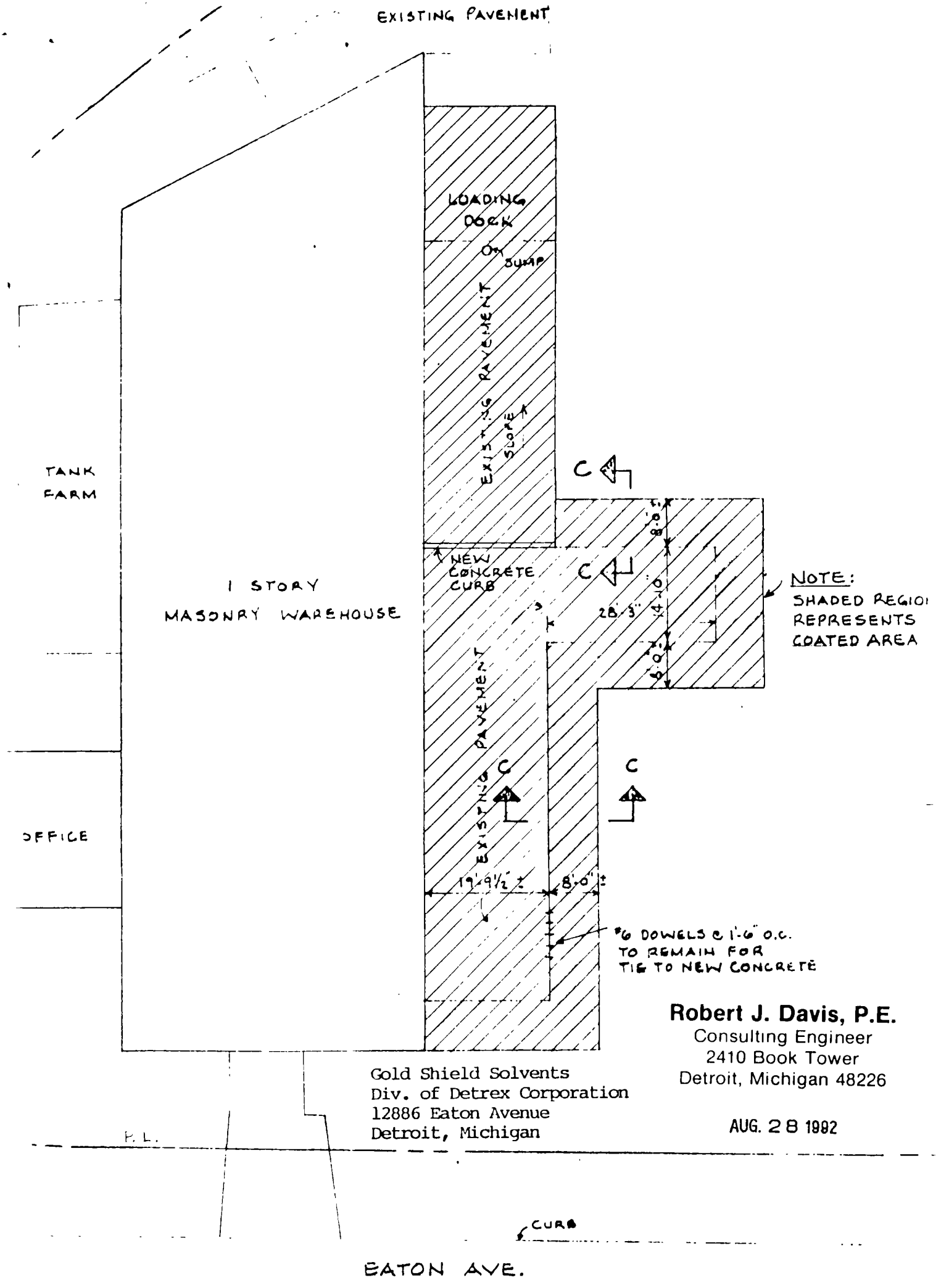
Name and Title

Signature of Registered P.E.

Robert J. Davis, No. 6556
Name of Registered P.E. and Michigan Registered Number

August 28, 1992
Date

(P.E. Seal)



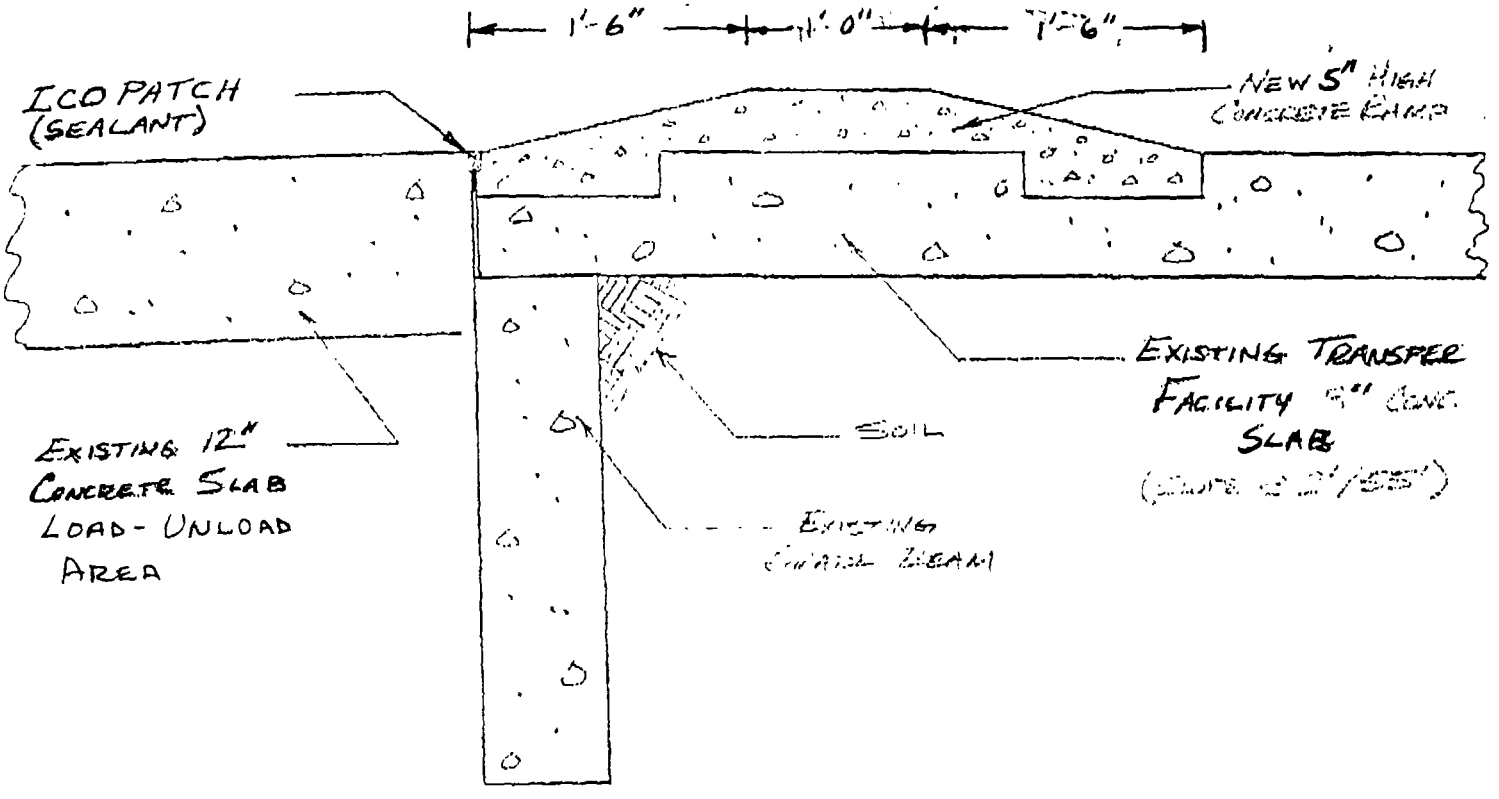
Gold Shield Solvents
Div. of Detrex Corporation
12886 Eaton Avenue
Detroit, Michigan

Robert J. Davis, P.E.
Consulting Engineer
2410 Book Tower
Detroit, Michigan 48226

AUG. 28 1982

DETREX CORP. SOLVENTS DIV.

EATON AVE. FACILITY



SCALE 1" = 1'-0"

SECTION F

PROCEDURES TO PREVENT HAZARDS

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Division

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SECTION F

PROCEDURES TO PREVENT HAZARDS

This section of the license application provides a description of the procedures implemented at the Detrex Corporation Facility (Facility) located in Detroit, Michigan to prevent the possibility of a hazard such as the formation of toxic gases, evolution of extreme heat and/or explosions from occurring.

This information is provided pursuant to Michigan Act 451 Rule 299.9504(1) which incorporates 40 CFR § 270.14(b)(4), (5), (6), (8), and (9) by reference The applicable section(s) of the Federal Regulations (40 CFR) is referenced as appropriate.

F-1 SECURITY
[40 CFR 264.14, 270.14(b)(4)]

F-1a SECURITY PROCEDURES AND EQUIPMENT
[40 CFR 270.14(b)(4), 264.14]

F-1a(1) 24-Hour Surveillance System
[40 CFR 264.14(b)(1)]

The hazardous waste management operations at the facility involve storage of DOT - approved containers. All hazardous waste activities are performed within a single secure building or in secured trailers. Therefore, 24-hour surveillance is not provided. The building is however, equipped with an alarm system tied to doors within the office and warehouse and windows within the office area. The alarm system provides notice when there is a failure of the system, including failure of exterior doors being properly closed.

F-1a(2)(a) Barrier
[40 CFR 264.14(b)(2)(i)]

The active portions of the hazardous waste storage areas are completely enclosed by either an 8-foot high chain-linked fence or a building of block construction. All entryways (including doors and loading docks) are locked after business hours or when the Facility is unattended. The loading dock by the hazardous waste staging area has a gate, as shown in a photograph in Attachment A-3, that can be used when the overhead door is open to prevent unauthorized entrance into the warehouse area.

An 8-foot high chain-link fence with razor wire surrounds much of the Facility This in conjunction with the building prevents unauthorized entrance by people and animals to the interior hazardous waste storage areas. A separate fence surrounds the flammable storage area (see photographs in Attachment A-3). Attachment F-3 provides a Facility plan illustrating security precautions. These measures prevent any individual from either entering the facility or obtaining access to areas where hazardous materials or wastes are stored. This precludes the need to provide fencing around the entire facility

F-1a(2)(b) Means To Control Entry
[40 CFR 264 14(b)(ii)]

Attachment A-3 provides photos illustrating some of the access control devices at the Facility. Security doors and overhead doors to the office and active portions of the Facility remain locked when the Building is unattended Access to warehouse areas is controlled via gates and passage doors, which can only be opened from the inside.

All flammables stored at the facility will occur on trailers located in the former transfer station area. The flammable storage area is surrounded by an 8-foot high chain link fence and gate. The gate will remain locked at all times except when moving vehicles into or out of this area. In addition, the trailers will be closed during hours when the facility is not attended. These measures will eliminate any access to this area except through the warehouse and then only during operating hours.

In addition, visitors enter the facility via the security door to the office. Visitors, including other Detrex employees who do not work at this office, are requested to sign a log to denote their arrival and departure times.

F-1a(3) Warning Signs
[40 CFR 264 14(c)]

Warning signs which bear the legend Danger - Unauthorized Personnel Keep Out are posted at each entrance of the active portion of the Facility. These warning signs are to be posted in sufficient numbers to be seen from any approach to the active portion of the Facility from a minimum distance of 25 feet. A photograph of one such sign is shown in Attachment A-3

F-1b WAIVER
[40 CFR 264.14 (a)]

Detrex considers the above noted security precautions to be sufficient to prevent unauthorized access to hazardous waste management areas. The Facility is provided with a physical barrier and a means to control entry Therefore, a waiver of security procedures and equipment requirements per 40 CFR §264 14(a) is not necessary

F-2 INSPECTION SCHEDULE
[40 CFR 270.15, 270 14(b)(5)]

F-2a GENERAL INSPECTION REQUIREMENTS
[40 CFR 270.14(b)(5), 264.15(a) and (b), 264.33]

Facility personnel conduct daily inspections of the hazardous waste storage areas, and loading / unloading areas after receipt of waste, for leaking or deteriorating containers. Regular scheduled inspections of the entire Facility are completed on a weekly basis. These inspections include all container handling equipment, security measures, emergency response equipment (i.e. spill control equipment, fire protection equipment and monitoring equipment), and communication and first-aid equipment,.

It is important to note that all of the hazardous waste management units are contained either within a single enclosed building, or in the flammable storage area that is secured by a fence with the gate locked, except when moving vehicles. Thus, personnel are almost continually working within or near the areas and are encouraged to be observant at all times.

F-2a(1) Types of Problems
[40 CFR 264.15(b)(3)]

Based on the nature of the operations at the Facility, the primary concern is the occurrence of leaks and/or spills Inspection schedules for monitoring secondary containment areas and loading and unloading areas were developed with the goal of promptly identifying leaks or spills. Safety and emergency equipment inspection schedules are based in part upon verification that adequate quantities are in place and the equipment being operational. As such each item of emergency equipment will be checked. For example, the phone system will be checked to insure that outside lines work, the sprinkler system, to insure that valves are open and system pressure is in the correct range; and emergency lighting, to insure that the battery is holding a charge. Other items like drum pumps and drum hand trucks are checked to insure that they are present and in good working order. Attachment F-4 presents the typical schedule for inspection and identifies the various items to be inspected and the types of things to be inspected.

Attachment F-5 shows an example of a typical daily and weekly/monthly inspection logs which will be used at the Facility The logs are discussed in greater detail in section F-2d. During inspections, employees will use the inspection schedule (Attachment F-4), along with their knowledge of the Facility and process equipment. The forms are designed to encourage personnel to include their observations when examining specific items, rather than just checking off a form. Other facilities have used similar

forms with excellent results. Each inspection record is kept on file at the Facility for a minimum of three years.

Any deteriorating or malfunctioning equipment, or structure identified during an inspection will be remedied (i.e., repaired or replaced) to ensure that the problem does not lead to a human health or environmental hazard. If a hazard is determined to be potentially imminent, the remedy will be taken immediately upon discovery.

F-2a(2) Frequency of Inspections
[40 CFR 264 15(b)(4)]

Attachment F-4 includes the frequency of inspection for each item. The frequency of inspection is based on:

1) the probable deterioration of equipment based on use and handling,

2) the probability of equipment deterioration or operator error resulting in an incident which is harmful to human health or the environment, and

3) regulatory requirements.

F-2b SPECIFIC INSPECTION REQUIREMENTS
[40 CFR 270.14(b)(5), 264 15(b)(4)]

The following sections outline specific inspection requirements

F-2b(1) Container Inspection
[40 CFR 264.174, 264 1086(c)(4)(iii)]

Hazardous waste containers are inspected prior to acceptance to ensure they meet the criteria for acceptance. The containers are also inspected daily for signs of leaks or deterioration and to ensure the containers are properly marked and labeled When a defect is detected for a container, its closure device, or its cover, Facility personnel will make note of the finding in the inspection and attempt repair on the container within 24 hours. If it is determined that repairs are not possible, or if the repair cannot be completed within 5 days, the Facility will either over-pack the container or transfer the hazardous waste to a suitable container

F-3 WAIVER OF DOCUMENTATION OF PREPAREDNESS AND PREVENTION REQUIREMENTS

[40 CFR 270.14(b), 264.32(a) Through 264.32(d)]

Detrex Corporation does not wish to request a waiver of the preparedness and prevention requirements under 40 CFR Part 264 Subpart C. Requirements of this Subpart are also addressed in the Contingency Plan found in Section G of this license application.

The Detroit Fire Department (DFD) is familiar with the hazardous waste management operation, and with the Contingency Plan for the Facility (see Section G-6).

F-3a EQUIPMENT REQUIREMENTS

[40 CFR 270 14(b), 264.32]

F-3a(1) Internal Communication

[40 CFR 264.32(a)]

Internal communication may be accomplished via hand held two-way radios, by verbal communication, PA system, or by some other means (such as air horns). Since the hazardous waste storage areas are adjacent to the lab area and the office, and the entire Facility is relatively small, communication can usually be most effectively achieved verbally in the event of an emergency.

F-3a(2) External Communications

[40 CFR 264 32(b)]

Storage areas and the office areas are equipped with telephones, which can be used to request emergency assistance. The locations of the telephones are shown in Attachment F-6. The flammable storage area is next to the building allowing verbal communication and in addition there is a telephone located near the access door to area 11 as seen in Attachment F-6.

F-3a(3) Emergency Equipment

[40 CFR 264.32(c)]

Location of Facility emergency equipment is shown in Attachment F-6 This equipment includes:

1) Absorbent Material,
2) First-Aid Kit;
3) Eye Wash/Safety Shower,

4) PPE;
5) Fire Extinguishers;
6) Main Electrical & Gas Disconnects;
7) Gloves; and
8) Boots.

All emergency and safety equipment is routinely inspected and tested in accordance with the inspection schedules provided in Section F-2a to ensure its proper operation in the event of an emergency Any equipment requiring decontamination after use in a response will be performed by using an appropriate cleaning agent (e.g., steam cleaning, scrubbing with hot water, sand blasting, etc.), which will be selected, based on the characteristics of the released material

Decontamination of equipment after use will also depend upon the type of equipment. For PPE (like gloves), soap and water may be enough. Supplies used in decontamination such as brushes, soap, buckets which are available from local stores will be maintained at the Facility. Other decontamination equipment needed to perform specific jobs or for use on larger equipment may be contracted out to local emergency response agencies that have the equipment necessary to perform larger decontamination jobs.

Wastes generated from the decontamination process, if determined to be a hazardous waste, will be packaged in DOT-approved containers and stored in the hazardous waste containment area approved for that material. If decontamination of the storage area is required, the Facility Manager will place the material in the staging area and make arrangements to have it removed as soon as possible.

F-3a(4) Water For Fire Control
[40 CFR 264.32(d)]

There are two fire hydrants, serviced by an 8-inch diameter watermain, located near the Facility along Eaton Avenue The nearest is only about 25 feet south of the south end of the Facility

A review of the new codes being included in this application indicates that the Facility is not at an increased risk of fire or explosion.

F-3b AISLE SPACE REQUIREMENTS [40 CFR 264.35]

Hazardous wastes will be stored in the container storage areas in single rows (i.e., 4 feet) with 24 -inch minimum aisle spaces between each row (See photographs in Attachment A-3). The use of single aisles will permit room for inspection of the containers and the detection of release. In addition, this space will allow for the unobstructed movement of personnel, fire protection equipment, and spill control equipment utilized at the Facility. Containers can be moved for spill cleanup and container decontamination as necessary

F-4 PREVENTATIVE PROCEDURES, STRUCTURES, AND EQUIPMENT
[40 CFR 270.14(b)(8)]

F-4a LOADING / UNLOADING OPERATIONS
[40 CFR 270 14(b)(8)(i)]

The unloading of containerized hazardous wastes occurs at the middle overhead door on the east side of the building. The door of the loading area is diked with a concrete ramp to maintain secondary containment while allowing for movement of containers. Containerized wastes are unloaded and placed in the staging area pending screening as per the waste analysis plan (Section C).

Containers of hazardous waste are primarily transported into and about the warehouse by a forklift. Hand trucks and other material handling practices also allow for movement of DOT containers inside the hazardous waste storage areas. Hand trucks or lift trucks may also be used to transfer flammable materials from the loading dock door near the staging area to the transfer station.

All loading / unloading operations are conducted under the supervision of Detrex personnel and the area used for unloading is inspected at the conclusion of unloading operations to ensure no spillage has occurred In addition, the transport vehicle and the loading/unloading area are inspected immediately following a transfer to ensure all wastes have been removed and no spillage has occurred during movement of the waste

F-4b RUN-OFF CONTROL
[40 CFR 270 14(b)(8)(ii)]

The hazardous waste container storage areas are located within an enclosed building or within secured trailers that are closed during non-business hours. This prevents accumulation of run-on waters in the hazardous waste storage areas As presented in Section B of this operating license application, surface runoff is directed away from the building structure in all areas except along a portion of the east wall A 12-inch square, 6-inch deep sump is located within the concrete loading/unloading area to provide runoff control The accumulated runoff is visually inspected. If the water meets the conditions for discharge, it is transferred into the municipal sanitary/storm sewer system. If the water fails to meet discharge requirements it will be collected and containerized for off-site disposal in accordance with Federal, State and local regulations A 12-inch diameter, 6-inch deep catchbasin is also located within the Flammable Storage Area (#11). Water collected from this area is inspected prior to discharge

F-4c WATER SUPPLIES
[40 CFR 270.14(b)(8)(iii)]

All water at this Facility is received from the municipal water main previously noted in Section B-2a(9) and F-3a(4). Contamination of the water supply is not possible since the secondary containment systems will hold all leaks or spills at the Facility, and thus will not come into contact with the water supply. In addition, the facility has a backflow prevention device on the potable water supply line.

F-4d EQUIPMENT AND POWER FAILURE
[40 CFR 270.14(b)(8)(iv)]

Failure of power, or of other equipment at this Facility would, in the worst case, cause the hazardous waste operations at the Facility to be suspended. All equipment used in the transfer of wastes in the Facility will shut down in a "fail-safe" mode

The building alarm system is provided with an emergency back-up battery to ensure its continued operation during periods of power outage. This will insure that the alarm system continues to provide security and fire protection.

F-4e PERSONAL PROTECTION EQUIPMENT
[40 CFR 270.14(b)(8)(v)]

Personal protective equipment (PPE) is provided at the Facility to prevent exposure of personnel to hazardous waste. This equipment includes appropriate protective clothing and eye protection, a safety shower, and an emergency eyewash to be used in the event a person is splashed with waste The Facility has a telephone system, an intercom system and two-way radios that can be used to warn personnel in the event of an emergency

The location of emergency equipment available at the Facility is shown on Attachment F-6.

F-5 PREVENTION OF REACTION OF IGNITABLE, REACTIVE AND INCOMPATIBLE WASTES

[40 CFR 270.14(b)(9)]

A list of current and proposed waste codes to be managed at the Facility is provided in Attachment F-1.

All incoming wastes are tested as part of the Screening Procedures (see Section C) to ensure that reactive wastes are not inadvertently accepted. Procedures are also in place to insure that wastes are not stored with any other material, which could react with it in the event of a leak or spill.

F-5a PRECAUTIONS TO PREVENT IGNITION OF IGNITABLE WASTES OR REACTIVE WASTES

[40 CFR 270.14(b)(9), 264 17(a)]

The Facility does not accept Reactive Wastes

Ignitable containerized wastes will be stored in the flammable storage area (shown in Attachment F-3) Previously this area was used for the storage of flammable wastes under a transfer facility. As such the area meets with all applicable Fire Codes and is also located more than 50 feet from the property line

Precautions taken by the Facility to prevent ignition of flammable wastes include separation and protection of ignitable wastes from ignition sources such as open flames, cutting and welding operations, hot surfaces, spontaneous ignition sources (such as heat-producing chemical reactions and radiant heat sources), frictional heat, and sparks. Only spark proof tools will be utilized when handling potentially ignitable wastes in containers. Bonding and grounding as appropriate will be used to help reduce the potential for fires and explosions due to static electricity Warning signs with the legend 'No Smoking' will also be posted conspicuously in the area designated for handling and storage of ignitable waste.

To prevent the incompatibility issue of flammables (F003, F005 & D001) with oxidizers (D001) Detrex will not accept any oxidizers unless there is one empty trailer available to store this material Prior to storing any flammables on this trailer, all oxidizers will be removed

F-5b PRECAUTIONS TO PREVENT COMMINGLING OF INCOMPATIBLE WASTES [40 CFR 270.14(b)(9), 264.17(b)]

The Facility handles all permitted wastes such that incompatible waste types are segregated when they are received at the Facility. Incompatible wastes are subsequently handled and stored separately. Incompatible waste types have been determined for all proposed and current waste codes in accordance with the US Department of Commerce's National Technical Information Service (NTIS) document *A Method for Determining the Compatibility of Hazardous Waste*, publication number PB80-221005 The following incompatibility considerations were evaluated when separation guidelines were established.

Classifications and separations of the waste types are based on chemical family. It should be noted that many chemicals exhibit characteristics associated with several chemical families due to their composition (i.e. Chlorobenzene is classified as a halogenated compound due to the presence of a chlorine molecule and is classified as an aromatic compound due to its benzene structure). Therefore, the compatibility evaluation of two chemicals, at times, involves more than two chemical family comparisons. Furthermore, during the evaluation of waste types, each currently accepted and proposed chemical was evaluated with respect to:

1) its chemical family characteristic(s); and
2) its potential incompatibility with every other currently accepted and proposed chemical characteristic

Detrex has also reviewed the issue regarding a failed container and the aspect of providing the required protection from material squirting into an adjacent storage area. Detrex has revamped the configuration of the storage areas to allow at least 3 feet between the edge of adjacent hazardous waste storage areas 7 & 8 and between these areas and storage area 9. Based on past experience Detrex has found that failed containers holding free liquids are not able to project liquids if there is minor damage to the container, as they will weep rather than flow This is because closed containers that fail below the liquid line rapidly develop a vacuum when liquids leave the container. Projection from leaks that occur near the liquid / air interface of a container open to the atmosphere lack the necessary head pressure to project any distance. Therefore second level containers in the worst case will only project if punctured at the bottom of the container. This precludes the container from squirting material into an adjacent storage area, unless caused by a gaping hole.

Waste will not be accepted into the Facility until a secondary containment area, containing only those wastes, which are compatible with the subject waste type, is available. This is accomplished by utilizing the procedure below to help identify the reactivity group number of each waste stream, and if necessary to provide the necessary storage area:

1. Upon acceptance, mark the reactivity number(s) (RGNs) of the material on each DOT container near the hazardous waste marking;

2. Post the chart contained in Attachment F-2 as a reference guide to determine compatibility of different waste streams. Use the chart prior to placing any new RGN into the storage area.

3. Post each RGNs present within a given storage area or use a computer tracking system to record and generate a list of RGNs in each containment area. .

4. If this system indicates a potential incompatibility problem between the wastes already in a given storage area and newly accepted wastes to be placed into the storage area, then an alternate storage area will be sought or incompatible waste(s) within a given storage area will be moved to another area

The procedure noted above is designed to preclude the need for designating storage areas for specific waste streams.

F-5c MANAGEMENT OF IGNITABLE OR REACTIVE WASTES IN CONTAINERS [40 CFR 270.15(c), 264.176]

This Facility does not accept any reactive wastes

F-5d MANAGEMENT OF INCOMPATIBLE WASTES IN CONTAINERS [40 CFR 270.15(d), 264 177]

Incompatible waste types are segregated and stored in secondary containment areas, which are separated by curbing. This will prevent the mixing of incompatible wastes in the event of an accidental release. This should preclude one or more of the following incidents

1) Generation of extreme heat or pressure, fire or explosions, or violent reactions,
2) Production of uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health or the environment;
3) Production of uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosion;
4) Damage to the structural integrity of the device or Facility, and
5) Through other like means, threaten human health or the environment

Waste segregation procedures have been developed as described in Section F-4b above. Wastes are only accepted if an appropriate secondary containment area (empty of all waste which is potentially incompatible with the waste to be accepted) exists.

ATTACHMENT F-1

LIST OF HAZARDOUS WASTES

RECEIVED
AUG 28 2000
Waste Management
Division

ATTACHMENT F-1

LIST OF HAZARDOUS WASTES

Waste	*EPA Hazardous Waste Number and Hazard Code*
Ignitable Wastes	D001 (I)
Corrosive Waste	D002 (C)
Arsenic	D004 (T)
Barium	D005 (T)
Cadmium*	D006 (T)
Chromium	D007 (T)
Lead	D008 (T)
Mercury	D009 (T)
Selenium*	D010 (T)
Silver	D011 (T)
Endrin	D012 (T)
Benzene	D018 (T, I)
Carbon Tetrachloride	D019 (T), U211(T)
Chlorobenzene	F002 (T, I), D021(T, I), U037(T, I)
Chloroform	D022 (T), U044(T)
1,4-Dichlorobenzene	D027 (T), U072(T)
1,2-Dichloroethane	D028 (T, I), U077(T, I)
1,1-Dichloroethylene	D029 (T, I), U078(T, I)
2,4-Dinitrotoluene	D030 (T)
Heptachlor*	D031 (T)
Hexachlorobenzene	D032 (T), U127(T)
Hexachloroethane	D034 (T), U131(T)
Methyl Ethyl Ketone	D035 (T, I), F003 (I)
Nitrobenzene	D036 (T)
Tetrachloroethylene	F001 (T), F002(T), D039 (T), U210(T)
Trichloroethylene	F001(T), F002(T), D040 (T), U228(T)
Vinyl Chloride	D043 (T, I)
Ortho-Dichlorobenzene	F002 (T)
1,1,2,2-Tetrachloroethane	U209(T)
1,1,1,2-Tetrachloroethane	U208(T)
Dichlorodifluoromethane	U075(T)
1,1-Dichloroethane	U076(T, I)
1,1,1-Trichloroethane	F001(T), F002(T), U226(T)
Dichloromethane (Methylene Chloride)	F001 (T), F002 (T), U080(T)

Note: Hazard Code based on 40 CFR 261 Wastes may be liquid or solid.

I - Ignitable Waste
H - Acute Hazardous Waste
* - Extremely Hazardous Waste
T - Toxic Waste
C - Corrosive Waste

ATTACHMENT F-1

LIST OF HAZARDOUS WASTES

Waste	*EPA Hazardous Waste Number and Hazard Code*
Monofluoromethane	F001 (T), F002 (T)
Trichlorofluoromethane	F001(T), F002(T), U121(T)
Trichloromonofluoromethane	F001 (T), F002 (T)
1,1,2-trichloro-1,2,2-trifluoroethane	F002 (T)
Xylene	F003 (I)
Acetone	F003 (I)
Ethyl Acetate	F003 (I)
Ethyl Benzene	F003 (I)
Ethyl Ether	F003 (I)
n-Butyl Alcohol	F003 (I)
Cyclohexanone	F003 (I)
Methyl Isobutyl Ketone	F003 (I), U161 (I)
Methanol	F005 (I)
Toluene	F005 (T, I)
Methyl Ethyl Ketone	F005 (I,T)
Carbon Disulfide	F005 (H, I)
Isobutanol	F005 (I,T)
Pyridine	F005 (T, I)

Wastewater treatment sludges from electroplating operations except from the following processes: F006

1. sulfuric acid anodizing of aluminum,
2. tin plating on carbon steel,
3. zinc plating (segragated basis) on carbon steel;
4. aluminum or zinc-aluminum plating on carbon steel,
5. cleaning/stripping associated with tin, zinc and
6. aluminum plating on carbon steel; and
7. chemical etching and milling of aluminum.

Waste water treatment sludges from the chemical conversion coating of aluminum except from zirconium phosphating in aluminum can washing when such phosphating is an exclusive conversion coating process F019

Note: Hazard Code based on 40 CFR 261. Wastes may be liquid or solid.

I - Ignitable Waste
H - Acute Hazardous Waste
* - Extremely Hazardous Waste
T - Toxic Waste
C - Corrosive Waste

ATTACHMENT F-2

HAZARDOUS WASTE GROUPS & COMPATIBILITY CHART

ATTACHMENT F-2

HAZARDOUS WASTES GROUPS

Reactivity Group Number	*Group Name and Constituents*
	Corrosive Materials
1, 2, 3	**Acids**
10	**Caustics**
4	**Alcohols and Glycols**
	1-Butanol
	iso-Butyl alcohol
	Methanol
	n-Butyl Alcohol
7	**Amines, Aliphatic and Aromatic**
	Pyridine
13	**Esters**
	Ethyl Acetate
14	**Ethers (All Isomers)**
	Ethyl Ether
16	**Aromatic Hydrocarbons**
	Benzene
	Toluene
	Xylene
	Ethyl Benzene
17	**Halogenated Organics**
	Freons
	Hexachloroethane
	Endrin
	Carbon tetrachloride
	Chlorobenzene (distillation or fractionation column bottoms)
	Chloroform
	1,4-Dichlorobenzene
	1,2-Dichloroethene
	1,1-Dichloroethylene
	Hexachlorobenzene
	Heptachlor
	Tetrachloroethylene
	Trichloroethylene
	1,1,1-Trichloroethane
	Dichloromethane
	Trichlorofluoromethane
	Chlorinated Fluorocarbons
	Vinyl Chloride
	1,1,2,2-Tetrachloroethane
	1,1,1,2-Tetrachloroethane

ATTACHMENT F-2

HAZARDOUS WASTES GROUPS

Reactivity Group Number	*Group Name and Constituents*
17	**Halogenated Organics** **Dichlorodifluoromethane** **1,1-Dichloroethane**
19	**Ketones** **Methyl Ethyl Ketone** **Acetone** **Cyclohexanone** **4-Methyl-2-pentanone**
20	**Mercaptans and Other Organic Sulfides (All Isomers)** **Carbon Disulfide**
21-24	**Metals** **Arsenic (24)** **Barium (21, 24)** **Cadmium (23, 24)** **Chromium (23, 24)** **Lead (23, 24)** **Mercury (24)** **Selenium (22, 24)**
27	**Nitro Compounds** **2,4-Dinitrotoluene** **Nitrobenzene**
28	**Hydrocarbons, Aliphatic, Unsaturated (All Isomers)** **Xylene**
29	**Hydrocarbons, Aliphatic, Saturated**
31	**Phenols** **Phenol**
101	**Combustible and Flammable Materials** **Ignitable Waste**

Attachment: F-2
DETREX HAZARDOUS WASTE COMPATABILITY CHART

REACTIVITY CODE	CONSEQUENCES
H	HEAT
F	FIRE
G	INNOCUOUS AND NON-FLAMMABLE GAS GENERATION
GT	TOXIC GAS GENERATION
GF	FLAMMABLE GAS GENERATION
S	SOLUBILIZATION OF TOXIC SUBSTANCES
E	EXPLOSTION

REACTIVITY GROUP NUMBER	1	2	3	4	7	10	13	14	16	17	19	20	21	22	23	24	27	28	29	31	101
1																					
2		H,G																			
3	H	H, F	H, P																		
4	H	H, GT	H																		
7	H	H	H																		
10	H	H, F																			
13	H	H, F																			
14	H,GT	H,F,GT			H, GT	H,GF															
16		H,F																			
17	H	H,F				H															
19	GT, GF	H, F, GT								H	H										
20	GT, H, F	GF, H, F	GF, H, F	GF, H, F	GF, H	GF, H	GF, H			GF, H	GF, H	GF, H									
21	GF, H, F	GF, H, F	GF							H, E	GF, H	GF, H, F									
22	GF, H, F	GF, H, F				GF, H				H, E		GF, H, F									
23	S	S	S		S	S															
24		H, F, GT				H, F															
27	H	H, F												H, E							
28		H, F																			
29	H	H, F																			
31	H, G	H, F, GT																			

ATTACHMENT F-3

SECURITY PRECAUTIONS

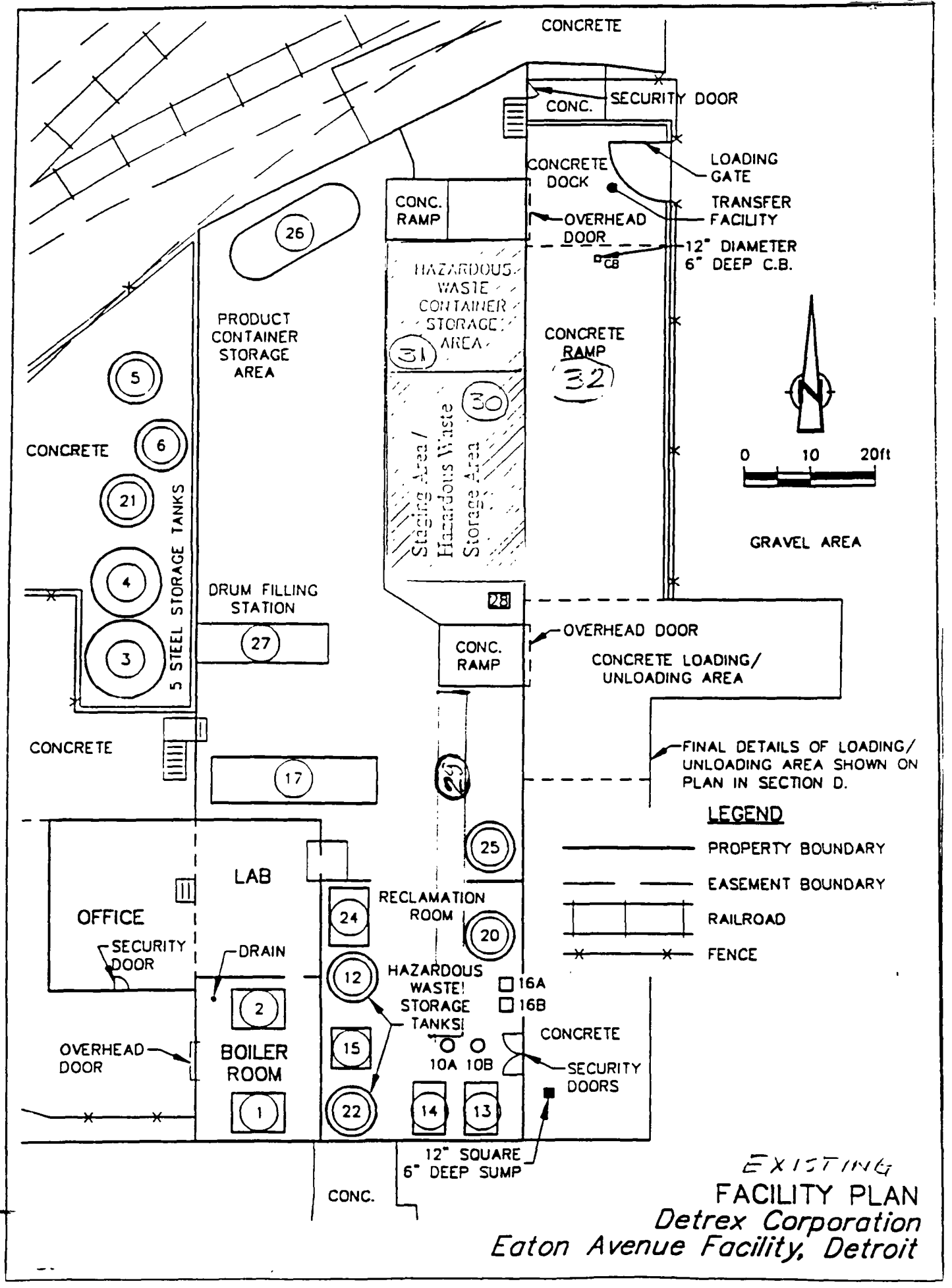
ATTACHMENT F-3
EXISTING FACILITY LAYOUT

I.D. No.	Equipment Name	Description
1.	Clayton Model E-100 Steam Generator	This unit is no longer in service
2.	Air Compressor	In use
3.	20,000 gal. Carbon steel Tank	Storage tank for reclaimed Trichloroethylene
4.	10,000 gal. Carbon Steel Tank	This tank is currently out of service
5.	4,500 gal. Carbon Steel Tank	This tank is currently out of service
6.	4,500 gal. Carbon Steel Tank	Storage tank for reclaimed/ virgin Trichloroethylene
10 A/B	2 – 600 gal. Receiver Tanks	These tanks are currently out of service
12.	2,300 gal. Carbon Steel Tank	Used for storage of Non-Hazardous Wastes.
13.	Detrex Model S-350 Still	This unit is currently out of service
14.	Detrex Model S-350 Still	Dismantled and removed
15.	DCI Model Dyna-1-100 Still	This unit is currently out of service
16 A/B	Drying Columns	These units are currently out of service
17	5,000 gal. Carbon Steel Tank	Used for storage of Non-Hazardous Wastes.
20	2,500 gal. 316 Stainless Steel Tank	Used for storage of reclaimed solvent
21	4,500 gal Carbon steel tank	Used for storage of Non-Hazardous Waste
22	4,500 gal. Carbon Steel Tank	Used for storage of Non-Hazardous Wastes.
24	DCI Model Dyna-1-500 Still	Dismantled
25	3,000 gal. 316 stainless steel Tank	Used for storage of Non-Hazardous Wastes.
26	SVRM - Carbon Absorption Unit	Dismantled
27	Drum Filling Station	Product Drumming Station. Used for filling 55- gallon drums with product. Unit can fill approximately 30 drums

ATTACHMENT F-3
EXISTING FACILITY LAYOUT

		per hour and is operated as necessary
28	Product Blending Vessel	550 gal. Carbon steel vessel utilized for product blending.
29	Temporary Storage Area	Roller conveyor used as temporary storage of up to 18 x 55 gallon drums.
30	Staging Area / Hazardous Waste Storage Area	Area used to store containerized waste (less than 500 gallon DOT approved containers) that has not yet received full waste screening.
31	Hazardous Waste Storage Area	Storage area for wastes that have full waste screening performed.
32	Transfer Facility	Active

ATTACHMENT F3



EXISTING
FACILITY PLAN
Detrex Corporation
Eaton Avenue Facility, Detroit

ATTACHMENT F-3
PROPOSED FACILITY LAYOUT

ID #	Equipment Name	Description
1.	Clayton Model E-100 Steam Generator	This unit is no longer in service
2.	Air Compressor	In use
3.	20,000 gal. Carbon steel Tank	Storage tank for reclaimed Trichloroethylene
4.	10,000 gal. Carbon Steel Tank	This tank is currently out of service
5.	4,500 gal. Carbon Steel Tank	This tank is currently out of service
6.	4,500 gal. Carbon Steel Tank	Storage tank for reclaimed/ virgin Trichloroethylene
10 A/B	2 – 600 gal. Receiver Tanks	These tanks are currently out of service
12.	2,300 gal. Carbon Steel Tank	Used for storage of Non-Hazardous Wastes.
13.	Detrex Model S-350 Still	This unit is currently out of service
15.	DCI Model Dyna-1-100 Still	This unit is currently out of service
16 A/B	Drying Columns	These units are currently out of service
17	5,000 gal. Carbon Steel Tank	Used for storage of Non-Hazardous Wastes.
20	2,500 gal. 316 Stainless Steel Tank	Used for storage of reclaimed solvent
21	4,500 gal Carbon steel tank	Used for storage of Non-Hazardous Waste
22	4,500 gal. Carbon Steel Tank	Used for storage of Non-Hazardous Wastes.
25	3,000 gal. 316 stainless steel Tank	Used for storage of Non-Hazardous Wastes.
27	Drum Filling Station	Product Drumming Station.
28	Staging Area	Area where drums are staged for sampling
29	Product storage area	Active
30	Hazardous Waste Storage areas	Storage areas 1, 2, 3, and 4
31	Flammable Storage area	Storage area 5 & Transfer Station

ATTACHMENT F-4

INSPECTION SCHEDULE

ATTACHMENT F-4

HAZARDOUS WASTE INSPECTION SCHEDULE

Items	*Type of Problem*	*Inspection Frequency*
Fire Protection-		
Extinguisher	- Available - Loss of pressure	Weekly
Eye wash station/ safety shower	- Functions - Scale or rust in water	Weekly
First Aid Kit	- Available - Adequate supplies	Weekly
Communication equipment		
Telephones	- Operational	Weekly
Intercom	- Operational	Weekly
Emergency lighting	- Operational	Monthly
Decontamination Equipment	- Adequate supplies	Weekly

ATTACHMENT F-4

HAZARDOUS WASTE INSPECTION SCHEDULE

Items	*Type of Problem*	*Inspection Frequency*
Hazardous waste container storage areas (7, 8, 9, 11 & 29)	- Leaking containers - Bungs secure / properly secured - Corrosion on containers - Proper stack height - Proper labeling/marking - Adequate Aisle space	Daily
Secondary Containment	- Base free of cracks and intact - Presence of Free Liquid	Daily
Loading/unloading area & Flammable Storage Dock Area	- Spills - No cracks / Leaks, joints intact	Daily
Sump Pump	- Operational - Available - Leaks	Weekly
Container handling equipment (fork lift, grapple, pallet jack, drum hand cart)	- Operational - Available	Daily, when used
Absorbent material	- Adequate supply	Weekly
Barriers to prevent entry		
Doors	- Open freely - Locks function	Daily
Signs	- Present	Weekly
Fences	- Intact	Weekly
Alarm System	- operational	Weekly
Personnel Protective Equipment (gloves, aprons, goggles, face shields)	- Adequate supply	Weekly

ATTACHMENT F-5

TYPICAL INSPECTION RECORD

BRANCH LOCATION: _____ WEEK ENDING: _____

FACILITY WEEKLY INSPECTION FORM

INDICATE CONDITIONS

Equipment to inspect	possible problems	status / condition
Personnel Protective Equipment	Quantity and availability	
Eye Wash / Safety Showers	Quantity and availability	
First Aid Kit	Quantity and availability	
Communication Equipment	Quantity and availability	
Emergency Lighting	Operational *on monthly basis*	
Fire Protection	Quantity and availability	
Absorbent Materials	Quantity and availability	
Barriers to prevent entry	Equipment is operational	
Sump pump	Equipment is operational	
Alarm System	Equipment is operational	
Signature, Date, Time		

Comments concerning problems or potential problems (include: date, time, and nature of repairs or remedial actions taken to mitigate problems):

NOTE: REFER TO HAZARDOUS WASTE INSPECTION SCHEDULE FOR GREATER DETAILS ON TYPES OF PROBLEMS WHICH MAY BE ENCOUNTERED

HAZARDOUS WASTE INSPECTION SCHEDULE

Items		*Type of Problem*	*Inspection Frequency*
Personnel Protective Equipment (gloves, aprons, goggles, face shields)	-	Adequate supply	Weekly
Eye wash station/ safety shower	-	Functions	Weekly
	-	Scale or rust in water	
First Aid Kit	-	Available	Weekly
	-	Adequate supplies	
Communication equipment			
Telephones, Intercom	-	Operational	Weekly
Emergency Lighting	-	Operational	Weekly
Fire Protection-			
Extinguisher	-	Available	
	-	Loss of pressure	Weekly
Absorbent material	-	Adequate supply	Weekly
Barriers to prevent entry			
Signs	-	Present	Weekly
Fences	-	Intact	Weekly
Sump Pump (Loading/Unloading area)	-	Operational	Weekly
	-	Available	
	-	Leaks	
Alarm System	-	Operational	Weekly

BRANCH LOCATION: _____ WEEK ENDING: _____

FACILITY DAILY INSPECTION FORM

INDICATE CONDITIONS

INSPECTION ITEM	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
Hazardous Waste Container Storage Areas (7, 8, 9, 11& 29)					
Loading / Unloading & Flammable Storage Area					
Container Handling Equipment					
Barriers to prevent entry					
Signature					
Date					
Time					

Comments concerning problems or potential problems (include: specific storage area/item of concern, date, time, and nature of repairs or remedial actions taken to mitigate problems):

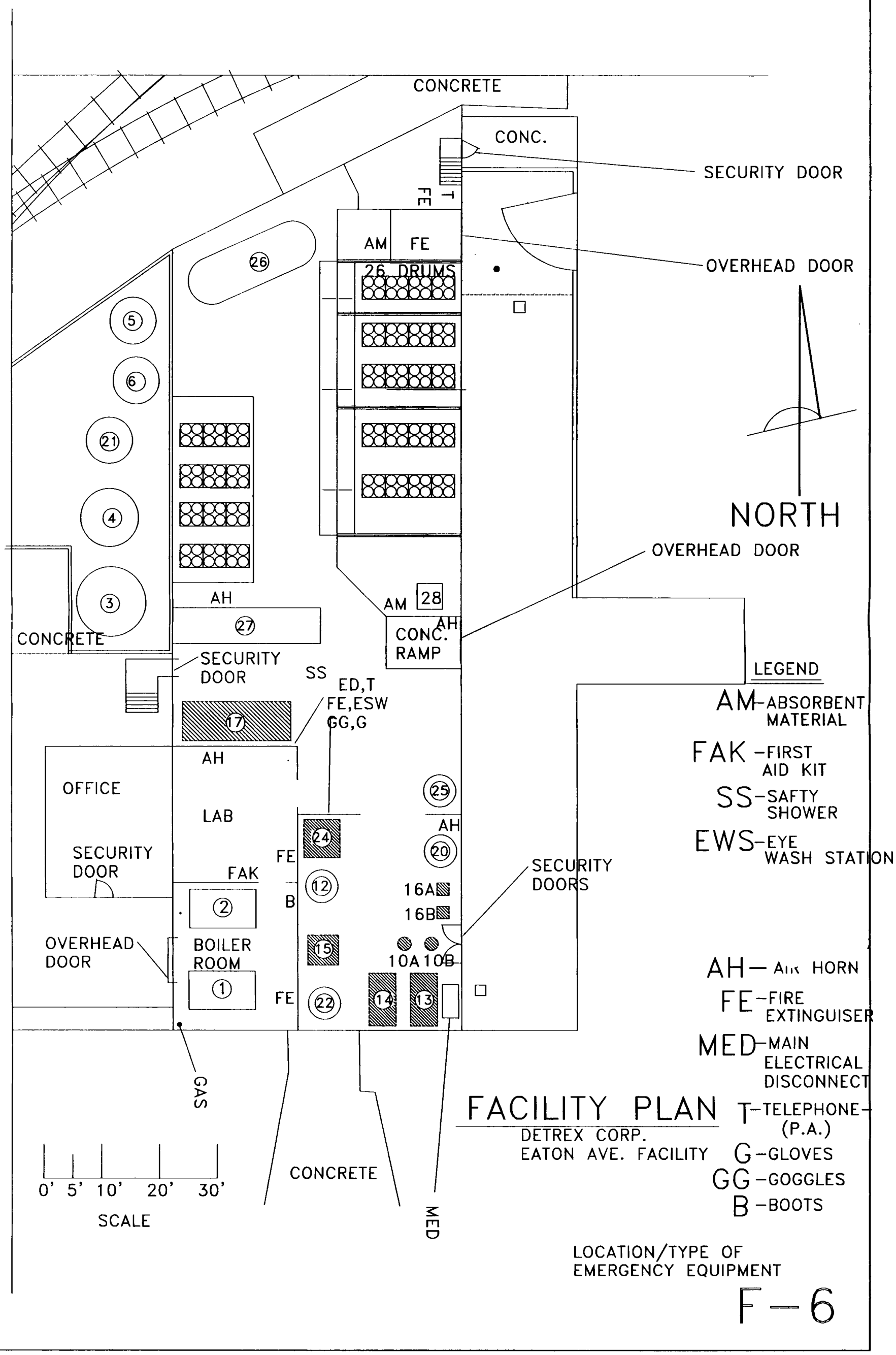
NOTE: REFER TO HAZARDOUS WASTE INSPECTION SCHEDULE FOR DETAILS ON TYPES OF PROBLEMS WHICH MAY BE ENCOUNTERED

HAZARDOUS WASTE INSPECTION SCHEDULE

Items		*Type of Problem*	*Inspection Frequency*
Hazardous waste container storage areas (7, 8, 9, 11 & 29)	-	Leaking containers	Daily
	-	Bungs secure / properly secured	
	-	Corrosion on containers	
	-	Proper stack height	
	-	Proper labeling/marking	
	-	Adequate Aisle space	
Secondary Containment	-	Base free of cracks and intact	Daily
	-	Presence of Free Liquid	
Loading/unloading area & flammable storage area dock	-	Spills	Daily
	-	No cracks / Leaks, joints intact	
Container handling equipment (fork lift, grapple, pallet jack, drum hand cart)	-	Operational	Daily, when used
	-	Available	
Barriers to prevent entry			
Doors	-	Open freely	Daily
	-	Locks function	

ATTACHMENT F-6

LOCATION OF EMERGENCY AND SAFETY EQUIPMENT


CONCRETE
CONC.
SECURITY DOOR
T
FE
AM
FE
26 DRUMS
OVERHEAD DOOR
26
5
6
21
4
3
NORTH
OVERHEAD DOOR
AH
27
AM
28
AH
CONC. RAMP
CONCRETE
SECURITY DOOR
SS
ED,T
FE,ESW
GG,G
17
AH
OFFICE
LAB
25
AH
20
24
SECURITY DOOR
FE
FAK
12
16A
16B
SECURITY DOORS
2
B
OVERHEAD DOOR
BOILER ROOM
15
10A 10B
1
FE
22
14
13
GAS
CONCRETE
MED
0' 5' 10' 20' 30'
SCALE
LEGEND
AM-ABSORBENT MATERIAL
FAK -FIRST AID KIT
SS-SAFTY SHOWER
EWS-EYE WASH STATION
AH- AIR HORN
FE-FIRE EXTINGUISER
MED-MAIN ELECTRICAL DISCONNECT
T-TELEPHONE (P.A.)
G-GLOVES
GG-GOGGLES
B-BOOTS
FACILITY PLAN
DETREX CORP.
EATON AVE. FACILITY
LOCATION/TYPE OF EMERGENCY EQUIPMENT
F-6
DETREX CORPORATION
FACILITY
EATON AVE.
9601
FACILITY
DEC.10.98
E.L.R.
1/8"=1'2"

Attachment F-6

EMERGENCY EQUIPMENT

1. Communications System

- telephone/public address system (notify in-house staff and external agencies)

2. Fire Control Systems and Equipment

- fire extinguishers - for combustibles, flammables, liquids, and electrical fires;
- fire hydrants - 1 hydrant located approximately 50 feet out from the facility building

3. Spill Control Equipment

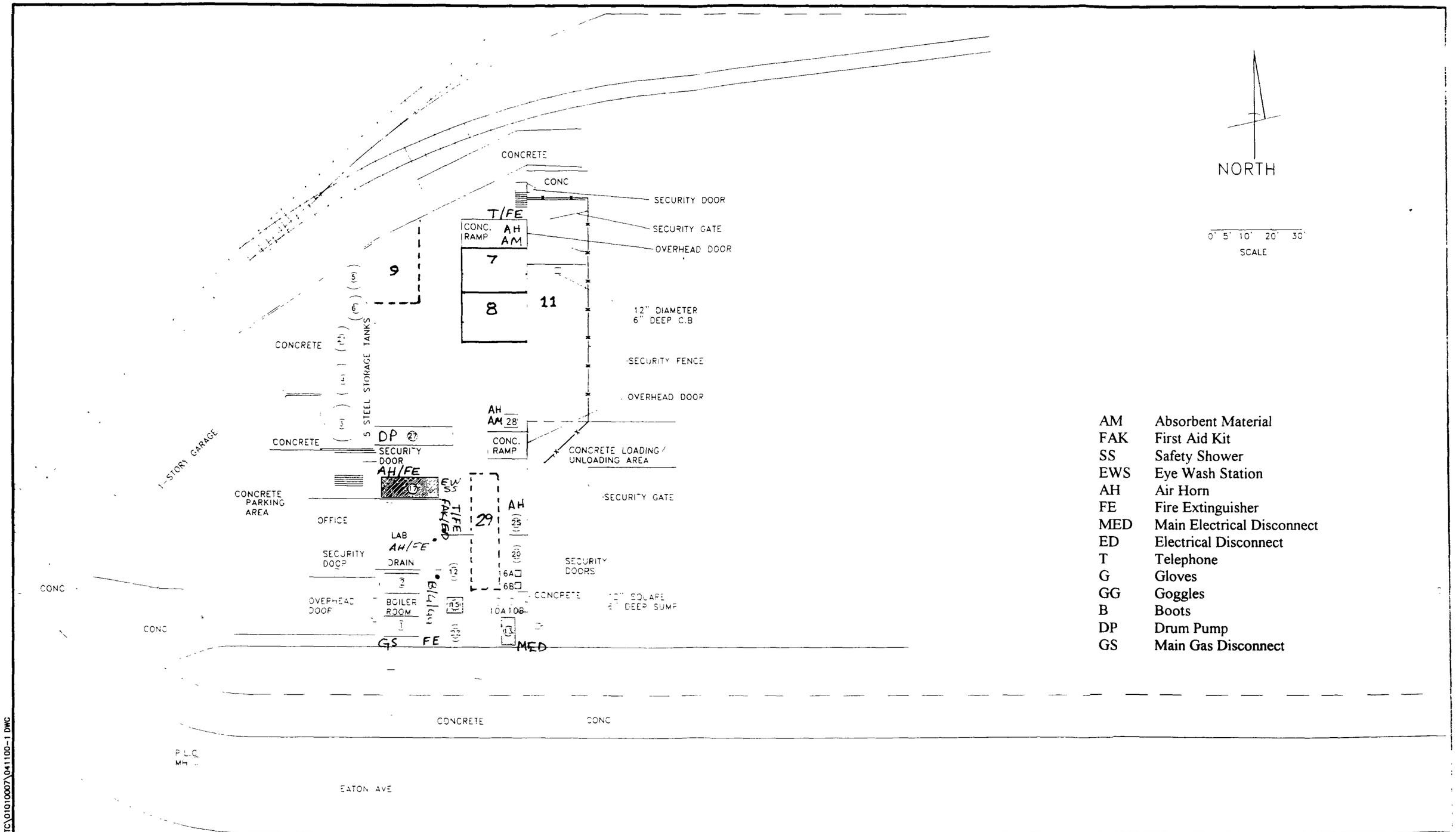
- absorbent material - approximately 5 gallons absorbed per bag
- drum pump
- brooms, shovels (part of operational supplies used for housekeeping, which may also be used in event of release. These are not stored in any specific location)

4. Health and Medical Emergency Equipment/Supplies

- protective clothing (aprons, coveralls)
- emergency lighting (10 - 30 minutes lighting for escape)
- eye wash/safety shower - adequate supply of fresh water for flushing eyes and skin
- first-aid stations
- safety glasses
- gloves (cotton, leather, rubber)
- boots

5. Material Handling Equipment

- Lift Truck
- Drum Hand Truck



AM	Absorbent Material
FAK	First Aid Kit
SS	Safety Shower
EWS	Eye Wash Station
AH	Air Horn
FE	Fire Extinguisher
MED	Main Electrical Disconnect
ED	Electrical Disconnect
T	Telephone
G	Gloves
GG	Goggles
B	Boots
DP	Drum Pump
GS	Main Gas Disconnect

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REV. DATE 04/14/00 8/00	THIS DRAWING AND ALL INFORMATION CONTAINED THEREON IS THE PROPERTY OF NORTHERN ENVIRONMENTAL INCORPORATED AND SHALL NOT BE COPIED OR USED EXCEPT FOR THE PURPOSE FOR WHICH IT IS EXPRESSLY FURNISHED.	

Northern Environmental™
Hydrologists · Engineers · Geologists

DETREX CORPORATION
SOUTHFIELD, MICHIGAN

LOCATION/TYPE OF EMERGENCY EQUIPMENT

ATTACHMENT F-6/G-4

ATTACHMENT F-7

HAZARDOUS WASTES GROUPS

Reactivity Group Number	*Group Name and Constitutents*
	Corrosive Materials
1, 2, 3	Acids
10	Caustics
16	**Aromatic Hydrocarbons**
	Benzene
	2,4-Dinitrotoluene
	Nitrobenzene
17	**Halogenated Organics**
	Carbon tetrachloride
	Chloroform
	1,4-Dichlorobenzene
	1,2-Dichloroethene
	1,1-Dichloroethylene
	Heptachlor
	Hexachloroethane
	Hexachlorobenzene
	Tetrachloroethylene
	Trichloroethylene
	Dichlorodifluoroethane
	1,1-Dichloroethane
	1,1,1-Trichloroethane
	1,1,2,2-Tetrachloroethane
	1,1,1,2-Tetrachloroethane
	Dichloromethane
	Trichlorofluoromethane
	Chlorobenzene (distillation or fractionation column bottoms)
	Vinyl Chloride
19	**Ketones**
	Methyl Ethyl Ketone
24	**Metals**
	Cadmium
	Chromium
	Lead
	Mercury
	Selenium
	Silver
	Arsenic
	Barium

DETREX HAZARDOUS WASTE COMPATABILITY CHART

Date: ./16/99
Revision: 99-1
Attachment: F-7

REACTIVITY GROUP

NUMBER

1	1							
2		2						
3		H,G	3					
10	H	H	H	10				
16		H,F			16			
17	H,GT	H,F,GT		H,GF		17		
19	H	H,F		H			19	
24	S	S	S	S				24

REACTIVITY CODE	CONSEQUENCES
H	HEAT
F	FIRE
G	INNOCUOUS AND NON-FLAMMABLE GAS GENERATION
GT	TOXIC GAS GENERATION
GF	FLAMMABLE GAS GENERATION
S	SOLUBILIZATION OF TOXIC SUBSTANCES

SECTION G

CONTINGENCY PLAN

RECEIVED
AUG 28 2000
Waste Management
Division

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SECTION G

CONTINGENCY PLAN
[40 CFR 270.149(b)(7), 264.50 through 264.56, 264.52(b)]

This Contingency Plan has been prepared for the Detrex Corporation Facility (Facility) located in Detroit, Michigan. The Contingency Plan has been designed to minimize hazards to human health or the environment and describes the actions Facility personnel will take in response to fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents at the Facility.

The information is provided pursuant to Michigan Act 451 Rule 299.9607 which incorporates 40 CFR Part 264 Subpart D by reference. The applicable section(s) of the Federal Regulations (40 CFR) is referenced as appropriate.

G-1 GENERAL INFORMATION

This Contingency Plan has been provided for the Treatment Storage and Disposal Facility (TSDF) owned and operated by Detrex Corporation at the following location:

Detrex Corporation
12886 Eaton Avenue
Detroit, Michigan 48227
Telephone: (313) 491-4550

The Facility is classified as TSDF and operates under EPA identification number MID 091605972.

The hazardous waste management operations involve container storage; the Facility will also combine/commingle NON-RCRA and Non-hazardous wastes. Wastes will be received in DOT-approved containers and stored in appropriate storage areas to prevent combining or commingling of incompatible wastes in the event of a release.

The entire operation is located within a single enclosed building or in flammable storage area. A Facility plan showing the location of the hazardous waste management units is provided in Attachment G-3.

This Contingency Plan contains emergency provisions to minimize hazards to human health or the environment from fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents for the entire Facility. A copy of this Contingency Plan and all revisions will be maintained at the Facility

G-2 EMERGENCY COORDINATORS
[40 CFR 264.52(d), 264.55]

If an imminent or actual emergency is discovered, the Emergency Coordinator (either on the Facility premises or on call) will be immediately notified. The primary Emergency Coordinator (EC) will be contacted first; if he/she is not available, the alternate(s) will be contacted (in the order listed) until one is reached. A list of ECs with address and telephone numbers is provided in Attachment G-1 and will be posted in key areas of the Facility.

The employee who discovers an imminent or actual emergency shall take responsibility for notifying an EC. At least one of the designated ECs will either be at the Facility or on call and available to respond to an emergency seven (7) days per week. They will be typically able to reach the Facility within approximately 30 minutes of being contacted. It is important to note that this Facility does not process or treat any wastes; therefore the potential for an emergency in a non-operational time is remote

The EC and the alternates are thoroughly familiar with all aspects of the Contingency Plan, all operations and activities at the Facility, the location and characteristics of wastes handled, the locations of all records within the Facility, and the Facility layout. They have the authority to commit the resources necessary to implement the contingency plan. The EC or the alternate(s) will coordinate and direct all response efforts and personnel.

In the event that the Detroit Fire Department (DFD) responds to an emergency at the Facility, the DFD Supervisor assumes the duties and authorities of the Emergency Coordinator. The Supervisor and the EC then act together to coordinate and direct the response effort. The plant EC's principal authority is to effectively provide the DFD Supervisor with comprehensive and detailed information concerning plant operations and the location and characteristics of materials handled.

A listing of the emergency response agencies and organizations, which may be called upon to provide emergency assistance at the Facility, is provided in Attachment G-2 with the appropriate contact numbers

The local Police, Fire Department and the local Hospital are familiar with, and have a copy of the most current Contingency Plan for the Facility (see Section G-6).

G-3 IMPLEMENTATION
[40 CFR 264 52(a), 264.56(d)]

The provisions of this Contingency Plan must be carried out immediately whenever there is an imminent or actual incident, such as fire, explosion, or release of hazardous waste or hazardous waste constituents, which could adversely affect human health or the environment. This would include spills that have Detrex knows has reached surface or groundwaters. Minor leaks or spills in the hazardous waste storage areas (i.e., small quantity within a containment area that can easily be managed and cleaned by the personnel and equipment at hand) would not normally trigger the formal implementation of the Contingency Plan but would be managed by the EC or the alternate(s). Leaks or spills will only trigger formal implementation of the Contingency Plan, should the EC determine that such leaks or spills represent an imminent or actual threat to human health or the environment, or if the release reaches surface or groundwaters. It is noted that the methods addressed in the Contingency Plan and the personnel training conducted for contingency procedures are applicable to any potential minor leak or spill.

Also, a fire in the incipient stage will not normally trigger the formal implementation of the Contingency Plan since Facility Personnel have been trained in a fire extinguisher program, as defined under OSHA 1910 Subpart L. An incipient fire is defined as a fire which can be extinguished with approximately two 20-pound fire extinguishers. Fires in the incipient stage will only trigger implementation of the Contingency Plan should the EC determine that such fires represent an imminent or actual threat to human health or the environment

The following section offers the EC guidelines to evaluate the implementation of the Contingency Plan.

The Contingency Plan will be implemented in the following situations

A. Fire and/or Explosion

1. A fire caused the release of toxic fumes (based on G-4c);
2. The fire spreads and could possibly ignite materials or other locations on site or could cause heat-induced explosions.
3. The fire could possibly spread to off-site areas.
4. Contaminant could spread from the use of water or water and chemical fire suppressants external to the Facility; or
5. An explosion has occurred or an imminent danger exists that an explosion could occur at the Facility.

B Spill or Material Release

1 The spill could result in the release of toxic liquids or vapors, thus causing a fire or gas explosion hazard or health hazard; or

2. The spill is major and could result in soil contamination and/or groundwater pollution.

If the EC determines that the Facility has had a release, fire, or explosion which could threaten human health or the environment, has knowledge that a release has reached surface water or groundwater , or if there is a need to bring in outside agencies/organizations, he/she will report his/her finding as follows:

1. If his/her assessment of the emergency indicates that evacuation of the surrounding local areas may be advisable, the EC will immediately notify the DFD at 911, MDEQ via Pollution Emergency Alerting System (PEAS), and any other appropriate authorities as deemed necessary including the National Response Center.

2. Immediately contact all other appropriate departments, agencies and organizations with designated response orders to relate to them the specific information they require to respond (see Section G-4a).

3. Contact Detrex Risk Management Department.

G-4 EMERGENCY ACTIONS
[40 CFR 264.56]

In the event of an emergency, the Emergency Coordinator or his/her alternate will be contacted immediately and will:

1. Determine whether to formally implement the Contingency Plan based upon the criteria set forth in Section G-3 (i.e potential threat to human health or the environment).
2. Immediately warn Facility personnel and appropriate emergency response authorities if it is an imminent or actual emergency, involving sudden or non-sudden release by fire, explosion, or otherwise so as to threaten human health or the environment. The procedures listed below with regard to appropriate notification of the proper authorities shall be followed as soon as possible once the safety of personnel is assured.
3. Determine the origin, location, nature, and extent of the problem.
4. Establish a command post from which to coordinate and direct the overall emergency response effort.
5. Inform other personnel of the situation.

G-4a NOTIFICATION
[40 CFR 264.56(a)]

1. Once immediate concerns involving human health and the environment have been addressed by the emergency response personnel the EC will immediately notify the appropriate national, state (including the MDEQ's PEAS (Pollution Emergency Alerting System)), and/or local departments, agencies and organizations with designated response roles, including the Risk Management Department of Detrex Corporation (see Attachment G-2)

2. When notifying response agencies and organizations noted above, the EC will furnish the following information:

   a. Name and telephone number of individual reporting the incident,
   b. Name, address, telephone number, and EPA ID # of the Facility,
   c. The name, telephone number, and the owner/operators name for the Facility (PEAS requirement);
   d. Date, time and type (e.g., release, fire) of incident;
   e. Name and quantity of material(s) involved and to what extent;
   f. The extent of injuries, if any,
   g. The amount of recovered material, if any, and its disposition;
   h. The possible, hazards to human health or the environment; and
   i. The types of response actions taken

G-4b IDENTIFICATION OF HAZARDS MATERIALS [40 CFR 264.56(b)]

In the event of an emergency situation, the EC or his/her alternate will be contacted immediately. Upon notification, the EC will take the necessary steps to immediately identify the character, exact source, amount and aerial extent of any released materials.

The EC and the alternate(s) are familiar with the characteristics of all hazardous wastes handled at the Facility and have access to the appropriate waste characterization information kept on file in the office. They also have access to the Operating Record, which contains up-to-date information on the inventory of hazardous wastes at the Facility.

Based upon the EC's knowledge of the types and locations of all hazardous wastes at the Facility, and on a thorough visual inspection of the situation, an accurate identification of the hazardous materials existing in an emergency situation will be possible.

G-4c ASSESSMENT [40 CFR 264.56(c), 264.56(d)]

Upon discovery or notification of an emergency situation, the EC will assess possible hazards to human health or the environment that may have resulted from the release, fire or explosion. This assessment shall consider both direct and indirect effects of the release, fire, or explosion, including the effects of any toxic, irritating, or asphyxiating gases that were generated, or the effects of any hazardous surface water runoff from water or chemical agents used to control fire and heat-induced explosions

The procedure for assessing possible hazards includes:

1. Identification of hazardous properties of the materials involved or by-products thereof.
2. Determination of threat to human health or the environment, both on site and off site.
3. Assessment of any environmental conditions (e.g , windspeed and direction) that may contribute to the magnitude of the hazard
4. Determination of the readiness and availability of response equipment, both on-site and off-site.

Specific Assessment of Possible Hazards to Human Health or the Environment

Although each potential threat to human health or the environment will be evaluated/assessed by the EC or alternate(s) on a case-by-case basis, the following five scenarios have been developed by the Risk Management Group to provide general guidance to the EC or the alternate(s). These and other possible scenarios may be discussed during training. In the event a situation occurs that is not covered in one of these scenarios, and the EC or alternate(s) are not absolutely sure of appropriate protective steps, the EC or alternates are directed to error on the conservative side and implement the Contingency Plan.

1. Emergencies that result in a spill or release of hazardous material, which cannot be controlled by plant employees but will be contained by the secondary containment system, shall not be deemed a hazard to human health or the environment.

2. Emergencies which result in the release of gases which cannot be controlled by the employees but can be contained by the building, to the extent that the amount escaping to the surrounding areas are below hazardous levels, then the release will not be considered a threat to the environment, but may be considered a threat to human health only for those responding to the incident.

3. Emergencies which result in a liquid spill or release of hazardous material which cannot be controlled by plant employees or the secondary containment system but does not reach sanitary/storm drains, ponds, creeks, rivers or other bodies of water which are used for irrigation of food crops or can otherwise enter aquifers or reservoirs which are used for human consumption shall be considered a hazard to the environment but not necessarily to human health.

4 Emergencies, which satisfy the criteria in 3 above and may possibly reach sanitary/storm drains, ponds, creeks, rivers or other bodies of water, which are used for irrigation of food crops or can otherwise enter aquifers or reservoirs which in turn are used for human consumption shall be considered a hazard to the environment and to human health.

5. In the event that a major gaseous release escapes the boundaries of the Facility or if the material has a flash point of less than 100° F (i.e., flammable liquid) and may create an explosion/fire, the release will be considered a threat to human health and the environment.

If the EC or alternate(s) determines that the release, fire, or explosion could threaten human health or the environment, or has knowledge of a release reaching surface or groundwaters, the EC will proceed with the notification procedures detailed in Section G-4a of this Contingency Plan

The EC or alternate(s) will evaluate information regarding the following.

1. The quantity of material released (from visual observations and Facility records);
2. The characteristics of the material (including physical and chemical properties, toxicity information from reference sources such as the handbooks for chemical substance from NIOSH or ACGIH, etc.); and
3. The potential for employee exposure (such as the generation of vapor/mists or dermal contact).

This information will be used to determine if there is a need to evacuate personnel from the Facility. Once the concern for the safety of Facility Personnel is taken into account, the Emergency Coordinator or alternate will use the above information, along with such items as the zoning map, the wind rose, and sewer location maps found in Attachments B-2 through B-4 to determine if there could be a threat to human health and/or the environment outside of the Facility If a concern does exist, the local emergency response agencies will be contacted. The local agencies will then determine if a need for evacuation does indeed exist.

G-4d CONTROL PROCEDURES
[40 CFR 264.52(a)]

Potential accidents are classified into three general areas:

1. Fire and/or explosion involving hazardous waste or hazardous waste constituents.
2. Accidental release in a liquid form of hazardous waste or hazardous waste constituents
3. Accidental release in the form of a vapor of hazardous waste or hazardous waste constituents

G-4d(1) Fire and/or Explosion

The hazardous waste management containment areas are accessible to fire-fighting and other emergency equipment Response procedures in the event of a fire and/or explosion will be as follows

1. Facility Personnel will notify the office via telephone or other communication methods (example, verbal);
2. The EC, or in their absence the alternate, will be notified;
3. If a fire is minor (i.e. in incipient stage), Facility fire-fighting equipment such as a fire extinguisher will be used to extinguish the fire. Location and type of fire extinguishers at the Facility are shown in Attachment G-4.

4. In the event that Step 3 fails to control the fire, Steps 5, 6 and 7 will be implemented and all employees will immediately vacate the premises. Personnel will meet and be accounted for at the primary or alternate meeting area.
5. If a fire and/or explosion is major, the DFD will be contacted at 911, as well as other authorities as deemed necessary.
6. Any operating units, such as pumps, etc., would be shut down as expeditiously as possible, if safe to do so. The type of equipment the facility operates is such that an emergency shut down will not create a potential for problems.
7. If time permits, and employees will not be placed into danger, power from the main disconnects will be shut down (locations shown on Attachment G-4).
8. The EC has the authority to direct other necessary actions as required.
9. An "all clear" signal will be given when the fire and/or explosion has been extinguished and the personnel's safety is no longer endangered.
10. After a fire and/or explosion has been extinguished, cleanup procedures will commence. All emergency equipment used must be replaced, repaired, recharged or otherwise be in good operating condition and placed in the appropriate location before normal operations resume.

G-4d(2) Accidental Release, Liquid

If an accidental release of liquid occurs which cannot be controlled with absorbent material, the following steps will be taken:

1. Facility Personnel will notify the office via telephone or other communication methods.
2. The EC, or in their absence the alternate, will be notified. Appropriate Emergency Response Agencies (i e , Emergency Spill Cleanup) as listed in Attachment G-2, will be notified as deemed necessary.
3. The exact source and type of release of hazardous waste or hazardous waste constituents will be determined.
4. All pump(s) contributing to the release will be shut off, keeping the safety of the responders in mind.
5. Any section(s) of pipe contributing to the release will be isolated by closing the appropriate valve(s).
6. If the discharge is from a container, the container will be turned, if possible, to orient the leak toward the top if it will reduce or stop the discharge until such a time as the drum can be properly overpacked.
7. A temporary dike of absorbent material will be placed around the discharge area.
8. All doors to the outside will be opened if the vapor(s) associated with the release are minor in nature as found in G-4d(3).
9. If there is a major release of product, which may endanger human health, plant personnel will be evacuated from the building. Personnel will meet and be accounted for at the primary or alternate meeting area.

10. Clean-up procedures will be implemented which may include notification of a spill clean-up firm, furnishing the clean-up crew with physical and/or chemical properties of waste and amount of waste released.

    a. Clean-up of released material: The waste will be collected via use of absorbent material or other methods for small spills. The contaminated material will then be placed in DOT-approved containers for transportation off site for treatment/disposal at permitted facilities. For large spills, the waste will be collected with a pump and placed in DOT-approved containers for reclamation or disposal. Explosion-proof electrical equipment will be used in the event the material is assessed as being combustible or flammable. The balance of the spilled material will be cleaned with absorbent material or other methods as stated above.

    b. Decontamination Following cleanup, the affected area of the secondary containment area will be swept and all sweepings will be containerized. The area, when necessary, would be decontaminated by a triple steam cleaning process. Scrubbing with hot water and/or sand blasting may be required if the triple rinsing is determined to be insufficient. Proper decontamination of an impacted area will be verified by the collection of water sample after the triple rinse process. The sample will be analyzed for the constituents present in the released material and the results compared to the appropriate Federal or State Drinking Water Standards

    Waste sand generated in the event that sand blasting is utilized will be properly containerized, sampled, analyzed, characterized and disposed of in accordance with statutory requirements of jurisdiction; i.e., if the sand is non-RCRA material, it can be disposed of in a Class II Landfill If hazardous, it must be shipped to an off-site permitted TSDF

    Any wash waters generated will be collected in DOT containers and processed, or transported off site for treatment/disposal at permitted facilities, if testing indicates it is a RCRA waste

    c. Cleanup of Contaminated Soil Should the spill or release occur outside the secondary containment area (i.e., external to the building), cleanup will be accomplished by a group specializing in such procedures. All visually contaminated soils, where practical, will be excavated and disposed as appropriate, at a permitted hazardous waste facility Building foundations may restrict any excavations. In the event an excavation is restricted by a building foundation, Detrex will work with MDEQ to determine an appropriate response.

11. Emergency equipment used will be decontaminated, replaced, repaired, recharged or otherwise be in good operating conditions and placed in the appropriate location before operations resume.

G-4d(3) Accidental Release Vapor

1. Facility Personnel will notify the office via phone or another communication method;
2. The EC or one of the alternate(s) will be notified;
3. The exact source and type of released hazardous waste or hazardous waste constituent will be determined, if possible, by using Facility records and operator knowledge;
4. All doors to the outside will be opened, if the release is minor in nature;
5. If the release is major (could cause a fire/explosion outside the Facility, or could affect human health), the DFD will be contacted via 911. Any operating units such as air conditioning or heating systems, pumps, etc. will be shut down as expeditiously as possible, if deemed safe to do so. Personnel will be evacuated from the building and will meet at the primary or alternate meeting area. Appropriate Emergency Response Agencies as listed in Attachment G-2 will be notified as deemed necessary; and
6. Clean up procedures will be initiated.

G-4e PREVENTION OF RECURRENCE OR SPREAD OF FIRES, EXPLOSIONS OR RELEASES
[40 CFR 264.56(e)]

Actions to prevent the recurrence or spread of fires, explosions or releases may include:

1. Halt operations and continue to monitor the Facility hourly, if possible, until assured that no problems may develop due to the emergency shut down.
2. Any containers contributing to a release will be emptied or otherwise be removed. Any product tanks contributing to a release will be removed from service until repaired.
3. Collecting and containing released wastes.
4. Use non-sparking tools and use bonding/grounding as appropriate
5. Protecting the area from open flame or heat generating activities
6. Upgrading daily and weekly inspection forms, if necessary.

All reasonable safety procedures will be followed prior to resuming operations

G-4f STORAGE AND TREATMENT OF RELEASED MATERIAL [40 CFR 264.56(g)]

Immediately after an emergency, the EC will make arrangements for proper treatment, storage and/or disposal of all water and contaminated materials resulting from the release, fire or explosion. In the event that equipment is needed to help contain, collect, store, and treat the released wastes, the EC, or the alternate will:

1. evaluate the type and quantity of material(s) released;
2. determine if the necessary equipment is in-house to properly respond;
3. contact outside agencies, such as those in Appendix G-2 to provide assistance and equipment;
4. transfer material to empty DOT-approved container(s) (an on-site supply is available) or to a storage tank which is either empty or contains compatible material;
5. if necessary, a bulk transport unit may also be utilized for temporary storage; and
6. characterize and dispose of the wastes at a properly permitted facility.

Care shall be taken to consider potential waste incompatibilities (see Section F-5) when handling released material.

All resulting wastes generated will be considered a RCRA hazardous waste consistent with the characteristics of wastes present within the Facility at the time of the emergency. The wastes will be managed as a RCRA waste unless it can be demonstrated to be non-regulated.

G-4g INCOMPATIBLE WASTES [40 CFR 264.56(h)(1)]

Operational procedures to prevent the storage of incompatible wastes in the same container storage area are documented in Section F It is noted that water reactive wastes are not accepted at the Facility, therefore any water from cleaning or potential fire fighting activities will not create a compatibility problem in any area.

In the event of a release of hazardous waste into a container storage area, no additional wastes may be placed in that containment area until the release is cleaned up

G-4h POST-EMERGENCY EQUIPMENT MAINTENANCE [40 CFR 264.56(h)(2)]

After an emergency event, or as required during the emergency response, all emergency equipment utilized in the affected area will be decontaminated or replaced so that it is suitable for future use Prior to resuming operations, an inspection of all utilized safety equipment will be

conducted. All proper authorities will be notified that the post-emergency equipment maintenance has been performed and operations will resume.

G-4i CONTAINER SPILLS AND LEAKAGE [40 CFR 264.52, 264.171]

Any container identified to have a leak will be removed from service. If any contents remain in the container, the contents will be pumped out to another container or placed in an overpack container. The container will then be managed in accordance with 40 CFR 261.7. Any released waste will be cleaned up within 24 hours of discovery.

G-5 EMERGENCY EQUIPMENT
[40 CFR 264.52(e)]

The type and physical location of Facility's emergency equipment, including fire equipment, spill control equipment, and medical treatment facilities are shown in Attachment G-4. A brief description of each aspect of the Emergency Equipment is also found in Attachment G-4.

G-6 COORDINATION AGREEMENTS
[40 CFR 264.52(c), 264.37]

The layout of the Facility, the entrances to the Facility, possible evacuation routes, copies of the Contingency Plan, and other aspects of the Facility have been submitted to the DFD, the hospital and Emergency Spill Response company (companies) that may be utilized in an emergency (see Attachment G-2). Properties of the hazardous wastes/materials handled at the Facility and their associated hazards have been provided in Tier II reports.

Each person, or the chief officer of each department, agency, or organization which receives a copy of the Contingency Plan is asked to sign a Coordination Agreement form to acknowledge that he/she reviewed the plan, understood their department's, agency's or organization's role under the plan, and that all members of their department, agency, or organization will be informed of the plan's content and their individual responsibilities. The copy of the Contingency Plan and the request for signed acknowledgment is sent by certified mail to each organization or is hand delivered. The certified mail receipts and returned signed acknowledgments, where available, are kept in the Facility office.

A copy of this contingency plan has been forwarded to the appropriate agencies and acknowledgment agreements, where available, have been included in Attachment G-6

G-7 EVACUATION PLAN
[40 CFR 264.52(f)]

If an emergency occurs which Facility Personnel cannot adequately respond to, the Emergency Coordinator will signal employees to evacuate the Facility. Employees will exit the Facility by the most expeditious route. Provided in Attachment G-5 is a revised Facility Plan showing evacuation routes. It is noted that the Facility is small so verbal communication will be helpful in directing evacuation Due to the small size of the Facility, the announcement of an emergency will be accomplished by voice communication, intercom, or some other device such as an air horn. When the intercom is used, the EC or alternate will make an announcement at least three times. An example of how this may be accomplished as follows.

ATTENTION! ATTENTION! REPORT TO THE PRIMARY/ SECONDARY DESIGNATED AREA AS THERE IS A FIRE/SPILL/EXPLOSION/ETC. [DENOTE THE AFFECTED AREA IF APPLICABLE].

Once outside the building, employees will assemble at the primary or alternate meeting area or other designated area. The EC or the alternate will then notify the proper emergency response teams. The EC, based on this assessment, may deviate from established procedures in order to effectively and safely respond to emergency situations.

G-8 REQUIRED REPORTS

[40 CFR 264.56(j)]

As required, any emergency event requiring implementation of the Contingency Plan will be reported in writing to the appropriate federal and state regulatory Regional Administrator(s) within fifteen (15) days of the event. This report will, at minimum, contain:

1. Name, address, and telephone number of the owner or operator;
2. Name, address, and telephone number of the Facility;
3. Date, time, and type of incident (i.e., fire, explosion);
4. Name and quantity of materials involved;
5. The extent of injuries, if any,
6. The assessment of actual or potential hazards to human health or the environment, where this is applicable, and
7. Estimated quantity and disposition of recovered material that resulted from the incident.
8. As required, for any release that has reached the sewer drains, a written report shall be submitted within five days to the DWSD Industrial Waste Control Division.

The EC or a member of the Risk Management Department of Detrex Corporation will submit, and retain on file, reports to the appropriate agencies and all applicable information relevant to the event for which the Contingency Plan was implemented.

The EC or a member of the Risk Management Department of Detrex will also inform the appropriate departments, agencies, and authorities that cleanup is complete before operations at the Facility resume

Detrex will place in the operating record all reports of any incident that requires implementing the Contingency Plan

G-9 AMENDMENTS TO THE CONTINGENCY PLAN
[40 CFR 264.54]

The Contingency Plan will be reviewed and immediately amended, if necessary, whenever:

1. The Facility permit is revised;
2. The plan fails in an emergency;
3. The list of emergency coordinators changes;
4. The list of emergency equipment changes;
5. The Facility alters its design, construction, operation, maintenance, or other circumstances in a way materially increasing the potential for fires, explosions or releases of hazardous waste/or hazardous waste constituents;
6. The actions/responses necessary to comply in an emergency situation change; or
7. If required due to changes in the regulations.

All changes in this plan will be sent to every person, agency, department and organization on the contingency plan distribution list within 30 days of the effective date of the change.

ATTACHMENT G-1

EMERGENCY COORDINATORS

ATTACHMENT G-1
EMERGENCY COORDINATORS

NAME	JOB TITLE	WORK PHONE	HOME PHONE	HOME ADDRESS
Primary				
Hani Hamawi	Facility Manager	(313) 491-4550	(313) 491-2042	7900 Wisconsin St. Dearborn MI 48126
Alternate(s)				
Jim Goodrich	Waste Coordinator	(313) 491-4550	(248) 628-0321	3904 Ludwig Rd. Oxford MI 48317

ATTACHMENT G-2

EMERGENCY RESPONSE AGENCIES / AUTHORITIES

RECEIVED
AUG 28 2009
Waste Management
Division

ATTACHMENT G-2
EMERGENCY RESPONSE AGENCIES / ORGANIZATIONS

NAME	ADDRESS	PHONE NUMBER
Detroit Police Department	2ND Precinct 13530 Lesure Detroit MI 48227	911
Detroit Fire Department	Engine # 30 16600 Meyers Detroit MI 48235	911
Grace Hospital	Dianne Presley VP of Operations Administration Sinai-Grace Hospital 6071 W Outer Drive Detroit MI 48235	(313) 966-3300
National Response Center		1-800-424-8802
Detrex Corporation Risk Management Group	24901 Northwestern Hwy , 500 Southfield MI 48075	(248) 358-5800 (main) (248) 799-3820 (24 hr. emergency phone #)
Detroit City LEPC	Niles Sexton	313-596-2906
(PEAS) Michigan Pollution Emergency Altering System		1-800-292-4706
SERC		517-373-8481
MDEQ, Waste Management Division – Detroit Office	MDEQ, 300 River Place, Suite 3600 Detroit, MI 48207	(313) 392-6500
Detroit Water & Sewer Department (DWSD) System Control Center	303 South Livernois Detroit MI 48209	(313) 224-4775
Emergency spill Clean-Up Companies		
Marine Pollution Control	8631 W Jefferson Detroit MI 48209	(313) 849-2333 (800) 521-8232
K & D Industrial Services, Inc	6470 Beverly Plaza Romulus MI 48174	(313) 326-3550

ATTACHMENT G-3

FACILITY PLAN

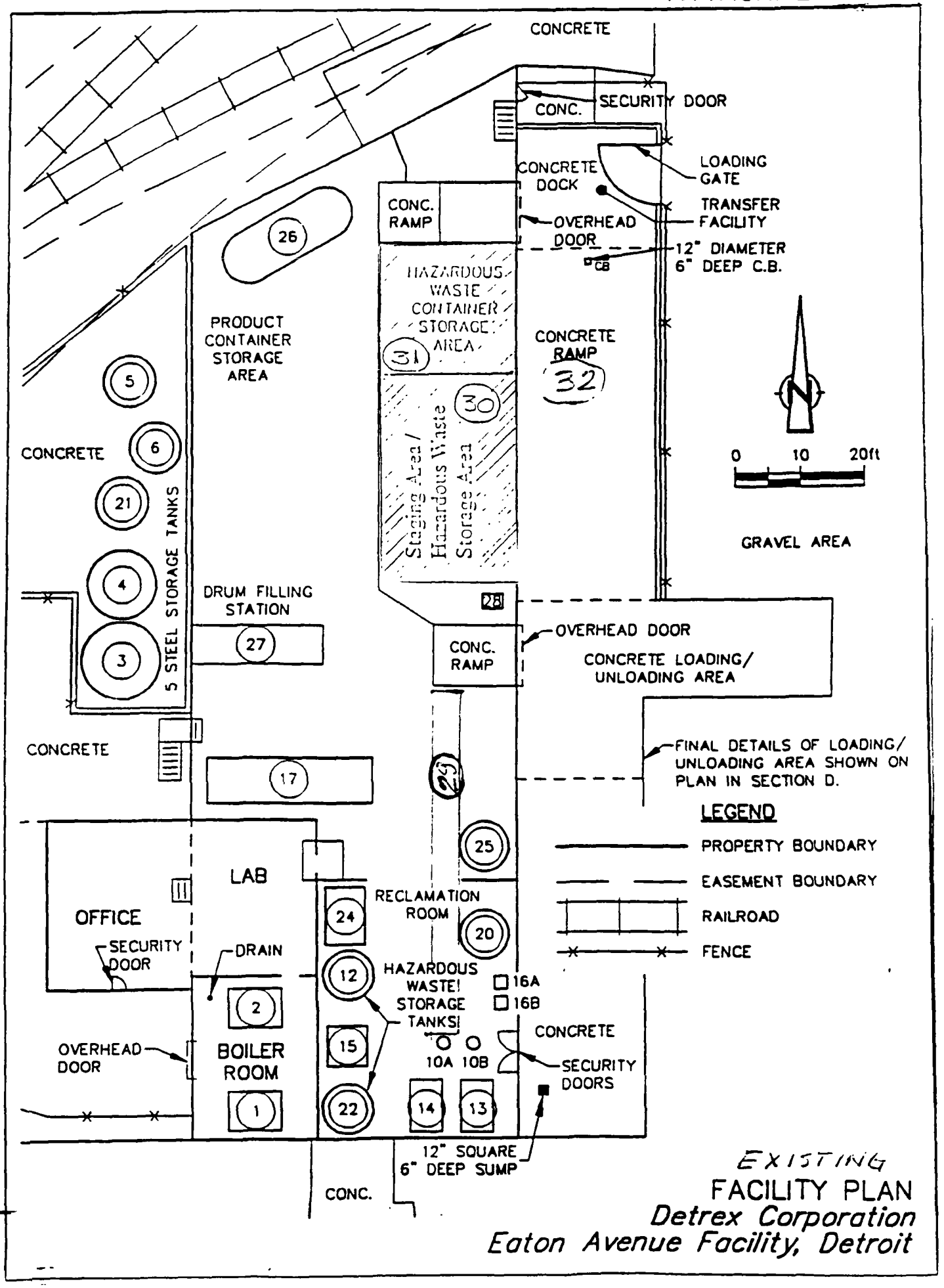
ATTACHMENT G-3
EXISTING FACILITY LAYOUT

I.D. No.	Equipment Name	Description
1.	Clayton Model E-100 Steam Generator	This unit is no longer in service
2.	Air Compressor	In use
3.	20,000 gal. Carbon steel Tank	Storage tank for Trichloroethylene
4.	10,000 gal. Carbon Steel Tank	This tank is currently out of service
5.	4,500 gal. Carbon Steel Tank	This tank is currently out of service
6.	4,500 gal. Carbon Steel Tank	Storage tank for Trichloroethylene
10 A/B	2 – 600 gal. Receiver Tanks	Product Storage Tanks
12.	2,300 gal. Carbon Steel Tank	Used for storage of Non-Hazardous Wastes.
13.	Detrex Model S-350 Still	This unit is currently out of service
15.	DCI Model Dyna-1-100 Still	This unit is currently out of service
16 A/B	Drying Columns	These units are currently out of service
17	5,000 gal. Carbon Steel Tank	Used for storage of Non-Hazardous Wastes.
20	2,500 gal. 316 Stainless Steel Tank	Used for storage Product
21	4,500 gal Carbon steel tank	Used for storage of Non-Hazardous Waste
22	4,500 gal. Carbon Steel Tank	Used for storage of Non-Hazardous Wastes
25	3,000 gal. 316 stainless steel Tank	Used for storage of Non-Hazardous Wastes.
27	Drum Filling Station	Product Drumming Station. Used for filling 55- gallon drums with product. Unit can fill approximately 30 drums per hour and is operated as necessary
28	Product Blending Vessel	550 gal. Carbon steel vessel utilized for product blending.
29	Roller conveyor	Used to weigh-in containers of waste.
30	Staging Area / Hazardous Waste Storage Area	Area used to store containerized waste that has not yet received full waste screening.
31	Hazardous Waste Storage Area	Storage area for wastes that have full waste screening performed.
32	Transfer Facility	Active

ATTACHMENT G-3
PROPOSED FACILITY LAYOUT

ID #	Equipment Name	Description
1.	Clayton Model E-100 Steam Generator	Out of service, slated for eventual removal
2.	Air Compressor	In use
3.	20,000 gal. Carbon steel Tank	Storage tank for Trichloroethylene
4.	10,000 gal. Carbon Steel Tank	This tank is currently out of service
5.	4,500 gal. Carbon Steel Tank	This tank is currently out of service
6.	4,500 gal. Carbon Steel Tank	Storage tank for Trichloroethylene
7-9	Interior Hazardous Waste Storage	Active
10 A/B	2 – 600 gal. Receiver Tanks	Product storage
11	Exterior Hazardous Waste Storage	Storage of Flammables
12.	2,300 gal. Carbon Steel Tank	Storage of Non-Hazardous Wastes
13.	Detrex Model S-350 Still	Out of service, slated for eventual removal
15.	DCI Model Dyna-1-100 Still	Out of service, slated for eventual removal
16 A/B	Drying Columns	Out of service, slated for eventual removal
17	5,000 gal. Carbon Steel Tank	Storage of Non-Hazardous Wastes.
20	2,500 gal. 316 Stainless Steel Tank	Storage of Non-Hazardous Wastes
21	4,500 gal Carbon steel tank	Storage of Non-Hazardous Wastes
22	4,500 gal. Carbon Steel Tank	Storage of Non-Hazardous Wastes.
25	3,000 gal. 316 stainless steel Tank	Storage of Non-Hazardous Wastes.
27	Drum Filling Station	Product Drumming Station.
28	Product Blending Vessel	550 gal. Carbon steel vessel utilized for product blending.
29	Staging area	Sampling (containers weighed as needed)

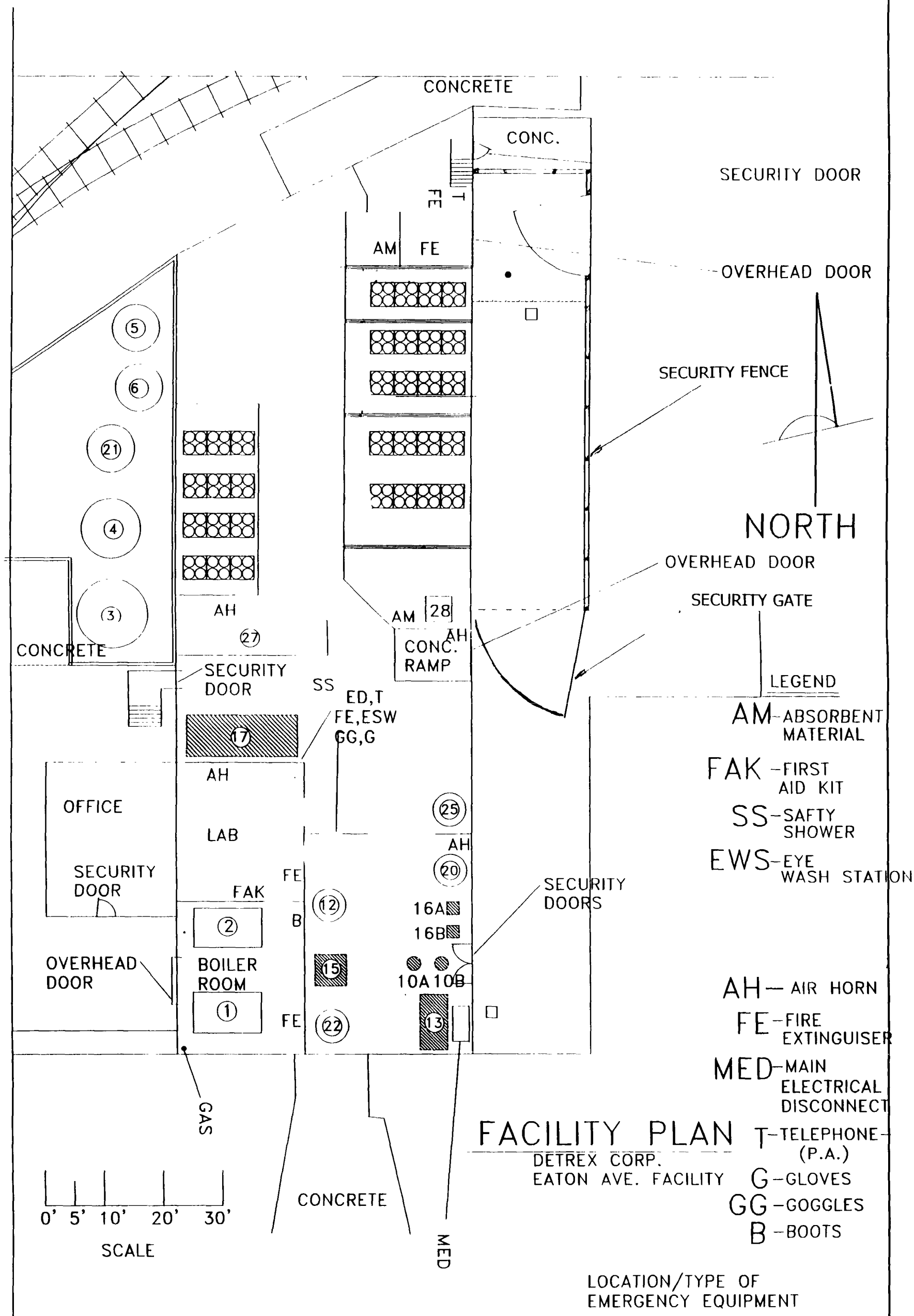
ATTACHMENT G-3



EXISTING
FACILITY PLAN
Detrex Corporation
Eaton Avenue Facility, Detroit

ATTACHMENT G-4

LOCATION OF EMERGENCY AND SAFETY EQUIPMENT


CONCRETE
CONC.
SECURITY DOOR
FE
T
AM
FE
OVERHEAD DOOR
SECURITY FENCE
NORTH
OVERHEAD DOOR
SECURITY GATE
5
6
21
4
3
AH
27
AM
28
AH
CONC. RAMP
CONCRETE
SECURITY DOOR
SS
ED,T
FE,ESW
GG,G
17
AH
OFFICE
LAB
25
AH
20
SECURITY DOOR
FE
FAK
12
B
2
16A
16B
SECURITY DOORS
OVERHEAD DOOR
BOILER ROOM
15
10A 10B
1
FE
22
13
GAS
CONCRETE
MED
0' 5' 10' 20' 30'
SCALE
LEGEND
AM-ABSORBENT MATERIAL
FAK -FIRST AID KIT
SS-SAFTY SHOWER
EWS-EYE WASH STATION
AH— AIR HORN
FE-FIRE EXTINGUISER
MED-MAIN ELECTRICAL DISCONNECT
T-TELEPHONE (P.A.)
G-GLOVES
GG-GOGGLES
B-BOOTS
FACILITY PLAN
DETREX CORP.
EATON AVE. FACILITY
LOCATION/TYPE OF EMERGENCY EQUIPMENT
G-4
DETREX CORPORATION
FACILITY
EATON AVE.
FACILITY
9601

RECEIVED

APR 1 0 2000

Waste Management
Division

Attachment G4

EMERGENCY EQUIPMENT

1. Communications System

- telephone/public address system (notify in-house staff and external agencies)

2. Fire Control Systems and Equipment

- fire extinguishers - for combustibles, flammables, liquids, and electrical fires;
- fire hydrants - 1 hydrant located approximately 50 feet out from the facility building

3. Spill Control Equipment

- absorbent material - approximately 5 gallons absorbed per bag
- drum pump
- brooms, shovels (part of operational supplies used for housekeeping, which may also be used in event of release. These are not stored in any specific location)

4. Health and Medical Emergency Equipment/Supplies

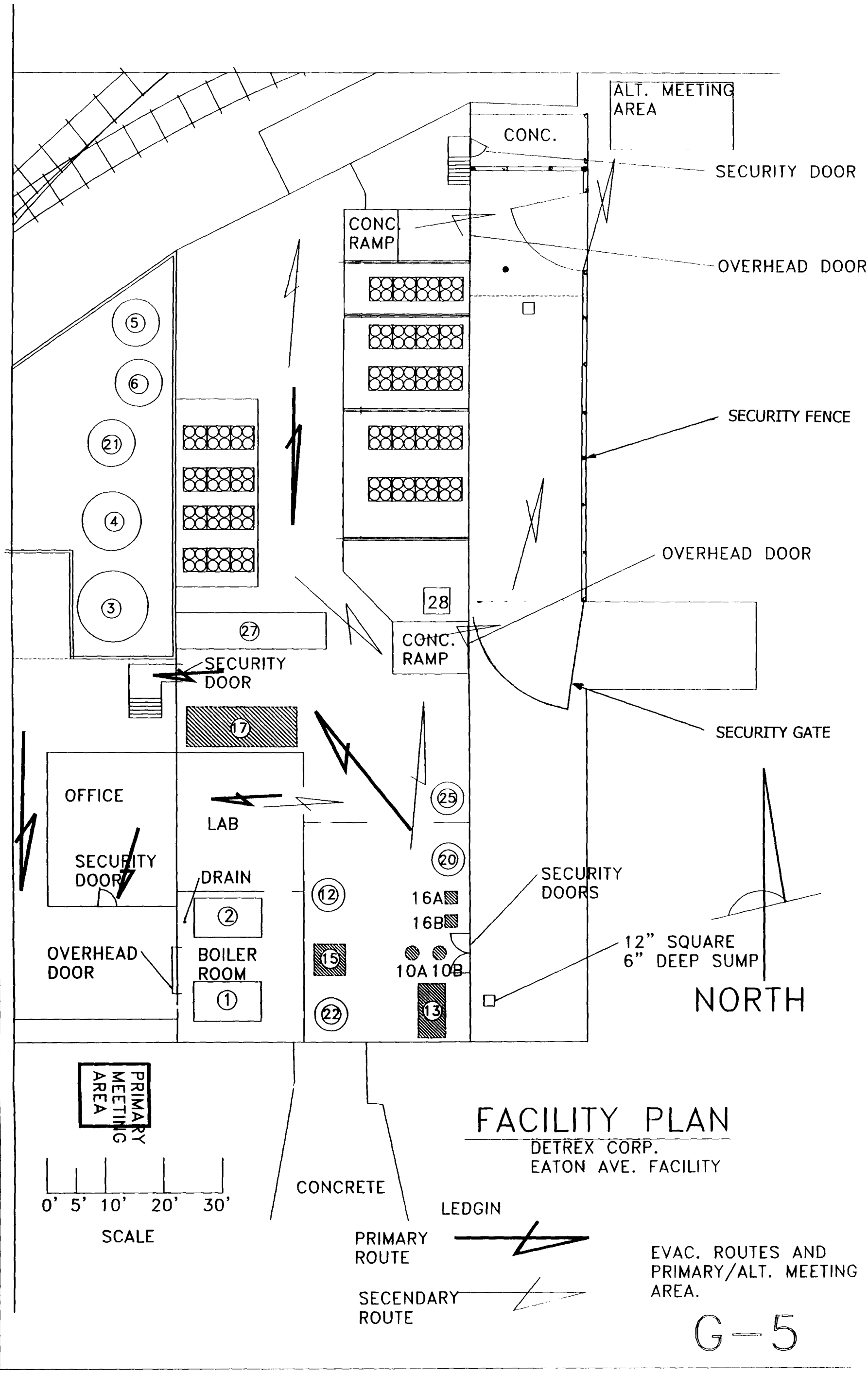
- protective clothing (aprons, coveralls)
- emergency lighting (10 - 30 minutes lighting for escape)
- eye wash/safety shower - adequate supply of fresh water for flushing eyes and skin
- first-aid stations
- safety glasses
- gloves (cotton, leather, rubber)
- boots

5. Material Handling Equipment

- Lift Truck
- Drum Hand Truck

ATTACHMENT G-5

EVACUATION ROUTES & PRIMARY AND ALTERNATE MEETING AREAS



FACILITY PLAN

DETREX CORP.
EATON AVE. FACILITY

DETREX CORPORATION
FACILITY
EATON AVE
FACILITY
9601

RECEIVED
APR 1 0 2000
Waste Management
Division

ATTACHMENT G-6

COORDINATION AGREEMENT ACKNOWLEDGMENTS

RECEIVED
JAN 05 2000
Waste Management
Division

December 16, 1999

«First_Name» «Last_Name» «Title»
«Company»
«Address1»

Re:
Contingency Plan.
Detrex Corporation
12886 Eaton Av.
Detroit MI 48227

Dear «Title» :

Detrex Corporation has ı···dated its Contingency Plan. All Emergency Responders and Organizations listed in Detrex's Contingency Plan are being provided a copy.

In order to verify your receipt of the Plan, please sign the attached Acknowledgment Form and return it in the enclosed envelope. Should you have any questions regarding the revised Contingency Plan, please feel free to contact Mr. Stan Miles at (317) 241-9379or me.

Sincerely,

David Craig - CHMM, CET
N ager of Environmental and Safety Compliance

cc:
MDEQ, Hazardous Waste Section
Facility
File

HAZARDOUS WASTE TSDF CONTINGENCY PLAN
ACKNOWLEDGEMENT FORM

I, «First_Name» «Last_Name» of «Company» acknowledge receipt of Detrex Corporation's Contingency Plan Dated November 7, 1996. I have reviewed the document and understand Detrex's need for my company as an Emergency Responder/Organization in the event that such services are needed. I further acknowledge that this Plan has been reviewed with key response personnel in my company and that the document is being maintained on file for future reference.

_____	_____
Signature of Emergency Responder	
_____	David Craig, CHMM, CET
Print Name and Title	Mgr. Environmental & Safety Compliance
_____	_____
Date	Date

SECTION H

PERSONNEL TRAINING

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H-1b Training Content, Frequency, and Techniques
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ATTACHMENT H-2 CORPORATE COMPLIANCE TRAINING PROGRAM OUTLINE

ATTACHMENT H-3 CURRICULUM VITA - TRAINING DIRECTOR

ATTACHMENT H-4 TYPICAL TRAINING ACKNOWLEDGMENT FORM

SECTION H

PERSONNEL TRAINING
[40 CFR 270.14(b)(12), 264.16]

This section outlines the personnel training program completed by all employees of the Detrex Corporations Facility (Facility) located in Detroit, Michigan. The information is provided pursuant to Michigan Act 451 Rule 299.9504(1)(c) which incorporates 40 CFR 270.14(b)(12) and 264.16 by reference. The applicable section(s) of the State and Federal Regulations are referenced as appropriate.

H-1 OUTLINE OF THE TRAINING PROGRAM
[40 CFR 264.16(a)(1)]

Detrex Corporation has developed a personnel training program for training employees in the safe handling of the hazardous wastes received at the Facility. This compliance program incorporates the existing Facility training program with expanded coverage of relevant subject areas including training required to comply with appropriate requirements of DOT, OSHA and EPA. The training consists of study, on-the-job training, and competence evaluation. Each employee must successfully complete the full training program before working unsupervised in the Facility. This occurs within 6 months of being hired or being transferred to a new position at the Facility. The training program provides each employee with a firm knowledge of how to handle the hazardous wastes and also how to react, in the event of an emergency situation, to protect human health and the environment.

H-1a JOB TITLES/JOB DESCRIPTIONS
[40 CFR 264.16(d)(1), 264.16(d)(2)]

Detrex Corporation maintains the following documents and records at the Facility:

1) The job title, experience requirements, and job descriptions for each position related to Hazardous Waste Management activities at this Facility are provided in Attachment H-1. A list of personnel currently filling these positions is available at the Facility.

2) An outline of the type and amount of both introductory and continuing training given to personnel for each position related to hazardous waste management.

3) Records certified by the Training Director, that document the training has been completed by Facility Personnel.

Detrex Corporation maintains training records of former employees involved with hazardous waste management for 3 (three) years from the date they last worked at the Facility and will maintain training records on current personnel until closure of the Facility.

Each employee receives the training necessary for him/her to perform his/her required job functions. For example, operators may receive training in such responsibilities as Emergency Action and Contingency plans, fire protection, lockout/tagout, confined space entry, and lift truck operations. The Emergency Coordinator and alternate receive training under the Emergency Action and Contingency Plans. These individuals are also familiar with operations at this Facility, and are able to provide information to emergency responders as well as helping direct responses to emergencies.

H-1b TRAINING CONTENT, FREQUENCY, AND TECHNIQUES
[40 CFR 264.16(c) and (d)(3)]

The program was developed by Detrex Corporation for training employees in the safe handling of hazardous wastes includes study, on-the-job training, and/or competence evaluation. Provisions are made for updating or revising the training program as necessary to ensure compliance with regulatory guidelines, changing Facility conditions, and organizational changes. As new waste groups are approved by MDEQ, the Training Director will ensure the appropriate personnel are aware of potential incompatibilities pursuant to Section F-5.

An outline of Detrex's Corporate compliance training program is provided in Attachment H-2. This outlines all aspects of the training program, providing each employee with the information required for the safe execution of his or her responsibilities.

An employee is not allowed to work unsupervised prior to completing introductory training. In addition, a refresher training program is conducted by Detrex Corporation once each calendar year for all facility Employees.

H-1 c TRAINING DIRECTOR
[40 CFR 264.16(a)(2)]

The Corporate Training Director for Detrex Corporation will be responsible for updating the existing personnel training program and ensuring all employees involved in hazardous waste management activities receive adequate training. As necessary, qualified independent persons or organizations may be contracted by the Training Director to assist in the training program. The curriculum vita for the individual currently filling this position is in Attachment H-3. Additionally, the Training Director and/or his staff attend various meetings/seminars. The purpose of these meeting are to help keep the Training Director / staff as current as possible on changing regulations that will affect operations.

H-1 d RELEVANCE OF TRAINING TO JOB POSITION
[40 CFR 264.16(a)(2)]

Contents of the training program are tailored to each position. For example, drivers and warehousemen receive training in applicable DOT, OSHA, and EPA regulations regarding the handling of Hazardous Chemicals, Materials, and wastes. The outline provided in Attachment H-2 is designed to provide a gerneral overview of the items covered in various training sessions. The level of detail provided to an individual employee depends on their responsibilities. For example, the warehouseman may receive training regarding the issues of time periods for storage

of hazardous waste but may not necessarily be trained regarding the status of generators classifications or the retention requirements for paperwork.

In addition, all employees receive some level of training with regards to the Contingeny Plan. The level of training is dependent on the individuals responsibilities. Individuals who are listed as the Emergency Coordinator or the alternate would be trained in all the requirements of the plan and their responsibilities under the plan; others may only be provided information on the aspects of non-emergency response or the evacuation procedures.

The following are examples of training individuals in certain job positions will receive:

The Facility Manager may receive training in areas such as: the Operation, Inspection and Recordkeeping for: Safety Equipment, Transportation and Material Handling Equipment and Contingency Plan Procedures. The Facility Manager will also ensure that proper response is given to any deficiencies identified during inspections (e.g. repair or replace defective equipment).

The Office Coordinator may receive training in areas such as: record keeping, the manifesting of hazardous waste shipments, inventory, and appropriate components of the Contingency Plan.

The Warehouseman may receive training in areas such as the operation of: Safety Equipment, Emergency Equipment, and Forklift or other material handling equipment, and appropriate components of the Contingency Plan.

Truck Driver/Warehouseman may receive training in areas such as the operation of: Safety Equipment, Emergency Equipment, and Material Handling Equipment, and all DOT requirements related to transportation of hazardous materials.

The Waste Coordinator may receive training in areas such as the operation of: Safety Equipment, Emergency Equipment, the operation of material handling equipment, and appropriate components of the Contingency Plan.

All employees, whose job is directly related to the handling of Hazardous Waste, receive training in the proper use of personnel protective equipment (PPE) including direction on when the equipment is to be worn. These employees are also trained to respond to non-routine conditions by being familiar with the Contingency Plan.

H-1e TRAINING FOR EMERGENCY RESPONSE
[40 CFR 264.16(a)(3)]

This training program is designed to ensure that personnel not only handle hazardous wastes in a safe manner, but also properly respond to emergency situations. The program trains hazardous waste handling/management personnel to maintain compliance under both normal and non-rotine operating conditions, and emergency conditions.

As noted above, each employee receives training in areas which are specific to their jobs as it relates to the handling of hazardous waste.

Emergency response procedures, as described in detail in Section G-4 of this permit application, consist of a number of steps.

1) Warn all Facility Personnel of emergency situations.
2) Notification of appropriate state or local agencies with designated response roles if necessary.
3) Identification of the nature and source of released material and assessment of potential hazards to human health or the environment.
4) Proper use of personnel protective equipment.
5) Implementation of appropriate control procedure(s) based on type of accident to reduce potential for environmental impact (i.e. release outside of containment structures).
6) Procedures for using, inspecting, repairing, and replacing emergency and monitoring equipment.
7) Procedures to respond to a fire.
8) Procedures to respond to potential groundwater contamination incidents.
9) Cleanup of affected area and emergency equipment.
10) Storage and disposal of released material.

The training plan implemented by Detrex Corporation involves study and on-the-job training in the proper emergency response procedures and the proper use of all personnel protective equipment.

H-2 IMPLEMENTATION OF TRAINING PROGRAM
[40 CFR 264.16(b), (d)(4) and (e)]

When an employee is hired to fill a specific position (i.e. Warehouseman), the employee is aquatinted with the written training program for the position he/she is to fill. No employee hired to work at the Facility, or transferred to a new position that requires skills he/she does not possess, will be allowed to work unsupervised at the Facility prior to the completion of the

training program. The employee is then given at least 40 hours of on-the-job training within 6 months of hiring or filling the new position.

Employees are required to meet annually for reviews and updates of this training program and to discuss and study the following subjects:

1. All hazardous wastes currently being handled at the Facility, noting any changes in waste type, volume, source, characteristics, or location that have occurred during the past year;
2. The status of operating conditions and procedures noting any areas where there are problems or potential for problems. Employees participate in developing effective solutions;
3. The requirements contained in the Facility's operating permit, noting any changes that have occurred during the past year. Areas where maintenance or compliance is a problem are identified and discussed, and effective solutions are sought; and
4. Incidents that have occurred in the past year that warranted use of the Contingency Plan. This review focuses on the cause of the incident and identification of steps to be taken to prevent or to ensure better handling of such events in the future.

Records certified by the Training Director will be kept on site documenting that the required training has been completed. A representative copy of the form signed by Facility Personnel after they have completed their initial or annual refresher training is provided in Attachment H-4. These records will be kept until closure of the Facility for current employees and for 3 years from the date of termination for former employees.

ATTACHMENT H-1

JOB DESCRIPTIONS

JOB DESCRIPTIONS

POSITION TITLE: Facility Manager

FACILITY: Detroit Michigan

SUMMARY: Responsible to plan, direct, and coordinate the day to day operations of the Facility with respect to the proper storage, and shipment of both product and hazardous waste materials.

VERIFICATION:

Experience: Leadership, communication skills, decision-making abilities, motivational skills, and experience in:

- Plant operations, including environmental and regulatory exposure;
- Working knowledge of transportation operations; and
- Understanding of sales and marketing situations and be able to support the Sales/Marketing groups as needed.

Education: Associates / Bachelors degree in a related field such as hazardous waste management, process control, or regulatory compliance is preferred.

Reports to: Division Operations Manager / President of the Solvents Division

RESPONSIBILITIES:

Marketing Operations:

1. Supervises pick-up of wastes where Detrex is the designated facility.
2. Supervises and directs employees involved in handling of hazardous wastes. Assure good industrial practices are followed in a manner to protect employee's safety and the environment.
3. Supervise operation of the warehouse.
4. Supervise/direct the dispatch and routing of the company's fleet of hazardous material vehicles.

Environmental and Regulatory Responsibilities:

Responsibility for on-site hazardous waste management as follows:

(1) Serves as Emergency Coordinator or alternate.
(2) Supervises all record keeping operations and preparation of hazardous waste manifests.
(3) Supervises employees when on-site sampling is performed.

JOB DESCRIPTIONS

(4) Supervises employees who screen hazardous wastes, when performed on site.
(5) Supervises employees who handle the record keeping of daily and weekly Facility inspection reports to insure compliance with the regulations and the permit.
(6) Acts as one of the contacts for the MDEQ and USEPA.
(7) Responsible for maintaining training levels of branch personnel.
(8) Responsible for regulatory compliance in operation of the Part B facility.
(9) Generates, or assists Risk Management, in the preparation of reports required by the permit, or other applicable laws

JOB DESCRIPTIONS

POSITION: Office Coordinator

FACILITY: Detroit Michigan

SUMMARY: Under the direction of the Facility Manager, is responsible for invoice to the customer for both solvent and waste. Check in and start cover sheets on waste shipments. Performs general office duties.

VERIFICATIONS:

Experience: Administrative experience with background in accounting preferred.

Education: Minimum of high school degree or equivalent

Reports To: Facility Manager

RESPONSIBILITIES:

1) May act as one of the facility's alternate Emergency Coordinators.
2) Start and maintain customer information packets for each waste shipment that is received. These packets will include:
   a) Cover Sheet with necessary information completed.
   b) Letter to the generator noting ability to accept waste
   c) Generator Waste Profile Sheet.
   d) Copy of the waste manifest(s).
   e) Customer purchase order(s).
   f) Any other information pertaining to waste shipment(s).
3) Help in the Scheduling of incoming shipments of waste.
4) Maintain and control invoice/customer files.
5) Maintain inventory for other Detrex Divisional material stored in the warehouse.

JOB DESCRIPTIONS

POSITION: Warehouseman

FACILITY: Detroit Michigan

SUMMARY: Handles hazardous waste in accordance with the latest rules and regulations. Emphasis is also placed on the development of "Better Ways" to operate the Facility in a more efficient manner.

QUALIFICATIONS:

VERIFICATIONS:

Experience: Knowledge of hazardous waste management, including handling and storage of hazardous waste preferred. Experience in maintenance of pumps and related equipment, and in the operation of a forklift preferred.

Education: High school degree or equivalent

Reports to: Facility Manager

RESPONSIBILITIES:

1. May act as an alternate Emergency Coordinator.
2. Comply with Detrex procedures for the transfer, storage, and handling of hazardous waste. This includes completion of all specified training courses.
3. Monitor the hazardous waste storage area for problems, (leaks, etc.). Address problems in a timely fashion.
4. Unload in-coming shipments of waste and store in the proper location in accordance with Detrex Facility part "B" permit.
5. Insure labels and markings remain intact until the containers are shipped off site for disposal.
6. Sample wastes received at the Facility in accordance with the Facility's WAP.
7. Provide the Office Coordinator information on the wastes received and wastes shipped from the Facility so that records may be maintained.
8. Make daily and weekly inspections and complete forms as necessary.
9. Perform additional duties/special projects as directed by the Facility Manager.

JOB DESCRIPTIONS

POSITION: Driver / Warehouseman

FACILITY: Detroit Michigan

SUMMARY: Takes over or assists the warehouseman as needed and also operates trucks used in pick-up and deliveries.

VERIFICATIONS:

Experience: Handling of hazardous materials and experience with the types of equipment utilized at the facility.

Education: High school degree or equivalent

Reports to: Facility Manager

QUALIFICATIONS:

1. Knowledge of streets in major cities in the geographic areas of coverage.
2. Common knowledge of the mechanical operations of all mobile equipment.
3. Meet applicable DOT requirements including but not limited to: Possession of a valid CDL (Commercial Driver's License) with an "X" endorsement for Hazardous Materials Tanker; Pass DOT physical; Have respectable driving record as required under DOT and Detrex policies; successfully complete any driver testing as required in the Code of Federal Regulations, part 49, section 380-392 (This test shall be given on equipment that is equivalent to or simulates the equipment utilized at the Facility. Detrex Corporation, Detrex Corporation's insurance carrier or carriers as well as appropriate Federal Regulations require this test).
4. Will have a minimum of three- (3) years experience working with hazardous waste, including flammable and corrosive waste, or 6 calendar months on-the-job training involving working with these hazardous materials which will be considered probationary.
5. Must be capable of driving any transportation equipment owned or leased by the company.
6. Load and unload or assist in the loading and unloading of any vehicle owned or leased by the company.
7. Perform job requirements as noted for Warehouseman, as required.
8. Exercise due care of the various pieces of equipment while operating it.
9. Responsible for implementing the Transporter's Contingency Plan in case of accidental spill of hazardous waste.
10. Responsible for ensuring that hazardous waste containers that are picked up meet all conditions as required in the Code of Federal Regulations, part 49, section 172-178 and that all labels and manifests are proper and in accordance with all federal and state codes. This

JOB DESCRIPTIONS

includes but is not limited to signing hazardous waste manifests on the company's behalf and ensuring Land Ban Certification is complete.

JOB DESCRIPTIONS

POSITION: Waste Coordinator

FACILITY: Detroit Michigan

SUMMARY: Position is responsible for ensuring that the Facility operates within the Hazardous Waste Operational Parameters specified in the Facility Part B Section C, the Waste Analysis Plan (WAPP).

VERIFICATION:

Experience: Experience in operations of various lab equipment as needed to perform the required tests as outlined in the Waste Analysis Plan.

Education: Associates degree, although a bachelors degree is preferred.

Reports to: Operations Manager

HAZARDOUS WASTE RESPONSIBILITIES

1. Work with the Warehouseman and Drivers to ensure that all shipments of waste received at the Facility are properly manifested, labeled, marked with accumulation start date, sampled, and logged in. Also performs analytical work or prepare the sample for shipment to appropriate analytical facility, including applicable paperwork, and bench top fingerprint analysis are performed
   Perform other analytical analysis as required.

ATTACHMENT H-2

CORPORATE COMPLIANCE TRAINING PROGRAM OUTLINE

Attachment H-2

TRAINING OUTLINE

I. Purpose

II. Objective

III. Definitions

A. DOT HM-215A

1. Hazardous Materials

2. Hazardous Substances

3. Hazardous Wastes
   a. D001
   b. D002
   c. D003
   d. D004-D042
   e. Subpart D Listed Materials

4. Shipping Papers (Manifests)
   a. Sending, Receiving, Uniform
   b. Signature & Dates
   c. Proper Shipping Names
   d. Additional Information

5. Markings
   a. Requirements
   b. Duplicating/Conflicting

6. Placards & Labels
   a. Hazard Class
   b. Where Placed
   c. When Offered

7. Containers
   a. Reuse
   b. Performance-Oriented Requirements

B. EPA

1. Storage Requirements
   a. Location
   b. Containment
   c. Identifying Markings

Attachment H-2

TRAINING OUTLINE

2. Container Condition
   a. Closure
   b. Leaks

3. Storage Limitations
   a. Conditionally Exempt
   b. Small Quantity
   c. Large Quantity

4. Training Requirements

IV. Written Program Requirements

A. Site General Requirements

1. Physical Location

2. Operational Information

3. Equipment Operation & Shutdown (Routine & Emergency)

B. Written Program

1. Purpose of the Plan to Minimize Hazards

2. Role of Coordinator
   a. Notify State, Local Authorities, departments
   b. Assessment
   c. Identification
   d. Act to Mitigate
   e. All Clear
   f. Report Written

3. Hazards Covered under Plan
   a. Fire
   b. Explosion
   c. Release (sudden/non-sudden)

4. General Plan Requirements
   a. Who Notifies Coordinator
   b. Information to Provide (5 W's & H)
   c. Special Duties of Employees
   d. Fire Department

Attachment H-2

TRAINING OUTLINE

e. Copy of Plan
f. Methods of Notification (facility)

5. Emergency Plans
   a. What Activates the Plan (imminent or actual hazard)
      (1) Fire/Explosion
         -toxic fumes
         -fire spreads - ignite or explode others
         -spread off-site
         -explosion possibility
      (2) Spill/Release
         - release above reportable quantity (RQ)
         -release to ground outside of containment areas
   b. PLAN Implementation
      (1) Notification
         - personal
         - response agencies
         - determine extent of emergency
         - command post
         - notify others
         - determine if in-house can handle
      (2) Identification
         -material, amount, source, characteristics, etc.
      (3) Assessment
         -effect to human health and/or environment: direct/indirect
         -hazardous properties
         -threat to human health and/or environment on- and off-site
         -environmental conditions to worsen effect
         -status of response equipment
      (4) Written Reports
         -government (agency)
         -Risk Management
   c. Responding to Emergencies
      (1) Accidental Release - Liquid
      (2) Accidental Release - Vapor
   d. Prevention of Recurrence of Spread of Fires, Explosions or Releases
   e. Storage and Treatment of Released Material
   f. Storage of Incompatible Wastes
   g. Post-Emergency Equipment Maintenance
   h. Container Spills and Leakage

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7. Evacuation

Attachment H-2

TRAINING OUTLINE

8. Coordination Agreements

C. Required Reports

D. Amendments to The Plan

E. Permit Parameters

ATTACHMENT H-3

CURRICULUM VITA - TRAINING DIRECTOR

DAVID D. CRAIG, CHMM, CET

CAREER HISTORY

DETREX CORPORATION, Southfield MI **1993-Present**
Chemical and related fields.

Corporate Environmental and Safety Engineer, Southfield MI
Responsible for assisting the Corporate Manager of Regulatory Compliance in completion of RCRA programs.

- Assisted in the drafting of revised safety programs for all facilities;
- Assist in the auditing of both Detrex and third party facilities to insure compliance with all Governmental Regulations;
- Assist in the training of all facility personnel in applicable OSHA, EPA, and DOT programs;
- Developed newsletter to inform all facilities of new pending or promulgated regulations as found in the Federal Register.

LOCKHART CHEMICAL, Allison park PA **1991-1993**
Manufacturer of Sulfonates and Coatings used in the formulation of end use products for the steel and auto industries.

Regulatory Engineer, Flint MI
Operated as Lab Manager for facility, managed plant security, developed and implemented safety programs, activated safety committee, obtained CAA permits from the MDNR, and completed all governmental reports.

- Developed safety programs;
- Developed Waste Tracking Program;
- Obtained a AC Construction and Operating permit associated with an Incinerator;
- Brought facility into compliance with all governmental reporting requirements.

QUAKER CHEMICAL, Conshohocken PA **1988-1991**
A chemical specialty manufacturer of products used in the steel and automotive industries. Annual revenues in excess of $200 MM.

Environmental/Safety Manager Detroit MI 1989-1991

Audited contractors, generated reports for governmental agencies, obtained equipment permits, developed and performed training programs, and worked directly with insurance carriers to resolve concerns. Acted as the Statistical Process Control (SPC) Coordinator for the Detroit Facility.

- Implemented procedural changes to reduce contaminants (fat, oil, and grease, BOD, and metals) by over 10 % in effluent discharged under pre-treatment permit;
- Developed Safety programs for various OSHA regulations;
- Managed local quality programs essential in helping obtain quality awards (Rouge Steel Q-1 and Double Eagle);
- Utilized SPC to reduce the Out of Specification (OOS) over ten fold in one key intermediate resulting in a decease in OOS in one product line by over 30%;
- Chaired SPC and safety committees, and participated in Employee Involvement Group.

Production Supervisor Detroit MI 1988-1989

Responsible for all aspects of the manufacturing operations producing nine to ten million pounds per month. These responsibilities included scheduling, answering customer inquiries, troubleshooting equipment problems, and interfacing with quality control.

- Achieved 100% on-time shipment of same day orders;
- Shipped over 90% of all orders within 3 days of receipt;
- Reduced carrier demurrage by over 50 % saving $30,000 per year;
- Directed expansion of operations from one to two shifts;
- Developed training programs for new hires;

ANDERSON DEVELOPMENT COMPANY, Adrian MI **1981-1988**
A specialty chemical manufacturer of proprietary and contracted products, from major chemical companies, used in the manufacture of industrial and consumer products.

Production Manager , Activated Carbon Plant 1985-1988
Managed a semi-works plant utilizing high temperature chemical process to produce an ultra high surface area carbon. Plant was managed during construction and startup.

- Applied new technology to a manufacturing process achieving over $500,000 in sales;
- Directed a 24 hour operations of 12 employees.

Production Manager, Prepolymer and Intermediate Division 1981-1985
Managed production of proprietary products and custom products for outside firms. Worked with the plant manager and research group on generating cost estimates for scale up of new projects. Responsibilities included inventory control, scheduling, billing, conducting safety meetings, and assuming the role of plant manager as needed.

- Supervised 14 employees in a 24 hour per day, 5 day operation
- Reduced on-site waste to below EPAs 90 day limit.

EDUCATION / EXPERIENCE

DOT Drug and Alcohol Compliance Workshop 1995
J.J. Keller Grand Rapids MI

Industrial Storm Water Training 1995
MDNR, Water Quality Group Livonia MI

HAZWOPER, 40 Hour Certification 1994
New Environment, Inc.

Certified HAZWOPER Trainer Workshop 1994
New Environment, Inc.

Annual RCRA Compliance Course 1994
Engineers Review, Inc. Romulus MI

BS, Chemical Engineering 1981
University of Michigan Ann Arbor MI

ORGANIZATIONS / CERTIFICATIONS

Certified Industrial Storm Water Operator MDNR, Water Quality Group Livonia MI	1995
Certified HAZWOPER Trainer New Environment, Inc.	1994
Certified Hazardous Materials Manager (CHMM) #5631 Institute of Hazardous Materials Management Detroit MI	1994
Certified Environmental Trainer (CET) # 94-285 National Environmental Training Association Washington, DC	1994

ATTACHMENT H-4

TYPICAL TRAINING ACKNOWLEDGMENT FORM

40 CFR 262.34 HAZARDOUS WASTE GENERATORS REVIEW

Last Date of Review and Person Reviewing:

Name (print)	**Signature**

INSTRUCTOR:_____

DATE:_____

29 CFR 1910.38 EMERGENCY ACTION PLAN & 40 CFR 264/265 SUBPART D CONTINGENCY PLAN

Last Date of Review:

Name	Signature

INSTRUCTOR:_____

Date:_____

SECTION I

CLOSURE PLAN

RECEIVED
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Division

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SECTION I

CLOSURE PLAN, POST-CLOSURE PLAN AND FINANCIAL REQUIREMENTS

This section identifies operational activities for the Detrex Corporation Facility (Facility) located in Detroit, Michigan which are necessary to completely close the hazardous waste storage areas at the end of their intended operating lives. This section also covers partial closure, including removal of a single containment area. A post-closure plan is not required because this is not a disposal facility; therefore, all wastes will be removed at closure.

The information in this section is provided in accordance with Michigan Act 451 Rule 299.9613 which incorporates 40 CFR Part 264, Subpart G, by reference. The applicable section(s) of the State and Federal Regulations are referenced where applicable.

I-1 CLOSURE PLAN

[40 CFR 270.14(b)(13), 264.112(a)(1) and (2)]

Prior to partial or final closure of the Facility, Detrex is likely to submitt to the State an ammendment to the current closure plan. Detrex Corporation will maintain on-site a copy of the closure plan, and all revisions to the plan, until the certification of closure completeness has been submitted and accepted by MDEQ. Detrex will notify the director at least 60days prior to the date Detrex expects to begin final closure at the Eaton Ave. Facility.

Attachment I-1 provides a listing of all the approved waste codes. A Facility Plan identifying all hazardous waste management units is provided in Attachment I-2.

Upon completion of closure activities, Detrex Corporation will submit a certification to the Director of MDEQ, verified by both Detrex Corporation and an independent registered professional engineer, that the facility has been closed in accordance with the specifications in the approved closure plan. The closure document will be certified in accordance with 40 CFR § 270.11(d) and include, at minimum, the following.

1. Manifests (or some type of manifest/waste removal summary) of where and how much waste was shipped off-site from closure activities.

2. Certification statement by the owner/operator and an independent registered engineer. All independent registered professional engineer certificates will have an original stamp on at least one copy.

3. Summary of decontamination procedures (pressure wash, steam clean, etc) and how waste water was disposed

4. Summary analysis (include time table, soil and groundwater results, weather conditions, runoff controls, equipment decontamination, etc.).

5. Results of all tests used to determine clean closure (chart, tables, lab sheets)

6. Statistical comparisons on sampling results compared to background.

7. Sampling and analysis procedures (specify references)

8. Final depth and elevations of excavations of wastes and soils.

9. Properly labelled and easily identified sampling grid stations (map); including background stations.

10. Summary of final remeidal action performed considering material used and/or future land use. If clean closure cannot be achieved (e.g. contaminated soils to water table and groundwater results show contamination) this summary item should be used to address the post closure program and/or corrective action.

11. A copy of the approved closure plan and letter of closure approval.

I-1 a CLOSURE PERFORMANCE STANDARD [40 CFR 264.111]

This Closure Plan is designed to ensure that the Facility will be closed in a manner that achieves the following:

1) Minimizes the need for further maintenance;

2) Controls minimize or eliminate, to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, or hazardous constituents to the ground or surface waters or to the atmosphere; and

3) Complies with the closure requirements of 40 CFR 264.111, including, but not limited to, the requirements of the regulations under 40 CFR § 264.178 - removal of all hazardous waste and residues from containment system.

At the time of final closure, the entire waste inventory will be transported to an off-site licensed hazardous waste management facility The complete removal of the entire hazardous waste inventory and the decontamination of the hazardous waste management units will ensure the achievement of the performance standard.

I-1 b PARTIAL CLOSURE AND FINAL CLOSURE ACTIVITIES [40 CFR 264 112(b)(1) through (b)(7)]

At such times in the operating life of the Facility that equipment may be updated, replaced, or if different operations may commence, partial closure of the Facility may occur. Closure procedures for partial closure would be essentially the same as those stipulated in this Closure Plan for final closure, as appropriate to the unit scheduled for partial closure. In the event of a partial closure, MDEQ will be notified at least 60 days prior to initiating closure activities.

I-1 c MAXIMUM WASTE INVENTORY
[40 CFR 264.112(b)(3)]

The maximum inventory of hazardous wastes that can be stored in this Facility at any time is 13,750 gallons. This is comprised using a total count from all containment areas and the staging area while not exceeding the maximum allowed amount in any area. The maximum amount allowed in each area is as follows:

Container Storage Area #7	3,520 gallons	(64 x 55-gallon drums)
Container Storage Area #8	3,520 gallons	(64 x 55-gallon drums)
Container Storage Area #9 (includes area 29)	5, 830 gallons	(106 x 55-gallon drums)
Container Storage Area #11	7,040 gallons	(128 x 55-gallon drums)

To allow for flexability, Detrex is opting to utilize variable storage capacity for all hazardous waste storage areas. Under this senario, the amount of material that may be stored in any storage area is limited to its maximum storage as stated above, or that amount necessary to prevent the Facility from exceeding its maximum allowable storage of 13,750-gallons. As an example, if 64 drums are stored in area 7, the Facility would reduce the quantiy from other storage areas.

I-1 d SCHEDULE OF CLOSURE
[40 CFR 264.112(b)(6)]

Detrex Corporation does not anticipate completing final closure of the Detroit, Michigan Facility prior to expiration of this Operating License. A conceptual closure schedule is provided in Attachment I-3. It is believed that final closure could be conducted by a qualified independent contractor in a period of approximately 180 days

I-1d(1) Time Allowed for Closure
[40 CFR 264.112(b)(2), 264.113(a) and (b)]

Within 90 days after receipt of the final volume of hazardous wastes, and at the direction of the Board of Directors of Detrex Corporation, final closure activities will be initiated. These activities will be completed within 180 days of initiation; the tasks and time required for partial closure would follow those given in the closure plan The approximate time frame for each task is provided in Attachment I-3 The Director will be notified by Detrex Corporation 60 days before beginning final closure. Final closure will be certified by both Detrex Corporation and an independent, qualified, registered professional engineer

I-1d(1)(a) Extensions For Closure Time
[40 CFR 264.113(a) and (b)]

Detrex Corporation does not anticipate requiring an extension for closure time for the Facility. In the event this becomes necessary, a request will be made to the Director by Detrex Corporation meeting the requirements of 40 CFR 264.113(a).

I-1 e CLOSURE PROCEDURES
[40 CFR 264.112, 264.114]

I-1e(1) Inventory Removal
[40 CFR 264.112(b)(3)]

At the time of partial closure of one or more of the hazardous waste management units, the hazardous wastes from the unit(s) designated for closure may be:

1) placed in the container storage area; or
2) transferred to a transport vehicle (in containers or transferred to a bulk tank truck) and transported off site to a properly permitted facility.

At final closure, the entire remaining inventory of hazardous wastes would be processed in the same manner. It is likely that hazardous wastes to be transported off site would be sent to a permitted facility for recovery or combined/commingled and transported to a RCRA-permitted TSDF.

I-1e(2) Disposal or Decontamination of Equipment, Structure and Soils
[40 CFR 264 112(b)(4), 264 114]

The procedures to decontaminate Facility equipment and structures are described in the following applicable sections. If sampling of underlying soils are required, as determined under this plan and with consultation with the MDEQ, then the procedures as found in Attachment I-4 would be followed.

I-1e(3) Closure of Container Storage Areas
[40 CFR 264.178, 264.112(b)(3), 270.14(b)(13)]

During closure, the remaining container inventory may either be transferred to bulk transport units for transportation to a properly permitted facility or shipped from the Facility in the original containers Empty containers if previously containing hazardous waste will be either sent to a reconditioner to be recycled or sent to a facility for 'disposal'.

Following the removal of the container inventory, the interior and exterior container storage areas and their respective secondary containment systems will be swept. This will include containment storage areas 7, 8, 9, 29, and the flammable storage trailers (11), if final closure is being performed. Subsequently, the area designated for closure will be carefully inspected to identify any potential cracks, gaps, or unsealed joints in the secondary containment area. Any cracks, gaps or unsealed joints will be repaired prior to proceeding with decontamination to ensure that all rinse water is contained.

The secondary containment areas will then be decontaminated by a floor wash/scrubbing operation followed by a triple rinse. Contaminated media generated will be collected using pumps, sponges, and/or another method, placed in DOT-approved containers, and transported off-site. Wastes will be sent to a permitted TSDF unless waste characterization sampling indicates alternate disposal is appropriate. It is noted that during partial closure, hazardous wastes generated may be managed in an on-site hazardous waste management unit. Solid wastes which are not generated from hazardous waste may be managed in an appropriate location at the Facility.

Decontamination of the secondary containment areas will be verified by collecting a sample of the final rinsate from each secondary containment area and submitting the sample for analysis of the all chemicals of concern (COC). Analyses will be by an approved method of SW-846. The "cleanup" level will be based on the environmental remediation parameters found in Part 201 of Act 451 as adopted by referenece in Part 111, at the time of closure.

Chemcials of Concern will be based on the approved waste codes found in attachment I-1 for which the facility has record of accepting. If a COC has never been accepted at the facility it will not be included into the test parameters.

In the event that test results indicate that a COC listed in Part 201 of Act 451 still exists above the required criteria for inhalation, ingestion or ingestion, further cleaning, as necessary, would be performed

Once decontamination is complete, soil sampling for COCs beneath any cracks, gaps or unsealed joints which may reasonably have provided a migratory pathway to underlying soils will be required The preservation method for the soil will be based on the COC. VOCs will be collected using Method 5035 or EnCore Sampler Methods for preserving semivolitals and metals will be based on the analytical test methods listed in SW-846, specifically method 6010 for metals and method 8270B for semivolitals. At each sampling location, the boreholes will be advanced through the fill material, the native soil, and completed in the top of the clay Split-spoon samples, will be collected at 1 foot, and then at 5 foot intervals to the endpoint for each borehole, which is the top of the clay unit Following sampling collection, each borehole will be backfilled with a bentonite/clay mixture. Each sample will be analyzed using a PID meter The highest PID reading in any borehole as the endpoint sample will be analyzed

In the event a piece of equipment can not be decontaminated to the required cleanup level stipulated on Attachment I-4, the piece of equipment will be characterized and disposed at an appropriately permitted facility.

All equipment used during decontamination which may have come in contact with potentially contaminated substances or a potentially contaminated surface will also be decontaminated prior to demobilization from the site. The decontamination of equipment may also involve steam cleaning. The washwater will be collected in an appropriate manner and handled as described above.

I-1e(4) Closure of loading / unloading area
[40 CFR 264.178, 264.112(b)(3), 270.14(b)(13)]

The entire outdoor concrete loading / unloading area and the dock below the flammable storage trailers will be swept and subsequently cleaned and sampled using the same protocols described above in section I-1e(3), for the container storage area and associated secondary containment system.

The soil sampling, conducted as part of partial or final closure,will be based on information in the closure plan and on consultation with the MDEQ, WMD. Boreholes will be drilled through the concrete at the location of the sump in the loading/unloading area and under the flammable storage trailers, and at the locations where any significant cracks are observed. The proposed location of these areas will be provided to the MDEQ for review and approval prior to initiating any sampling activities.

The same method for obtaining and perserving samples as found in I-1(e)3 will be used for the outside loading and unloading areas as well as below the flammable storage area

I-2 POSTCLOSURE PLAN/CONTINGENT POST-CLOSURE
[40 CFR 270.14(b)(13)]

Post-closure care will not be required for this Facility since all hazardous wastes will be removed at final closure.

I-3 NOTICES REQUIRED FOR DISPOSAL FACILITIES

I-3 a CERTIFICATION OF CLOSURE
[40 CFR 264.115, 264.280]

The Detrex Facility is not a disposal facility; however, within 60 days of completion of either partial or final closure, a closure certification document will be submitted to the Director regarding the area(s) closed. The document will certify that the Facility has been closed in accordance with the approved closure plan. The certification will be signed by Detrex Corporation and by an independent registered professional engineer.

I-3 b SURVEY PLAT
[40 CFR 264.116]

Since the Detrex Facility is not a disposal facility and no hazardous wastes will remain after final closure, a survey plat is not required.

I-3 c POST-CLOSURE CERTIFICATION

There will be no post-closure period, therefore this is not applicable to this Facility.

I-3 d POST-CLOSURE NOTICES
[40 CFR 270 14(b)(14), 264.119]

There will be no post-closure period, therefore this is not applicable to this Facility.

I-4 CLOSURE COST ESTIMATE
[40 CFR 270.13(b)(15), 264.142]

The closure cost information is presented in accordance with proper requirements. The estimate assumes closure procedures are completed by a third party at the time that the Facility closure would be most expensive (i.e. maximum inventory). The total closure cost for the Detrex Corporation Detroit Facility is estimated at $ **80,086.74** (2000 dollars). The closure cost estimate breakdown is provided in Attachment I-5. Closure activities include removal of waste inventory, decontamination, and closure certification.

Final closure activities include the removal of inventory from container storage areas and closure certification. The closure of one of the hazardous waste management units will involve only those costs directly associated with the unit.

The closure cost estimate assumptions made are as follows:

1) All hazardous waste storage areas are full to capacity at the time of closure.

2) All hazardous waste will be transported off site to a permitted facility in accordance with all State and Federal regulations.

3) The fact that the hazardous waste may have potential economic value has been ignored.

4) Costs are based on 2000 current year costs. All labor rates reflect commercial rates and include fringe benefits, payroll burden, and taxes

5) Total costs include a 10 percent contingency for administrative and 15 percent contingency for miscellaneous operating costs.

6) The costs are based on a point in the operating life of the Facility when the extent and manner of operation would make closure most expensive.

This closure cost estimate will be maintained at this Facility. It will be revised whenever a change in the closure plan affects the cost of closure. It will be adjusted annually as required by pertinent regulations, or when the types/quantity of waste received at the Facility change.

I-5 FINANCIAL ASSURANCE MECHANISM FOR CLOSURE
[40 CFR 270.14(b)(15) & 264.143]

Financial assurance for closure costs is provided by an appropriate mechanism closure as found under Michigan's Act 64 Rule 299.9703. A copy of the most recent mechanism is provided in Attachment I-6.

I-6 POSTCLOSURE COST ESTIMATE
[40 CFR 270.14(b)(6)]

Post-closure care will not be required for this Facility since all hazardous wastes will be removed at final closure.

I-7 FINANCIAL ASSURANCE MECHANISM FOR POST CLOSURE
[40 CFR 270.14(B)(16)]

Financial assurance is not necessary since post-closure care is not required.

I-8 LIABILITY REQUIREMENTS
[40 CFR 270.14(b)(17) & ACT 451 RULE 299.9710]

I-8 a COVERAGE FOR SUDDEN ACCIDENTAL OCCURRENCES
[ACT 451 RULE 299.9710(1)]

A copy of proof of liability insurance is provided in Attachment I-7 This provides an endorsement of certification of appropriate insurance coverage pursuant to Michigan's ACT 451 RULE 299 9710

I-8 b COVERAGE FOR NON-SUDDEN ACCIDENTAL OCCURRENCES
[ACT 451 RULE 299 9710(2)]

The Facility does not have a surface impoundment, landfill or land treatment facility; hence, coverage for non-sudden accidental occurrence is not required.

I-9 USE OF STATE-REQUIRED MECHANISMS
[40 CFR 270.14(b)(18)]

I-9 a USE OF STATE-REQUIRED MECHANISMS
[40 CFR 270.14(b)(18) ACT 451, RULE 299.9710(3)]

The liability insurance provided for in Section I-8a meets all necessary Federal and State requirements.

I-9 b STATE ASSUMPTION OF RESPONSIBILITY
[40 CFR 270.14(b)(18)]

Detrex Corporation does not intend to request State assumption of the legal or financial responsibilities for the Facility

ATTACHMENT I-1

LIST OF HAZARDOUS WASTES

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Waste Management
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ATTACHMENT I-1

LIST OF HAZARDOUS WASTES

Waste	*EPA Hazardous Waste Number and Hazard Code*
Ignitable Wastes	D001 (I)
Corrosive Waste	D002 (C)
Arsenic	D004 (T)
Barium	D005 (T)
Cadmium*	D006 (T)
Chromium	D007 (T)
Lead	D008 (T)
Mercury	D009 (T)
Selenium*	D010 (T)
Silver	D011 (T)
Endrin	D012 (T)
Benzene	D018 (T, I)
Carbon Tetrachloride	D019 (T), U211(T)
Chlorobenzene	F002 (T, I), D021(T, I), U037(T, I)
Chloroform	D022 (T), U044(T)
1,4-Dichlorobenzene	D027 (T), U072(T)
1,2-Dichloroethane	D028 (T, I), U077(T, I)
1,1-Dichloroethylene	D029 (T, I), U078(T, I)
2,4-Dinitrotoluene	D030 (T)
Heptachlor*	D031 (T)
Hexachlorobenzene	D032 (T), U127(T)
Hexachloroethane	D034 (T), U131(T)
Methyl Ethyl Ketone	D035 (T, I), F003 (I)
Nitrobenzene	D036 (T)
Tetrachloroethylene	F001 (T), F002(T), D039 (T), U210(T)
Trichloroethylene	F001(T), F002(T), D040 (T), U228(T)
Vinyl Chloride	D043 (T, I)
Ortho-Dichlorobenzene	F002 (T)
1,1,2,2-Tetrachloroethane	U209(T)
1,1,1,2-Tetrachloroethane	U208(T)
Dichlorodifluoromethane	U075(T)
1,1-Dichloroethane	U076(T, I)
1,1,1-Trichloroethane	F001(T), F002(T), U226(T)
Dichloromethane (Methylene Chloride)	F001 (T), F002 (T), U080(T)

Note: Hazard Code based on 40 CFR 261. Wastes may be liquid or solid.

I - Ignitable Waste
H - Acute Hazardous Waste
* - Extremely Hazardous Waste
T - Toxic Waste
C - Corrosive Waste

ATTACHMENT I-1

LIST OF HAZARDOUS WASTES

Waste	*EPA Hazardous Waste Number and Hazard Code*
Monofluoromethane	F001 (T), F002 (T)
Trichlorofluoromethane	F001(T), F002(T), U121(T)
Trichloromonofluoromethane	F001 (T), F002 (T)
1,1,2-trichloro-1,2,2-trifluoroethane	F002 (T)
Xylene	F003 (I)
Acetone	F003 (I)
Ethyl Acetate	F003 (I)
Ethyl Benzene	F003 (I)
Ethyl Ether	F003 (I)
n-Butyl Alcohol	F003 (I)
Cyclohexanone	F003 (I)
Methyl Isobutyl Ketone	F003 (I), U161 (I)
Methanol	F005 (I)
Toluene	F005 (T, I)
Methyl Ethyl Ketone	F005 (I,T)
Carbon Disulfide	F005 (H, I)
Isobutanol	F005 (I,T)
Pyridine	F005 (T, I)

Wastewater treatment sludges from electroplating operations except from the following processes: F006

1. sulfuric acid anodizing of aluminum;
2. tin plating on carbon steel;
3. zinc plating (segragated basis) on carbon steel;
4. aluminum or zinc-aluminum plating on carbon steel;
5. cleaning/stripping associated with tin, zinc and
6. aluminum plating on carbon steel; and
7. chemical etching and milling of aluminum.

Waste water treatment sludges from the chemical conversion coating of aluminum except from zirconium phosphating in aluminum can washing when such phosphating is an exclusive conversion coating process F019

Note: Hazard Code based on 40 CFR 261. Wastes may be liquid or solid.

I - Ignitable Waste
H - Acute Hazardous Waste
* - Extremely Hazardous Waste
T - Toxic Waste
C - Corrosive Waste

ATTACHMENT I-2

FACILITY PLAN

ATTACHMENT I-2
EXISTING FACILITY LAYOUT

I.D. No.	Equipment Name	Description
1.	Clayton Model E-100 Steam Generator	This unit is no longer in service
2.	Air Compressor	In use
3.	20,000 gal. Carbon steel Tank	Storage tank for Trichloroethylene
4.	10,000 gal. Carbon Steel Tank	This tank is currently out of service
5.	4,500 gal. Carbon Steel Tank	This tank is currently out of service
6	4,500 gal. Carbon Steel Tank	Storage tank for Trichloroethylene
10 A/B	2 – 600 gal. Receiver Tanks	Product Storage Tanks
12.	2,300 gal. Carbon Steel Tank	Used for storage of Non-Hazardous Wastes.
13.	Detrex Model S-350 Still	This unit is currently out of service
15.	DCI Model Dyna-1-100 Still	This unit is currently out of service
16 A/B	Drying Columns	These units are currently out of service
17	5,000 gal. Carbon Steel Tank	Used for storage of Non-Hazardous Wastes.
20	2,500 gal. 316 Stainless Steel Tank	Used for storage Product
21	4,500 gal Carbon steel tank	Used for storage of Non-Hazardous Waste
22	4,500 gal Carbon Steel Tank	Used for storage of Non-Hazardous Wastes.
25	3,000 gal. 316 stainless steel Tank	Used for storage of Non-Hazardous Wastes
27	Drum Filling Station	Product Drumming Station. Used for filling 55- gallon drums with product. Unit can fill approximately 30 drums per hour and is operated as necessary
28	Product Blending Vessel	550 gal. Carbon steel vessel utilized for product blending.
29	Roller conveyor	Used to weigh-in containers of waste
30	Staging Area / Hazardous Waste Storage Area	Area used to store containerized waste that has not yet received full waste screening
31	Hazardous Waste Storage Area	Storage area for wastes that have full waste screening performed.
32	Transfer Facility	Active

ATTACHMENT I-2
PROPOSED FACILITY LAYOUT

ID #	Equipment Name	Description
1.	Clayton Model E-100 Steam Generator	Out of service, slated for eventual removal
2.	Air Compressor	In use
3.	20,000 gal. Carbon steel Tank	Storage tank for Trichloroethylene
4.	10,000 gal. Carbon Steel Tank	This tank is currently out of service
5.	4,500 gal. Carbon Steel Tank	This tank is currently out of service
6.	4,500 gal. Carbon Steel Tank	Storage tank for Trichloroethylene
7-9	Interior Hazardous Waste Storage	Active
10 A/B	2 – 600 gal. Receiver Tanks	Product storage
11	Exterior Hazardous Waste Storage	Storage of Flammables
12.	2,300 gal. Carbon Steel Tank	Storage of Non-Hazardous Wastes
13.	Detrex Model S-350 Still	Out of service, slated for eventual removal
15.	DCI Model Dyna-1-100 Still	Out of service, slated for eventual removal
16 A/B	Drying Columns	Out of service, slated for eventual removal
17	5,000 gal. Carbon Steel Tank	Storage of Non-Hazardous Wastes.
20	2,500 gal. 316 Stainless Steel Tank	Storage of Non-Hazardous Wastes
21	4,500 gal Carbon steel tank	Storage of Non-Hazardous Wastes
22	4,500 gal. Carbon Steel Tank	Storage of Non-Hazardous Wastes.
25	3,000 gal. 316 stainless steel Tank	Storage of Non-Hazardous Wastes
27	Drum Filling Station	Product Drumming Station.
28	Product Blending Vessel	550 gal. Carbon steel vessel utilized for product blending.
29	Staging area	Sampling (containers weighed as needed)

ATTACHMENT I-3

CLOSURE SCHEDULE

ATTACHMENT I-3
CLOSURE SCHEDULE
EATON AVE.

ACTIVITY	DAYS																	
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
Receipt of final volume of Hazardous Waste																		
Removal of final container inventory																		
Decontamination of interior container storage areas (7, 8, 9 & 29)																		
Cleaning and decontamination of loading and unloading area and flammable storage area (11)																		
Removal /disposal / treatment of sweepings and waste waters																		
Completion of closure and certification submittal to Director																		

ATTACHMENT I- 4
SOIL SAMPLING AND ANALYSIS PLAN

SAMPLE COLLECTION AND ANALYSIS PROCEDURES

1. GENERAL SAMPLING PROTOCOLS 3
2. SUBSURFACE SOIL SAMPLING 3
3. SAMPLE LABELING AND CONTROL 3
   Sample Shipment 3
   Chain-Of-Custody-Records 4
4. EQUIPMENT CLEANING PROTOCOLS 4

SAMPLE COLLECTION AND ANALYSIS PROTOCOLS

1. GENERAL SAMPLING PROTOCOLS

The following protocols will be employed during all sampling throughout this program:

1. Prior to drilling the initial and all subsequent locations, the drilling rig and all drilling equipment will be cleaned according to the protocol set forth in section 4.
2. All sampling instruments and equipment used in collecting samples for chemical analysis will be cleaned in accordance with the protocols presented in Section 4 prior to sampling at each location
3. A new pair of disposable gloves will be used at each location to be sampled for chemical analysis. Additional glove changes will be undertaken as warranted.

Additional protocols specific to each sampling method are presented in the following sections.

2. SUBSURFACE SOIL SAMPLING

Subsurface soil sampling will be conducted according to the following protocols:

1. Split-spoon soil samples collected for analysis will be obtained and prepared in the following manner.
    a. The split-spoon sampler will be removed to a sample preservation station and opened
    b Using clean cutting tool a thin section will be removed from the top and bottom of the core and discarded as shown in Figure 1
    c The remaining core will be cut in half longitudinally. From the center of the core a continuous soil sample will be taken
2. Sample containers will be prepared using washing procedures that meet or exceed the requirements of the specific methods. Sample containers will be shipped to the site in sealed containers from a single lot of prepared jars
3. A blind, duplicate sample will be collected

3 SAMPLE LABELING AND CONTROL

Sample labeling and control will be consistent with the MDEQ and USEPA requirements and procedures. These procedures are discussed below

1 Sample shipment

All samples will be placed in coolers and iced to $4^{O}C$ ($\pm 2^{O}C$) after collection and labeling. The groundwater and soil samples will be placed in separate coolers All samples will be delivered to the laboratory within 24 hours of sample collection

Detrex or the sampling team will transport samples to the analytical laboratory or the samples will be packed and sealed in an ice cooler as noted above with the chain of custody placed inside the cooler for shipment.

The attached Table presents a summary of sample collection, preservation and shipping requirements established for both water and soil matrices.

2. Chain-of-custody-records

Chain-of-custody-records will be used to track all samples from the time of sampling to the arrival at the laboratory

4 EQUIPMENT CLEANING PROTOCOLS

Prior to mobilization, the drilling rig and all associated equipment will have been thoroughly cleaned to remove oil, grease, mud, and other foreign matter In addition, before initialing drilling at each location, the augers, cutting bits, samplers, drill steel and associated equipment will be thoroughly cleaned to prevent potential cross-contamination from the previous drilling location. Rinse water from the drill rig cleaning will be discharged to surface away from the borehole locations. The equipment will be inspected after cleaning and prior to initiation of drilling. Cleaning will be accomplished by flushing and wiping the components to remove all visible sediments followed by a thorough rinsing. Special attention will be given to the threaded sections of the drill rods.

All equipment used for collection of samples for chemical analysis including bailers, pumps, and trowels or split-spoons will be cleaned between each sampling location / interval according to the following protocol

Rinse with deionized water;
Rinse with Isopropanol;
Rinse with deionized water; and
Allow to air dry.

The bottom three feet of the water level measuring equipment will be cleaned prior to use in each well with Isopropanol and deionized water rinse.

Rinse water from the collection equipment decontamination will be containerized and characterized for eventual disposal in accordance with Federal & State Regulations.

Equipment will be protected from all forms of solvent contact between final rinse and initial use.

Table 1
FIELD QUALITY CONTROL PROCEDURES

MATRICIES	TRIP BLANK	FIELD BLANK/RINSATE	BLIND DUPLICATE	MATR SPIKE
Soil	--	--	1	

(1) ADDITIONALLY A SAMPLE (THREE TIMES THE DESIGNATED VALUE) WILL BE COLLECTED FOR MATRIX SPIKING PURPOSES.

Table 2
SAMPLE COLLECTION, PRESERVATION, AND SHIPPING PROTOCOL SUMMARY

MATRIX	PARAMETER	BOTTLES/JARS	PRESEVATIVES	HOLDING TIME (1)	SHI
Soil	TCL VOCs	250 ml glass jar with Teflon lid	Iced to $4^{O}C$ ($\pm 2^{O}C$)	14 days	Pers deli othe

(1) sample holding time will be calculated from the time of sample collection.

ATTACHMENT I-5

CLOSURE COST ESTIMATE

Attachment I-5

CLOSURE COST ESTIMATE (2000 $)

Item	*Activity*		*Estimated Cost*
A.	INVENTORY REMOVAL		
	• Transfer container contents to bulk tanker (1 1/2 day)		2,400
	Subtotal A		$ 2,400
B.	SECONDARY CONTAINMENT DECONTAMINATION		
	• Sweep and containerize sweepings (The interior hazardous wastes storage areas (7, 8, 9) & staging area, flammable storage trailers (11) and loading unloading areas - 1/2 day)		$800
	• Clean interior secondary containment areas (7, 8, 9 & 29), flammable storage trailers (11), and the loading/unloading areas.		$ 3,200
	Subtotal B		$ 4,000
C.	TRANSPORTATION AND DISPOSAL		
	• Bulked liquid waste disposal	13,750 gal @ $1.70/gal	$ 23,375
	• Washwater disposal	4,100 gal @ $0.75/gal	3,075
	• Containerized solids/sludges	10 drum @ $255/drum	2,550
	Subtotal C		$ 29,000
D.	SAMPLING AND ANALYSIS		
	• Technician	2 days @ $550	$ 1,100
	• Analytical	- water rinse (16) @$850 ea.	13,600
		- soil (4) @$900 ea.	3,600
	Subtotal D		$ 18,300

ATTACHMENT I-6

FINANCIAL ASSURANCE MECHANISM

COPY

PERFORMANCE BOND

Bond Number: 201912

Total Penal Sum of Bond: $85,000

Effective Date: April 26, 2000

EPA Identification Number: MID 091 605 972

Closure Costs: $85,000.00
Post-Closure Costs: $-0-

Name and Location: Detrex Corp. – Solvent Division
12886 Eaton Avenue
Detroit, Michigan 48227
Wayne County

Detrex Corporation, a Michigan corporation, 24901 Northwestern Highway, Suite 500, Southfield, Michigan 48075, as Principal and Evergreen National Indemnity Company, an insurer authorized to transact the business of surety and fidelity insurance in the State of Michigan and an acceptable surety on federal bonds as listed in Circular 570 of the United State Department of Treasury, as Surety, are firmly bound unto the Director of Environmental Quality (the "Director"), on behalf of the State of Michigan, his successors or successors in office, or his authorized representative, in the above penal sum, lawful money of the United States of America, for the payment of which we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally.

WHEREAS, the Principal is required under Part 111, Hazardous Waste Management, of 1994 PA 451, as amended, Michigan's Natural Resources and Environmental Protection Act (Part 111), to have an operating license to own or operate each hazardous waste management facility identified above; and

WHEREAS, the Principal is required to provide financial assurance for the closure, post-closure, or corrective action of each facility identified above as a condition of the Administrative Rules promulgated pursuant to Part 111 and as a condition of licensure;

NOW, THEREFORE, the conditions of this obligation are such that if the Principal shall faithfully perform closure, whenever required to do so, of each facility for which this bond guarantees closure, in accordance with the closure plan and other requirements of an operating license as such plan and operating license may be amended, pursuant to all applicable laws, statutes, rules and regulations, as such laws, statutes, rules and regulations may be amended;

And, if the Principal shall faithfully perform post-closure of each facility for which this bond guarantees post-closure, in accordance with the post-closure and operating license may be amended, pursuant to all applicable laws, statutes, rules and regulations, as such laws, statutes, rules and regulations may be amended;

And, if the Principal shall faithfully perform corrective action at each facility for which this bond guarantees corrective action, in accordance with the corrective action program and other requirements of an operating license or order, as such program and operating license or order, as such program and operating license or order may be amended, pursuant to all applicable laws, statutes, rules and regulations, as such laws, statutes, rules and regulations may be amended;

Or, if the Principal shall provide alternate financial assurance as specified in the Administrative Rules promulgated pursuant to Part 111, and obtain the Director's written approval of such assurance within 90 days after the date notice of cancellation is received by both the Principal and the Director from the Surety, then this obligation shall be null and void, otherwise it is to remain in full force and effect.

The Surety shall become liable on this bond obligation only when the Principal has failed to fulfill the conditions described above.

In the event that the Director, in accordance with the Administrative Rules promulgated pursuant to Part 111, issues a written Notice of Violation or other order to the Principal indicating that the Principal has failed to properly execute its closure responsibilities for a facility for which this bond guarantees performance of closure, the Surety shall either perform closure in accordance with the closure plan and other operating license requirements, or make payment of the closure amount guaranteed by this bond for closure of the facility to the Director.

In the event that the Director, in accordance with the Administrative Rules promulgated pursuant to Part 111, issues a written Notice of Violation or other order to the Principal indicating that the Principal has failed to properly execute its post-closure responsibilities for a facility for which this bond guarantees performance of post-closure, the Surety shall either perform post-closure in accordance with the post-closure plan and other operating license requirements, or make payment of the post-closure amount guaranteed by this bond for post-closure of the facility to the Director.

In the event that the Director, in accordance with the Administrative Rules promulgated pursuant to Part 111, issues a written Notice of Violation or other order to the Principal indicating that the Principal has failed to properly execute its corrective action responsibilities for a facility for which this bond guarantees performance of corrective action, the Surety shall either perform corrective action in accordance with the corrective action plan and other operating license requirements, or make payment of the corrective action amount guaranteed by this bond for corrective action of the facility to the Director.

The Surety hereby waives notification of amendments to closure, post-closure, and corrective action plans, licenses, orders, applicable laws, statutes, rules and regulations and agrees that no such amendment shall in any way alleviate its obligation on this bond, except for adjustments in the closure, post-closure, and corrective action plans that cause increases or decreases in the penal sum contained herein.

When the current closure, post-closure, or corrective action cost estimate(s) increase to an amount more than the penal sum, the Principal, within 60 days after the increase, shall either cause the penal sum to be increased to any amount at least equal to the current closure, post-closure, and corrective action cost estimate(s), and submit evidence of such increase to the Director, or obtain other financial assurance as specified in the Administrative Rules promulgated pursuant to Part 111. When the current closure, post-closure, or corrective action cost estimate(s) decrease(s), the penal sum may be reduced to the amount of the current closure, post-closure, or corrective action cost estimate(s) following written approval by the Director.

The liability of the Surety shall not be discharged by any payment or succession of payments hereunder, unless and until such payment or payments shall amount in the aggregate to the penal sum of the bond, but in no event shall the obligation of the Surety hereunder exceed the amount of said penal sum.

The Surety may cancel the bond by sending notice of cancellation by certified mail to the Principal and to the Director, provided, however, that cancellation shall not occur during the one hundred twenty (120) days beginning on the date of receipt of the notice of cancellation by the Principal and the Director, as evidenced by the return receipts.

Provided further, that this Performance Bond may be drawn upon and the Surety agrees to honor this bond should the Principal fail to provide the Director with an extension of this bond, or an acceptable replacement bond, or an alternative form of financial assurance as specified in the Administrative Rules promulgated pursuant to Part 111, and acceptable to the Director, not less that sixty (60) days prior to the expiration or cancellation hereof.

The Principal may terminate this bond by sending written notice to the Surety, provided, however, that no such notice shall become effective until the Surety receives written authorization for termination of the bond from the Director, or his authorized representative.

This bond shall be and continue in force for a period beginning with the effective date of the bond and terminating when canceled by the Surety in accordance with the cancellation provisions above, or when the Surety receives written authorization for termination of the bond from the Director. Upon determination of the Director or his authorized representative that any of the foregoing conditions have not been complied with, he shall recourse to the rights created under this bond.

In witness whereof, the Principal and the Surety have executed this Performance Bond and have affixed their seals and have attached the justification or power of attorney as of the day and date first above written.

The persons whose signatures appear below hereby certify that they are authorized to execute this surety bond on behalf of the Principal and Surety and that the wording of this surety bond is identical to the wording provided by the Director on the date this bond was executed.

Sealed with our seals, dated the 26th day of April, 2000.

Principal: **DETREX CORPORATION**

By: VICE PRESIDENT - FINANCE
(Title)

(Corporate Seal)

Surety: **EVERGREEN NATIONAL INDEMNITY COMPANY**
10055 Sweet Valley Drive
Valley View, OH 44125

State of Incorporation: Ohio
Liability Limit: $85,000.00

By:
Kathleen P. Price, Attorney-In-Fact

(Corporate Seal)

Bond Premium: $1,445.00

EVERGREEN NATIONAL INDEMNITY COMPANY
CLEVELAND, OHIO
POWER OF ATTORNEY

PRINCIPAL Detrex Corporation EFFECTIVE DATE April 26, 2000

CONTRACT AMOUNT $85,000.00 AMOUNT OF BOND $ 85,000.00

POWER NO. 201912

KNOW ALL MEN BY THESE PRESENTS: That the Evergreen National Indemnity Company, a corporation in the State of Ohio does hereby nomina constitute and appoint: Daniel J. Needham, Kathy J. Goe, Patricia A. Wall, Debra A. Erickson, Kathleen P. Price, Jill Calfee, Jeffery L. Booth, Laurie Krokos, Julie K. Thornton and Felicia P. Young its true and lawful Attorney(s)-In-Fact to make, execute, attest, seal and deliver for and on its behalf. Surety, and as its act and deed, where required, any and all bonds, undertakings, recognizances and written obligations in the nature thereof, PROVIDE however, that the obligation of the Company under this Power of Attorney shall not exceed One Million Dollars ($1,000,000.00).

This Power of Attorney is granted and is signed by facsimile pursuant to the following Resolution adopted by its Board of Directors on the 23rd day February, 1994:

"RESOLVED, That any two officers of the Company shall have the authority to make, execute and deliver a Power of Attorney constituting as Attorney(s)-in-fact of such persons, firms, or corporations as may be selected from time to time.
FURTHER RESOLVED, that the signatures of such officers and the Seal of the Company may be affixed to any such Power of Attorney or any certificate relating thereto by facsimile, and any such Power of Attorney or certificate bearing such facsimile signatures or facsimile seal shall be valid and binding upon the Company; and any such powers so executed and certificate by facsimile signatures and facsimile seal shall be valid and binding upon the Company in the future with respect to any bond or undertaking to which it is attached."

IN WITNESS WHEREOF, the Evergreen National Indemnity Company has caused its corporate seal to be affixed hereunto, and these presents to be sign by its duly authorized officers this 23rd day of February, 1994.

EVERGREEN NATIONAL INDEMNITY COMPANY

Craig L. Stout, President

Roswell P. Ellis, Treasurer

EVERGREEN NATIONAL INDEMNITY COMPANY CORPORATE SEAL 1939 OHIO

Notary Public)
State of Ohio) SS.

On this 23rd day of February, 1994, before the subscriber, a Notary for the State of Ohio, duly commissioned and qualified, personally came Craig Stout and Roswell P. Ellis of the Evergreen National Indemnity Company, to me personally known to be the individuals and officers described herein, who executed the preceding instrument and acknowledged the execution of the same and being by me duly sworn, deposed and said that they are officers of said Company aforesaid, and that the seal affixed to the preceding instrument is the Corporate Seal of said Company, and the said Corpor Seal and signatures as officers were duly affixed and subscribed to the said instrument by the authority and direction of said Corporation, and that resolution of said Company, referred to in the preceding instrument, is now in force

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal at Cleveland, Ohio, the day and year above written

NOTARIAL SEAL STATE OF OHIO

Gregory N. Miracle, Attorney
Notary Public State of Ohio
My Commission has no expiration date Section 147.03 R.C.

State of Ohio) SS

I, the undersigned, Secretary of the Evergreen National Indemnity Company, a stock corporation of the State of Ohio, DO HEREBY CERTIFY the foregoing Power of Attorney remains in full force and has not been revoked, and furthermore that the Resolution of the Board of Directors, set herein above, is now in force

Signed and sealed in Cleveland, Ohio this 26th day of April, 2000

Anne E. Meyers, Secretary

EVERGREEN NATIONAL INDEMNITY COMPANY CORPORATE SEAL 1939 OHIO

Any reproduction or facsimile of this form is void and inv.

Evergreen
National Indemnity Co.

CERTIFICATE
1999

The following financial information was excerpted from the Statutory Annual Statement filed by Evergreen National Indemnity Company with the Ohio Department of Insurance on March 1, 2000.

STATEMENT OF INCOME

Direct Written Premium	$26,490,511
Reinsurance Assumed	10,932,725
Reinsurance Ceded	31,339,381
Net Written Premium	6,083,855
Change in Unearned	474,477
Net Earned Premium	6,558,332
Losses & LAE Incurred	4,294,589
Commission Expense	1,702,107
Other Expenses	1,289,972
Underwriting Gain/(Loss)	(728,336)
Investment Gain	1,243,621
Other Income/(Expense)	(7,300)
Income Before FIT	507,985
Federal Income Tax	(13,500)
Net Income	$521,485

BALANCE SHEET

Assets	
Invested Asset	$25,747,425
Agents' Balances (net of Reins.)	(2,546,052)
Reinsurance Recoverables	5,428,281
Other Assets	1,204,223
Total Assets	$29,833,877
Liabilities & Surplus	
Unearned Premium Reserve	$ 2,472,256
Loss & LAE Reserves	7,404,655
Other Liabilities	6,380,578
Total Liabilities	$16,258,189
Surplus	$13,575,688

I hereby certify that the above information is that contained in the Statutory Annual Statement filed by Evergreen National Indemnity Company with the Ohio Department of Insurance ending December 31, 1999.

[illegible]
[illegible] and [illegible] Secretary

INS 102 (2/93) State of Michigan Department of Commerce

CERTIFICATE OF AUTHORITY

Company Admissions Division
Michigan Insurance Bureau
P. O. Box 30220
Lansing, MI 48909-7720

Date: November 15, 1995

THIS IS TO CERTIFY, that

EVERGREEN NATIONAL INDEMNITY COMPANY
(an Ohio stock insurer)
NAIC No. 12750

is authorized in Michigan to transact the business of Section 606; Section 610 (including Sections 614, 616 and 620); subsections (a), (b) (including automobile and liability and excluding workers' compensation), (c), (d), (e), (f), (g), and (h) of Section 624(1); and Section 628

of P.A. 218 of 1956 as amended, "The Michigan Insurance Code," so long as the insurer continues to conform to the authority granted by this certificate, its corporate articles, the requirements of P.A. 218 of 1956 and all amendments to it and any limitations, conditions or other matters which have been agreed to from time to time between the insurer and the Commissioner.

If issued to a domestic, foreign, or alien insurer, this Certificate of Authority shall be automatically revoked 90 days after the insurer or an affiliated insurer is made subject to formal delinquency proceedings, unless the insurer requalifies for a Certificate of Authority. If issued to a foreign insurer, this Certificate of Authority shall be automatically revoked 90 days after a change in control, unless the insurer requalifies for a Certificate of Authority.

This Certificate of Authority is granted subject to the laws of the State of Michigan.

Commissioner of Insurance

SECTION J

CORRECTIVE ACTION FOR SOLID WASTE MANAGEMENT UNITS

RECEIVED
AUG 28 2000
Waste Management Division

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ATTACHMENT J-2 LIST OF FORMER PERMITTED HAZARDOUS WASTES

SECTION J

CORRECTIVE ACTION FOR SOLID WASTE MANAGEMENT UNITS

This section provides information on the condition of all past and present solid waste management units as required by Michigan ACT 451 RULE 299.9629.

J-1 SOLID WASTE MANAGEMENT UNITS
[40 CFR 270.14(D)(1), 264.101]

The solid waste management units (SWMU's) presently operational at the Detrex Corporation facility include the following:

1) Container Storage Areas; and
2) Waste Handling Area;

Each of these solid waste management units is identified on a facility plan provided in Attachment J-1.

J-1A CHARACTERIZE THE SOLID WASTE MANAGEMENT UNIT

J-1a(1) Container Storage Area

The container storage areas are located entirely within an enclosed building structure or within enclosed trailers. Containers in inside container storage areas are placed on a concrete slab floor, complete with peripheral concrete curbing and access ramps to provide adequate secondary containment. The floor slab is free of all gaps, there are no expansion or control joints, and the slab has no floor drains or other such openings. Further details on the container storage areas are presented in Section D of this license application.

Trailers utilize secondary containment to prevent release of materials to the environment in the event of container failure.

Hazardous Waste containers are stored in the designated area. The entire warehouse area is utilized for secondary containment. The secondary containment volume for the warehouse, permanent fixtures and equipment is approximately 18,000 gallons

The container storage area has been in operation since 1977. The maximum volume of hazardous waste that may be stored in the container storage areas is currently 13,750 gallons (250 x 55 gallon drums) A list of each of the former permitted (i.e., prior to current license application) hazardous wastes and the appropriate Hazardous Waste Identification Numbers of the waste is presented in Attachment J-2.

MDEQ has approved the closure of the recycling operation at this Facility

J-1a(2) Generator Accumulation Tank

The hazardous waste recycling operation used a single 5,000 gallon storage vessel for the accumulation of still bottoms remaining at the end of the distillation procedures. This unit was closed at the same time as that of the recycling unit.

J-1a(3) Waste Handling Area

The receiving area, indicated on the facility plan in Attachment J-1, is utilized for the transfer of containers of wastes, received from off-site facilities, to the container storage areas. It previously had also been used for the transfer of waste from the still bottoms tank to a tanker truck for off-disposal.

Waste drum handling practices includes the unloading of containers from a truck, using a forklift equipped with a drum handling attachment, and the transfer of these drums to the appropriate area in the container storage area after sampling.

The floor in the receiving area is free of all gaps or any other openings in the same manner as the container storage area.

J-1a(4) Waste Recycling Operation

As noted previously, MDEQ has provided a certification of closure for this unit. Attachment J-1 shows the former location of the distillation stills used at the Facility.

J-1a(5) Flammable Storage Area

The Flammable Storage area, formally the Transfer Station, is located in the North East corner of the Facility. The former transfer station provided the Facility the abiltiy to act as a 10-day transfer station for wastes they lacked the authority to accept. Like the Waste Handling Area of the Facility all containers were handled with a fork truck or hand truck. The containers as part of this operation were not opened but rather are just stored for subsequent transportionat to another site.

The Flammable storage area is located in a concrete dock area that provides containment in the event of a release. The dock is equiped with a sump to allow for accumulated precipitation to be removed. Removal of precipitation is done mannually after visual inspection of the precipitation. The sump also provides a means by which the Facility can remove liquids in the event of a release.

The current application would allow the facility to begin accepting flammable wastes as one of their approved codes. The wastes would be sampled and analyzed prior to storage on trailers which provides secondary containment adequate to contain at least 10% of the total volume or largest container. The trailers would also provide containment to prevent the aspect of run-on and run-off into the areas where the wastes were held. The maximum amount of flammables that could be stored in this area is 7,040 gallons (e.g. 128 drums).

J-1a(3) Waste Handling Area

The receiving area, indicated on the facility plan in Attachment J-1, is utilized for the transfer of containers of wastes, received from off-site facilities, to the container storage areas. It previously had also been used for the transfer of waste from the still bottoms tank to a tanker truck for off-disposal.

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J-1a(4) Waste Recycling Operation

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J-1a(5) Flammable Storage Area

The Flammable Storage area, formally the Transfer Station, is located in the North East corner of the Facility The former transfer station provided the Facility the abiltiy to act as a 10-day transfer station for wastes they lacked the authority to accept Like the Waste Handling Area of the Facility all containers were handled with a fork truck or hand truck The containers as part of this operation were not opened but rather are just stored for subsequent transportionat to another site.

The Flammable storage area is located in a concrete dock area that provides containment in the event of a release. The dock is equiped with a sump to allow for accumulated precipitation to be removed. Removal of precipitation is done mannually after visual inspection of the precipitation. The sump also provides a means by which the Facility can remove liquids in the event of a release

The current application would allow the facility to begin accepting flammable wastes as one of their approved codes. The wastes would be sampled and analyzed prior to storage on trailers which provides secondary containment adequate to contain at least 10% of the total volume or largest container The trailers would also provide containment to prevent the aspect of run-on and run-off into the areas where the wastes were held. The maximum amount of flammables that could be stored in this area is 7,040 gallons (e.g. 128 drums).

ATTACHMENT J1
EXISTING FACILITY LAYOUT

I.D. No.	Equipment Name	Description
1.	Clayton Model E-100 Steam Generator	This unit is no longer in service
2.	Air Compressor	In use
3.	20,000 gal. Carbon steel Tank	Storage tank for reclaimed Trichloroethylene
4.	10,000 gal. Carbon Steel Tank	This tank is currently out of service
5.	4,500 gal. Carbon Steel Tank	This tank is currently out of service
6.	4,500 gal. Carbon Steel Tank	Storage tank for reclaimed/virgin Trichloroethylene
10 A/B	2 – 600 gal. Receiver Tanks	These tanks are currently out of service
12.	2,300 gal. Carbon Steel Tank	Used for storage of Non-Hazardous Wastes.
13.	Detrex Model S-350 Still	This unit is currently out of service
14.	Detrex Model S-350 Still	Dismantled and removed
15.	DCI Model Dyna-1-100 Still	This unit is currently out of service
16 A/B	Drying Columns	These units are currently out of service
17	5,000 gal. Carbon Steel Tank	Used for storage of Non-Hazardous Wastes.
20	2,500 gal. 316 Stainless Steel Tank	Used for storage of reclaimed solvent
21	4,500 gal Carbon steel tank	Used for storage of Non-Hazardous Waste
22	4,500 gal. Carbon Steel Tank	Used for storage of Non-Hazardous Wastes.
24	DCI Model Dyna-1-500 Still	Dismantled
25	3,000 gal. 316 stainless steel Tank	Used for storage of Non-Hazardous Wastes.
26	SVRM - Carbon Absorption Unit	Dismantled
27	Drum Filling Station	Product Drumming Station. Used for filling 55- gallon drums with product. Unit can fill approximately 30 drums

ATTACHMENT J1
EXISTING FACILITY LAYOUT

		per hour and is operated as necessary
28	Product Blending Vessel	550 gal. Carbon steel vessel utilized for product blending.
29	Temporary Storage Area	Roller conveyor used as temporary storage of up to 18 x 55 gallon drums.
30	Staging Area / Hazardous Waste Storage Area	Area used to store containerized waste (less than 500 gallon DOT approved containers) that has not yet received full waste screening.
31	Hazardous Waste Storage Area	Storage area for wastes that have full waste screening performed.
32	Transfer Facility	Active

ATTACHMENT J-1
PROPOSED FACILITY LAYOUT

ID #	Equipment Name	Description
1.	Clayton Model E-100 Steam Generator	This unit is no longer in service
2.	Air Compressor	In use
3.	20,000 gal. Carbon steel Tank	Storage tank for reclaimed Trichloroethylene
4.	10,000 gal. Carbon Steel Tank	This tank is currently out of service
5.	4,500 gal. Carbon Steel Tank	This tank is currently out of service
6.	4,500 gal. Carbon Steel Tank	Storage tank for reclaimed/ virgin Trichloroethylene
10 A/B	2 – 600 gal. Receiver Tanks	These tanks are currently out of service
12.	2,300 gal. Carbon Steel Tank	Used for storage of Non-Hazardous Wastes.
13.	Detrex Model S-350 Still	This unit is currently out of service
15.	DCI Model Dyna-1-100 Still	This unit is currently out of service
16 A/B	Drying Columns	These units are currently out of service
17	5,000 gal. Carbon Steel Tank	Used for storage of Non-Hazardous Wastes.
20	2,500 gal. 316 Stainless Steel Tank	Used for storage of reclaimed solvent
21	4,500 gal Carbon steel tank	Used for storage of Non-Hazardous Waste
22	4,500 gal. Carbon Steel Tank	Used for storage of Non-Hazardous Wastes.
25	3,000 gal. 316 stainless steel Tank	Used for storage of Non-Hazardous Wastes.
27	Drum Filling Station	Product Drumming Station.
28	Staging Area 1	One area where drums are staged for sampling
29	Product storage area	Active
30	Hazardous Waste Storage areas	Storage areas 1, 2, 3, and 4
31	Transfer Facility	Active

SECTION K

OTHER FEDERAL LAWS

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SECTION K

OTHER FEDERAL LAWS

Other Federal Laws which have been reviewed for compliance include the:

- Wild and Scenic Rivers Act;
- National Historic Preservation Act;
- The Endangered Species Act;
- The Coastal Zone Management Act;
- The Fish and Wild Life Coordination Act;
- NPDES.

Letters noting Detrex's compliance with the first three Acts will be placed into Appendix K-1 once received. Due to the physical location of the facility there will be no impact with regards to the Coastal Zone Management Act.

The facility discharges all of its rain water collected from the areas surrounding the facility to the City of Detroit combined sanitary/storm sewars. As such the facility does not have a NPDES permit.

SECTION L

OWNER / OPERATOR CERTIFICATION

SECTION L

OWNER/OPERATOR CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature David R. Crandell

Name Dave Crandell

Title Division President

Date 6/12/00

SECTION N

ENVIRONMENTAL ASSESSMENT

SECTION N
ENVIRONMENTAL ASSESSMENT

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N-2 DESCRIPTION OF EXISTING ENVIRONMENT

The facility is located in north-western Detroit, Michigan. The site location is shown in Attachment N-1.

This section provides a description for the existing environment on and around the Detrex Corporation facility.

N-2a Physiography

N-2a(1) Topography

The surface topography of Southeast Michigan as seen today has been influenced by the bedrock topography and by the Wisconsinian glaciation of the late Pleistocene Epoch. Prior to glaciation, the landscape in Southeast Michigan was composed of two physiographic regions: the Thumb Upland area in the Livingston, Oakland and Washtenaw Counties; and the Eric-Huron Lowland in the Monroe and Wayne Counties. The Upper Devonian Berea Sandstone forms the approximate boundary between these two regions. During the advance and retreat of the glaciers, the glaciers established a lobate pattern of subdividing into the Lake Michigan, Saginaw and Lake Erie lobes. The lobe which most strongly affected the southern portions of Michigan (in which we are interested) was the Lake Erie lobe. The Lake Erie lobe preserved or even exaggerated the topographic features present before the glaciation.

The Lake Erie lobe advanced and retreated many times into the inland. As a result of these re-advances and retreats, a series of end moraines and pitted and wash plains are now readily evident in the Oakland, Livingston and Washtenow Counties. As the glaciers retreat further, the areas to the southeast, i.e. Monroe, Macomb, St. Clair and Wayne Counties, were overlain by lake bottom deposits and the occasional water-laid moraine. This area is comprised of mainly silts and clays. These lacustrine plains are especially well developed in Wayne (i.e. where the facility is located) and Monroe Counties.

As a result of the glacial activity and the initial bedrock topography, the slope of the landscape is towards the southeast and northwest. In the Genesee and Shiawassee Counties that are northeast of Detroit, the topographic relief is greater. In the same direction, several morainic knolls in the Oakland, Livingston, Macomb and Washtenow Counties have elevations of more than 1,100 feet and a local relief of approximately 600 feet. In contrast, Monroe County, which lies entirely within the lake plain, has only 160 feet of relief. The lowest point in the area is Lake Erie that has an average surface elevation of 568.6 feet.

The Detrex facility in Detroit is located on the flat lacustrine plain. Very little topographic relief exists close to the facility. The area is interrupted only by major

N-1 NEED FOR AND OBJECTIVE OF EXISTING FACILITY

The Detrex Corporation facility specializes in the sale of halogenated hydrocarbon solvents and cleaning equipment and formally the recovery (recycling) of solvents from wastes generated in degreasing operations. The recycling operations were discontinued in December of 1995 and the equipment associated with the recovery operation closed under a plan of closure submitted by Hani Hamawi in June of 1996.

Currently the hazardous waste management operations involve only storage of DOT containers. It is these storage areas that require the facility to have a Michigan Act 451 Operating License.

The storage areas are used to temporarily store containerized hazardous wastes prior to the wastes being transferred off site to another TSDF for processing or disposal. The storage areas are enclosed within a building that provides a safe and environmentally sound storage area for the wastes. In addition, the entire facility provides diking to retain any hazardous wastes in the unlikely event of a release.

Silurian

Bass Leland Group - This group is composed of fine-grained dolomites.

Of the formations listed above, the following formations are reported to be used as a water supply source in Wayne County: Berea Sandstone, Traverse Group, Dundee Limestone, Detroit River Group, and the Sylvania Sandstone.

Several injection wells are located within Wayne County. Six Class I injection wells are used to inject industrial, nuclear or municipal wastes beneath the deepest stratum containing an underground drinking water source. Eight injection wells used for injecting fluids for solution mining, oil shale gasification or geothermal energy recovery are also reported for Wayne County. Thirty wells are reported to be used for Liquefied Petroleum Gas storage. No brine injection wells are recorded in Wayne County.

N-2a(3) Soils

The soils in the Detroit area reflect strong glacial influences with lacustrine clay deposits and minor moraine deposits. Small quantities of sand reflect former beach areas. The composition of the soil provides for substantial strength and stability for structural development.

The facility is located within the Detroit City Limits; therefore they have little significance in terms of agriculture. The soils at the facility serve as a base for structures and roads.

N-2b Climate

The climate of Detroit is influenced mainly by its location with respect to major storm tracks and the influence of the Great Lakes.

The major storm tracks occurring in this region originate from the northwest or the southeast of the region. In the winter, the northwest winds bring snowfall accumulations to all parts of Michigan; however, the heaviest precipitation in the City of Detroit is caused by the southeast winds. Although snowfall is the most common form of precipitation, rain, freezing rain and sleet may also occur. In the summer months, the northwest winds carry little precipitation to the City of Detroit. As the storms approach the city, they are often weakened and dissipate. Consequently, the weather is normally warm and humid reaching temperatures of 90°F and higher. Only occasional thunderstorms will alleviate the warm and humid stretches.

drainage channels and markings of former beaches of glacial lakes. The closest major water course, the River Rouge, is some 5 miles away from the site.

The lands immediately surrounding the facility are at an approximate elevation of 656 feet AMSL. The building floor, which forms the base of the secondary containment area is an elevation of approximately 659 feet AMSL.

To the west of the facility, one railroad track moves in a northeast direction. One railroad spur enters the property directly north of the facility building. The elevation of the spur is approximately 656 feet AMSL.

Topographic maps for the facility are provided in Attachments B-1 and B-2 of this operating license application.

N-2a(2) Geology

As described previously, the main overburden material in Wayne County consists primarily of silts and clays with the occasional glacial moraine deposits. This thick layer of lacustrine material mantles a bedrock of sandstones, limestones, shales and dolomites. The downward sequence of the various bedrock formations beneath Wayne County includes the following:

Mississippian

Coldwater Shale - This unit exists at the northwest corner of Wayne County. The unit outcrops and subcrops in this area. The unit generally has low permeability.

Devonian

Berea Sandstone - This moderately fine-grained sandstone can be 100 feet in thickness in spots.

Traverse Group - This alternating sequence of shales and limestones outcrops in the central portions of Wayne County.

Dundee Limestone - This unit is a fossiliferous limestone with high permeability.

Detroit River Group - This group includes sandstones, limestones and dolomite.

Sylvania Sandstone - This unit outcrops in the southeast reaches of Michigan.

A number of non-community sources outside the Detroit City limits however have been recorded. Those geologic units capable of supplying water were listed in the Geology section. The table below summarizes the information as provided by the EPA (1981).

Aquifer System	*# of Wells*	*Depth (ft)*	*Capacity (gpm)*
Glacial Drift Aquifer	15	62 - 122	13 - 4,000
Berea Sandstone	2	207 - 234	5 - 30
Traverse Group	1	126	100
Dundee Limestone	1	183	110
Detroit River Group	5	28 - 102	15 - 41
Sylvania Sandstone	2	66 - 135	50 - 300
Silurian-Devonian	1	475	40

The water quality from the bedrock aquifers is normally good. Water, which is extracted from great depths, tends to have higher sulphate concentrations due to the presence of gypsum at depth. Limestone bedrock aquifers also tend to have increases in total dissolved solids. In general, however, natural groundwaters in Wayne County have inorganic concentration measurements below EPA established guidelines.

In conclusion, groundwater users are mainly located out of City limits.

Much of the information from this section was taken from a United States Environmental Protection Agency Report entitled "Hydrogeology for Underground Injection Control in Michigan: Part 1, 1981".

N-2f Air Quality

A Wayne County air quality summary taken from the Michigan Department of Natural Resources "Air Quality Report - 1986", outlines air quality from 1971 to 1986 and is presented below.

> Several networks monitor ambient air in Wayne County. The foremost is the Wayne County Air Pollution Control Division (WCAPC) that is operated by the county health department.
>
> The WCAPC Division operates 20 suspended particulate samplers in Wayne County. Of these sites, two violated the primary annual geometric mean standard during 1986 - one in the City of Detroit (Site 82-005: Annual geometric mean 82 ug/m^3) and one in Dearborn (Site 82-032: Annual geometric mean 103 ug/m^3). A third site located in Detroit (82-091) had an annual geometric mean of 82 ug/m^3 but did not achieve 75% valid data retrieval. These same sites, which are located in a specific

The most pronounced lake effect occurs in the winter when arctic air moves across the lakes and is warmed and moistened. This produces an excess of cloudiness but a moderation of cold wave temperatures. On warm summer days, occasional lake breezes help to lower temperatures in the eastern part of the city by 10 to 15 degrees.

Air pollution comes primarily from heavy industry spread along both shores of the waterway from Port Huron to Toledo. Wind dispersion is normally adequate to keep it from becoming a major problem.

Temperatures recorded at Detroit Metropolitan Airport range from -21°F in January 1984 to 102°F in July 1977. The average temperature for Detroit is 48.6°F with an average precipitation of 30.97 inches per year. (The average precipitation is based on a water equivalent measurement.)

N-2c Terrestrial Systems

The Detrex facility is situated on a 0.9-acre property in an industrial district of Detroit. The area is mostly devoid of vegetation and animal or bird life due to the development in the district.

For the purpose of providing an accurate detailed survey of the flora and fauna in the area surrounding the facility, Detrex contracted the firm Environmental Consultants, Inc. of Rochester, Michigan to conduct a site survey. This report, prepared by an experienced biologist, entitled "Terrestrial Systems, Detrex Corporation - Gold Shield Solvents Facility, Detroit, Michigan", is included as Attachment N-2.

N-2d Aquatic Systems

In Wayne County, a total of 52 bodies of water with an areal extent of 5 acres or greater have been documented. Of the 52 bodies, 5 are marshes and 47 are warm water lakes. Together these water bodies comprise only 0.6 percent of the county. However, within 10 miles of the site, no major watercourse or water body exists.

N-2e Hydrology

The City of Detroit covers much of Wayne County. Detroit derives its water from surface sources. As such, very little groundwater is exploited in Wayne County. Of the 42 communities in Wayne County, 38 of these communities purchased water from another community, and four of these communities were supplied by surface water (EPA, 1981). No community reported the use of groundwater as a municipal supply source.

Monitoring for ozone was conducted at four sites in Wayne County during 1986. All sites were in compliance with the .12-ppm standard as in the previous two years. In 1983, the two Detroit sites exceeded the .12-ppm standard; one site once, and the other site three times. During the summer of 1982, the Allen Park site recorded two excursions of the standard while one Detroit site and the Livonia site recorded one excursion each. One Detroit location exceeded the ambient 1-hour standard back in 1981.

The Wayne County Air Pollution Control Division operates eight calendar-quarter lead sites. All sites have complied with the standard since 1980, when the site located near the Jeffries Freeway violated the standard. In 1979 the same highway lead site showed violations for two consecutive quarters.

N-2g Aesthetics

The area in which the Detrex facility is located is an intensive industrial area of northwestern Detroit. The aesthetic value of this area is somewhat limited. Within the industrial sector, virtually all plant life occurs as "weedy" growth along fences, railroad tracks, etc.

The facility is not a source of unreasonable noise or other nuisance factors. The amount of truck and rail traffic to and from this facility is not inconsistent with other industries in the area. Traffic information, in relation to the movement of hazardous wastes, is discussed in Section B of this operating license application.

N-2h Land Use

Existing land use and zoning in the site area is shown on Attachments N-3 and N-4, respectively. The facility is located in an intensive industrial district (M4) with surrounding single family residential (R1). The nearest residence is located over 300 feet west of the facility.

N-2i Archaeological and Historical Resources and Site

The facility is an existing industrial operation in an intensive industrial area. The site has been reviewed by the State Historic Preservation Officer (SHPO) of the Michigan Department of State, Michigan History Division. It is the SHPO's opinion that the site is not eligible for listing in the Natural Register of Historic Places. The result of their review is presented in Attachment N-5.

problem corridor, have been in violation during all previous years monitored. Years of suspended particulate monitoring data in Wayne County indicate approximately a 50% reduction of the annual average levels. In 1971, only three sites met the health-related standard under the clean air act; however, by 1981 the reverse held true.

None of the WCAPC total suspended particulate sites violated the primary 24-hour suspended particulate standard in Wayne County during 1986. Four Wayne County monitors registered violations of the 24-hour secondary standard; all in the downtown Detroit area. Although this is a slight increase from 1985, it is an improvement over previous years monitored.

Four PM10 monitors, those which measure particulate matter 10 microns or less, are operated by WCAPC in Wayne County. Included are three Detroit, one River Rouge and one Dearborn monitoring sites. The annual arithmetic mean for January through December 1986 ranged from 38 to 55 ug/m^3.

For the past three years the sulfur dioxide monitors in Wayne County met primary and secondary standards. Back in 1983, two excursions of the sulfur dioxide primary 24-hour standard were recorded at a site near ICL Trucking in Detroit. These excursions were running 24-hour averages and are therefore not recorded as a violation of the standard. A dispersion model is being used to identify future potential problems in the area. The other 18 sulfur dioxide sites that monitored County met all applicable standards. During the six years prior to 1983, continuous sulfur dioxide monitors from 14 sites throughout Wayne County indicated compliance with the standards.

The nitrogen dioxide annual standard was met at the two sites that operate in the city of Detroit. However, as was the problem in 1985, equipment malfunction again kept the sites from recording 75% valid data.

As in previous years, WCAPC operates continuous monitors for carbon monoxide. The past two years indicate compliance with the ambient standards. During 1984, one downtown Detroit site recorded a violation of the 8-hour standard. No violations were recorded during 1983. In 1982, one downtown location recorded a violation of the 8-hour standard. Sixteen excursions of the 8-hour standard occurred in 1979 at a downtown location. During both 1978 and 1977 over 70 excursions were recorded in the county - most at the downtown locations.

N-4a Potential Secondary Impacts

The only potential for off-site secondary impacts to occur would be a result of mismanagement of operations that is considered under the failure mode assessment presented in a following section.

N-4b Environmental Review

The facility has been designed to minimize any potential impacts on the environment. Existing management operations and response procedures have also been designed to minimize potential impacts on the environment.

N-5 UNAVOIDABLE ADVERSE IMPACTS

There will be negligible adverse impacts from the operation of the storage areas, assuming attention is paid to site security, routine inspection and maintenance, proper containment of waste materials, and strict adherence to all applicable State and Federal regulations.

N-6 MITIGATING MEASURES

All feasible alternatives for the temporary storage of hazardous wastes at the facility have been considered. No other mitigating measures are available. The storage areas themselves are a mitigating measure that reduces the potential of a loss of hazardous waste to the environment.

N-7 FAILURE MODE ASSESSMENT

N-7a Description of System

The Detrex Corporation hazardous waste handling system consists of receiving containerized hazardous wastes, temporarily storing the wastes in a secure container storage area within the single enclosed building, and shipping the wastes off-site to another licensed TSDF for reclamation or disposal. No physical processing or disposal of waste occurs at this site.

N-2j Social-Economic Environment

The City of Detroit is a large metropolitan city encompassing a very large land area and a population estimated by the Detroit City Planning Department to be in excess of 1.2 million people.

The economics of the City are based on a largely diversified industrial and commercial structure.

The Detrex Corporation facility should not have any direct effect on any aspect of the local economic environment. The facility should not have any direct impact on local support systems such as school taxes, sewage disposal, or public utilities. Local police, fire and hospital officials have been given copies of the contingency plan for the facility to assure proper response procedures in the unlikely event of a major incident at the facility. Small incidents can be handled by in-house emergency procedures.

N-3 ALTERNATIVES CONSIDERED

Wastes are typically received in 55-gallon drums from off-site customers, although other size containers up to 550 gallons are permitted. The facility provides temporary storage for generators hazardous wastes in order for them to maintain compliance with the regulations regarding storage and time limitations. Detrex requires the temporary storage to accumulate enough wastes of a particular type to provide for economy of operations. The alternative to this would be to allow generators to store their wastes on site for longer periods of time prior to shipping off site for disposal.

Detrex now utilizes the two former hazardous waste storage tanks for the storage of solid wastes not meeting the definition of a hazardous waste.

N-4 ANTICIPATED ENVIRONMENTAL IMPACT OF THE EXISTING FACILITY

The storage areas are located within an enclosed building that provides adequate secondary containment. It is relatively free of the potential for negative impacts on topography, geology, climate, air quality, aesthetics, land use, archaeological, historical and social resources in the area.

A concrete pad directly underlies the total area where the truck sits during the unloading operation. Peripheral drive-over concrete curbing will be installed around the concrete pad. All expansion joints and any existing cracks in the concrete pad will be cleaned out, saw cut as necessary to provide a clean opening. Subsequently, all expansion joints and any cracks will be filled with a compatible chemically resistant flex joint sealant. The selected sealant will be installed in accordance with the manufacturer's specifications. The concrete pad and peripheral concrete curbing, with sealed joints, will provide control against the contact of any potentially spilled liquids with the surrounding ground surface.

N-7f Possible Corrective Actions in the Event of Failure

A detailed description of the response actions that will be implemented in the event of a failure is presented in Section G (Contingency Plan) of this operating license application. Section G-4b(2) details the response in the event of an accidental release of liquids and Section G-4b(3) details the response in the event of an accidental release of vapors. Procedures to prevent the occurrence of hazards are described in Section F (Preparedness and Prevention Procedures).

In summary, the Preparedness and Prevention Procedures (Section F) addresses the following:

- Security and alarms
- Inspection requirements and schedule
- Emergency equipment
- Emergency prevention

The Contingency Plan addresses the following:

- Emergency Coordinators
- Notification, identification and assessment
- Control procedures
- Response Procedures
- Emergency procedures
- Evacuation plan

N-7g Human Exposure

The purpose of this evaluation is to discuss the potential magnitude and nature of the human exposure to chemicals of potential concern specifically; methylene chloride, perchloroethylene, Trichloroethylene, 1,1,1-trichloroethane and trichlorotrifluoroethane; resulting from accidental releases in the workplace. Due to the air regulations the types

N-7b Definition of Failure

A failure within the container storage area could occur as either a leakage of liquids or a leakage of vaporized liquids from the drums.

A failure during on-site transport to and from the outdoor concrete loading/unloading area could also occur as either a leakage of liquids and/or a leakage of vaporized liquids during transfer from the truck to the container storage areas.

N-7c Possible Causes of Failure

The potential failure modes could occur from poorly sealed DOT containers, DOT containers of poor structural integrity, or DOT containers that are accidentally punctured or in some other manner damaged during handling operations.

N-7d Methods for Detection of Failure

The possible modes of failure presented above would either be detected during regular inspections of the storage areas or immediately identified by plant personnel during transfer operations at the loading/unloading area. The storage areas are located within the single building in the vicinity of the process equipment. As such, plant personnel are in or near the storage area during all plant operating hours.

N-7e Environmental Effects of Failure

The possible modes of failure presented in previous sections could cause a release of hazardous waste onto the facility floor in the enclosed structure, or onto the concrete pad at the loading/unloading area.

The building floor, which encompasses the entire facility, is constructed of concrete with peripheral concrete curbing to provide secondary containment. All doorways are diked with concrete ramps. The peripheral concrete curbing was originally coated with Surewall Surface Bonding Cement Coating; this coating and all subsequent coatings provide an impervious barrier. There are no floor drains or other such openings in the secondary containment area. All existing expansion joints and any cracks in the building floor will be cleaned out, saw cut if necessary to provide a clean opening. Subsequently, all expansion joints and any cracks will be filled with a compatible chemically resistant flex joint sealant. The selected sealant will be installed in accordance with the manufacturer's specification. The concrete slab and perimeter diking, with sealed joints, will serve as an impervious containment structure, thus eliminating the potential for the release of spilled liquids from within the facility.

In summary, care must be taken when handling the hazardous waste solvents managed at the Detrex facility. Continued exposure to highly elevated concentrations of these solvents in air may cause long-term health impacts, however the substances have warning signs which should prevent long-term exposure.

Exposure to the other classes of waste handled by facility personnel would generally create an exposure pathway through dermal contact. Preventions of exposure to these materials is easily accomplished using the appropriate Personal Protective Equipment (PPE). Facility personnel have received training on the proper use and limitations of PPE such as gloves, glasses/faceshields/goggles, hard hats, and protective footware. As such this is not expected to create any foreseeable problems.

and amounts of chlorinated solvents handled at the facility has been greatly reduced. Today the facility typically only deals with Tetrachloroethylene and Trichloroethylene, although it does handle limited amounts of methylene chloride.

Other wastes handled by the facility will be limited to those meeting the characteristics of corrosivity, flammability or toxicity. Since waste code D001 is a characteristic waste code no toxicity information is available. Toxicity information is readily available on the constituents making up waste code F003 and F005.

The aforementioned halogenated solvents are classified as volatile organic compounds (VOCs). These chemicals are colorless liquids at room temperature which are primarily used as industrial solvents. They evaporate quickly into the air producing ether-like odors.

The most significant route of exposure is inhalation. These VOCs do not penetrate the skin to any extent. Entry into the body via dermal contact is of minimal concern since VOCs evaporate off the skin quickly and the amount absorbed is usually small unless it is trapped against the skin by clothing or gloves. If direct exposure occurred to undiluted liquid, skin irritation may result.

Exposure to VOCs can be determined by measuring levels in the breath or by monitoring a number of breakdown products (metabolites) in the urine or blood.

These particular VOCs can cause Central Nervous System (CNS) effects producing symptoms from low dose short-term exposure such as dizziness, loss of balance and coordination, sluggishness, lightheadedness, nausea and headaches. However, these symptoms disappear fairly rapidly after exposure stops. Acute exposure to high doses include eye, nose and throat irritation. This demonstrates several warning properties that personnel should be aware of that can prevent prolonged exposure that could cause long-term health impacts.

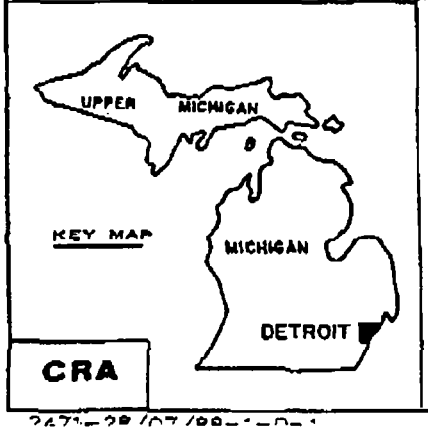
Methylene chloride, tetrachloroethylene and Trichloroethylene are classified as carcinogens via inhalation route. Mice exposed to chronic low doses of methylene chloride produced lung and liver damage; Trichloroethylene effects include lung damage while tetrachloroethylene effects lead to leukemia and liver lesions.

Table N-1 presents the Threshold Limit Values (TLVs) from the American Conference of Governmental Industrial Hygienists (ACGIH); the Permissible Exposure Limits (PELs) from the U.S. Department of Labor, Occupational Safety and Health Administration (OSHA); and the Maximum Concentration Values in the workplace (MAKs) from the Deutsche Forschungsgemeinshaft (DFG), Federal Republic of Germany, Commission for the Investigation of Health Hazards of Chemical Compounds in the Work Area.

ATTACHMENT N-1

SITE LOCATION

ATTACHMENT K-1



SITE LOCATION

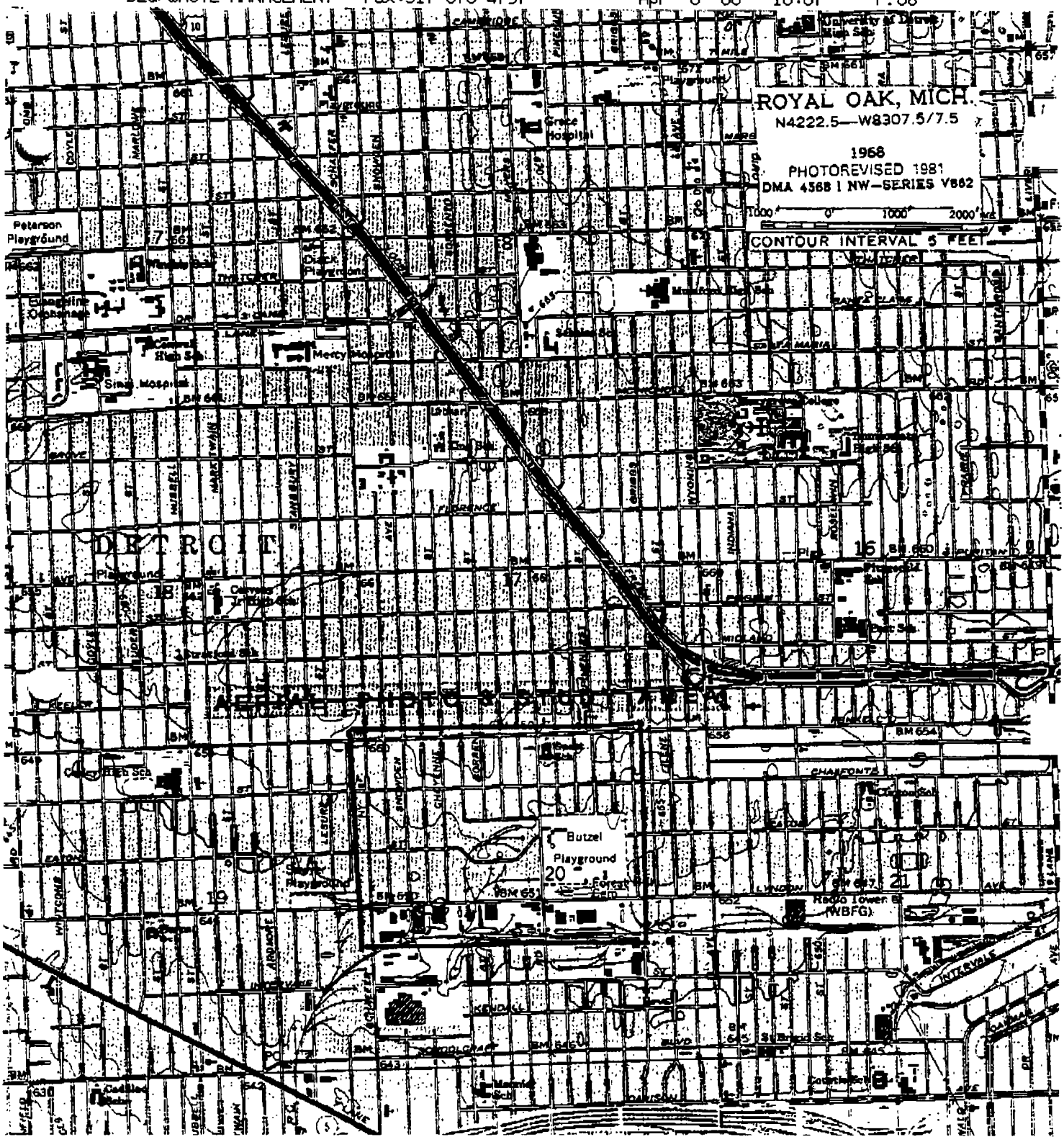
Detrex Corporation

Eaton Avenue Facility, Detroit

ATTACHMENT N-2

ARIAL PHOTO MAP OF AREA

A-2


ROYAL OAK, MICH.
N4222.5—W8307.5/7.5
1968
PHOTOREVISED 1981
DMA 4568 I NW—SERIES V882
CONTOUR INTERVAL 5 FEET
DETROIT
Peterson Playground
Grace Hospital
Mercy Hospital
Sinai Hospital
Butzel Playground
Radio Tower (WBFG)
AERIAL PHOTO STUDY AREA

TERRESTRIAL SYSTEMS
DETREX CORPORATION - GOLD SHIELD SOLVENTS FACILITY
DETROIT, MICHIGAN

The Gold Shield Solvents Facility is located in an industrial zone in Northwest Detroit. The study area surrounding the Facility, as shown in the accompanying map, includes residential, commercial, and industrial sectors, as well as a large park and a cemetery. The area was studied on August 1, and 2, 1988.

TERRESTRIAL SYSTEMS

FLORA:

There are no natural plant communities in the usual sense within the study area, with flora being determined by land use within each sector.

Within the industrial (and commercial) zone, which includes the 0.9 acre Gold Shield Solvents Facility, virtually all flora are pioneer species, characterized by their ability to become established on very poor soil under very harsh conditions. Herbacious plants identified in this area include grasses, Yellow Nut Sedge, Milkweed, Goldenrod, Chicory, and Morning Glory. Woody plants, mostly under 5 feet in height, include Cottonwood, Box Elder, Chinese Elm, Sycamore, Mulberry, Raspberry, and Virginia Creeper. Virtually all plant life within the industrial sector occurs as "weedy" growth along fences, railroad tracks, and in out of the way corners. It is apparently cut and sprayed with herbicide regularly. Except for a very few Cottonwoods and Box Elders, no plants seem to be over 2 years old, and provide no animal habitat.

Within the residential area, flora consists of well maintained lawns, and introduced trees and shrubs. The shade trees, mostly Ash, Norway Maple, and Linden, range from 4" to 16" in diameter, and appear to range up to about 40 years in age.

The Butzel playground which lies within the study area is almost entirely grass, except for a few shade trees in the area and around the perimeter.

The cemetery contains an array of plant species similar to that of the residential area, but includes a few somewhat older trees, up to 24" trunk diameter, estimated to be 60 to 70 years old.

FAUNA

While no animal life was observed, the residential areas could be expected to support populations of various songbirds and probably squirrels.

Due to the highly developed and intensely used nature of the study area, it is highly unlikely that any rare or endangered species exist in the vicinity.

AQUATIC SYSTEMS

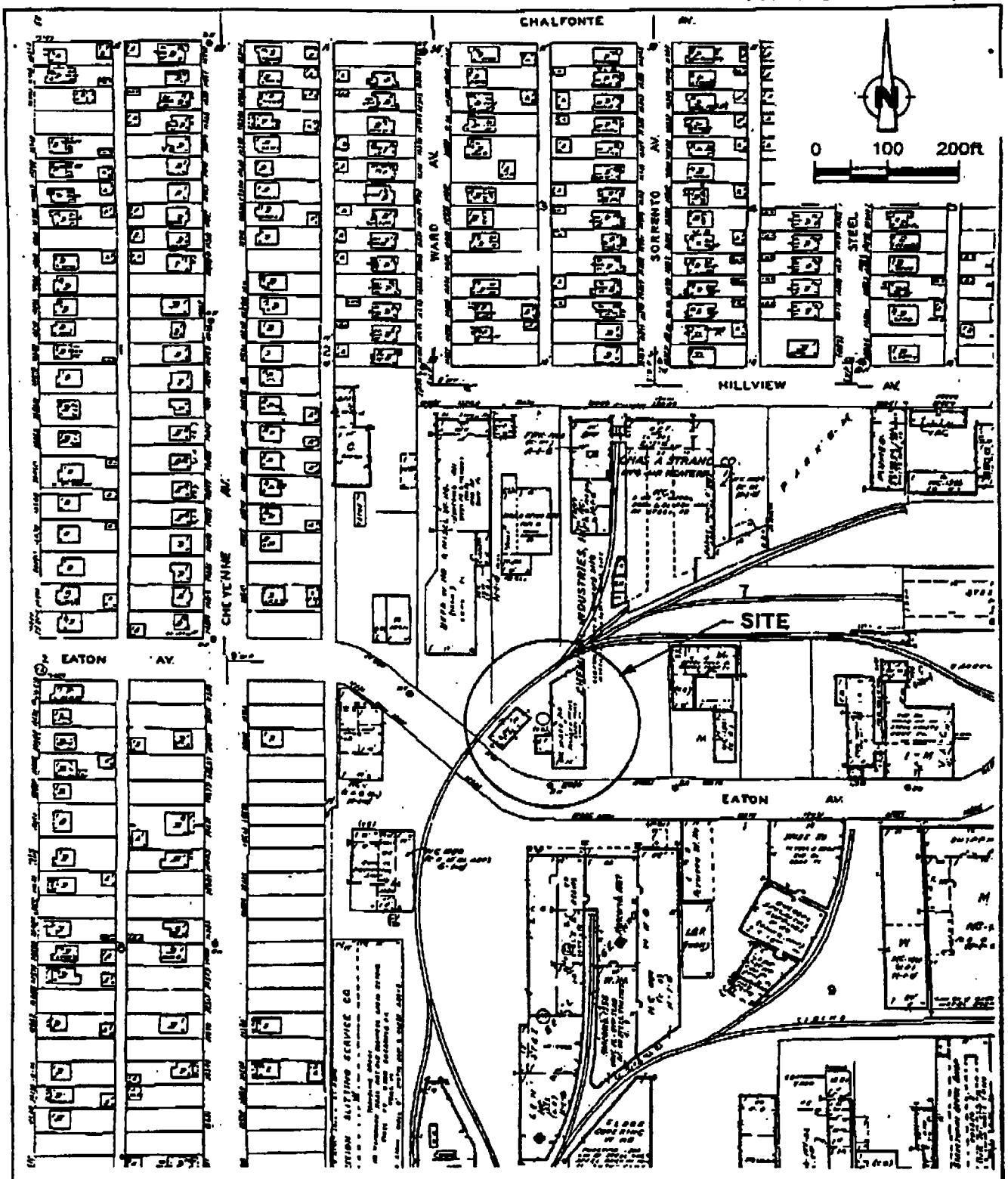
There are no aquatic systems of any kind within the study area.

Robert Cobb, M.S.
Environmental Consultants, Inc.

ATTACHMENT N-3

SURROUNDING LAND USE

ATTACHMENT N 3



SURROUNDING LAND USE
Detrex Corporation
Eaton Avenue Facility, Detroit

CRA

2471-28/07/88-1-D-1

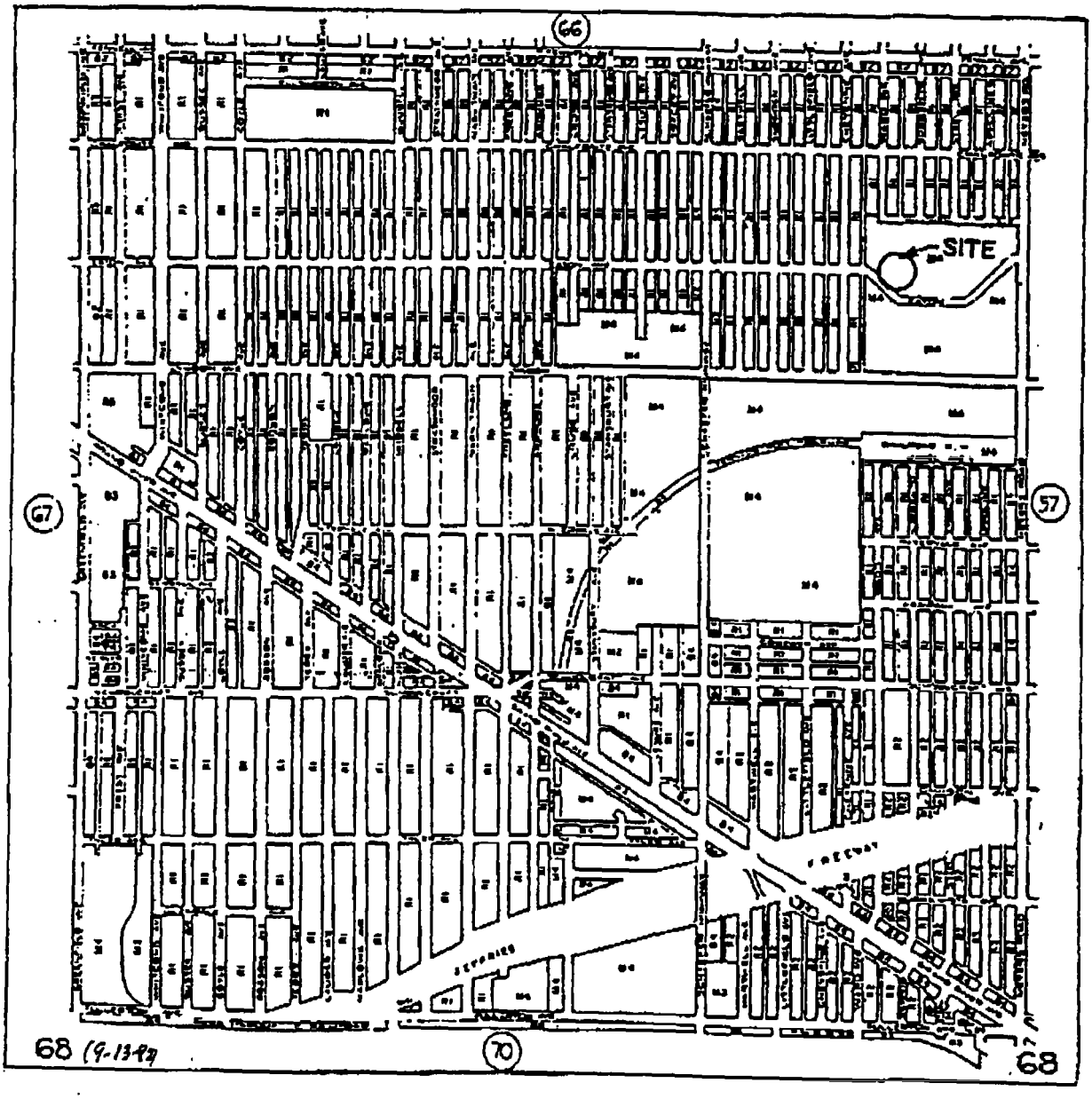
ATTACHMENT N-4

ZONING MAP

ATTACHMENT #4

DETROIT ZONING ORDINANCE

N. T. S.



ZONING MAP

Detrex Corporation
Eaton Avenue Facility, Detroit

CRA

2471-28/07/88-1-D-1

ATTACHMENT N-5

ENVIRONMENTAL ASSESSMENT LETTER

MICHIGAN DEPARTMENT OF STATE

RICHARD H. AUSTIN SECRETARY OF STATE

LANSING

MICHIGAN 48918

BUREAU OF HISTORY

ADMINISTRATION, PUBLICATIONS
ARCHAEOLOGY AND HISTORIC
PRESERVATION
208 N. Capitol Avenue
517—373-0510

STATE ARCHIVES
3405 N. Logan Street
517—335-9165

MICHIGAN HISTORICAL MUSEUM
208 N. Capitol Avenue
517—373-3559

August 10, 1988

Mr. Bruce McConnell, B.A.S.C.
Conestoga-Rovers & Associates Limited
651 Colby Drive
Waterloo, Ontario, Canada N2V 1C2

RE: ER-88468 Environmental Assessment-Detrex Corporation Gold Shield Solvents Facility, Detroit, Wayne County

Dear Mr. McConnell:

We have reviewed the above-cited project which includes the above-cited site(s) under authority of the National Historic Preservation Act of 1966, as amended. It is the opinion of the State Historic Preservation Officer (SHPO) that the site(s) is not eligible for listing in the National Register of Historic Places. It is, therefore, further the opinion of the SHPO that this project will not affect any historic properties and is cleared under Federal Regulation 36 CFR 800 for the "Protection of Historic Properties."

Please maintain a copy of this letter with your environmental review record for this project. Should the scope of work change in any way, or if artifacts or bones are discovered, contact this office immediately. This letter evidences your compliance with 36 CFR 800.4 "Identifying Historic Properties," and the SHPO hereby waives your responsibility to notify this office under 36 CFR 800.4(d) with a determination of "No Historic Properties Found."

If you have any questions, please contact Robin S. Peebles, Environmental Review Coordinator, at (517) 335-2721. Thank you for this opportunity to review and comment.

Sincerely,

Martha M. Bigelow
Director, Bureau of History
and
State Historic Preservation Officer

by:

Kathryn B. Eckert

Kathryn B. Eckert, Deputy
State Historic Preservation Officer
Bureau of History

MMB/KBE/JRH/BDC/RSP/cc

RECEIVED

APR 1 0 2000

Waste Management
Division

SECTION ~~K~~ M

ENVIRONMENTAL ASSESSMENT

SECTION K
ENVIRONMENTAL ASSESSMENT

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ATTACHMENT K-3 LAND USE

ATTACHMENT K-4 ZONING

ATTACHMENT K-5 CORRESPONDENCE - BUREAU OF HISTORY

K-1 NEED FOR AND OBJECTIVE OF EXISTING FACILITY

The Detrex Corporation facility specializes in the sale of halogenated hydrocarbon solvents and cleaning equipment and formally the recovery (recycling) of solvents from wastes generated in degreasing operations. The recycling operations were discontinued in December of 1995 and the equipment associated with the recovery operation closed under a plan of closure submitted by Hani Hamawi in June of 1996.

Currently the hazardous waste management operations involve only storage of DOT containers. . It is these storage areas that require the facility to have a Michigan Act 451 Operating License.

The storage areas are used to temporarily store containerized hazardous wastes prior to the wastes being transferred off site to another TSDF for processing or disposal. The storage areas are enclosed within a building that provides a safe and environmentally sound storage area for the wastes. In addition, the entire facility provides diking to retain any hazardous wastes in the unlikely event of a release.

K-2 DESCRIPTION OF EXISTING ENVIRONMENT

The facility is located in north-western Detroit, Michigan. The site location is shown in Attachment K-1.

This section provides a description for the existing environment on and around the Detrex Corporation facility.

K-2a Physiography

K-2a(1) Topography

The surface topography of Southeast Michigan as seen today has been influenced by the bedrock topography and by the Wisconsinian glaciation of the late Pleistocene Epoch. Prior to glaciation, the landscape in Southeast Michigan was composed of two physiographic regions: the Thumb Upland area in the Livingston, Oakland and Washtenaw Counties; and the Eric-Huron Lowland in the Monroe and Wayne Counties. The Upper Devonian Berea Sandstone forms the approximate boundary between these two regions. During the advance and retreat of the glaciers, the glaciers established a lobate pattern of subdividing into the Lake Michigan, Saginaw and Lake Erie lobes. The lobe that most strongly affected the southern portions of Michigan (in which we are interested) was the Lake Erie lobe. The Lake Erie lobe preserved or even exaggerated the topographic features present before the glaciation.

The Lake Erie lobe advanced and retreated many times into the inland. As a result of these re-advances and retreats, a series of end moraines and pitted and wash plains are now readily evident in the Oakland, Livingston and Washtenow Counties. As

the glaciers retreat further, the areas to the southeast, i.e. Monroe, Macomb, St. Clair and Wayne Counties, were overlain by lake bottom deposits and the occasional water-laid moraine. This area is comprised of mainly silts and clays. These lacustrine plains are especially well developed in Wayne (i.e. where the facility is located) and Monroe Counties.

As a result of the glacial activity and the initial bedrock topography, the slope of the landscape is towards the southeast and northwest. In the Genesee and Shiawassee Counties that are northeast of Detroit, the topographic relief is greater. In the same direction, several morainic knolls in the Oakland, Livingston, Macomb and Washtenow Counties have elevations of more than 1,100 feet and a local relief of approximately 600 feet. In contrast, Monroe County, which lies entirely within the lake plain, has only 160 feet of relief. The lowest point in the area is Lake Erie that has an average surface elevation of 568.6 feet.

The Detrex facility in Detroit is located on the flat lacustrine plain. Very little topographic relief exists close to the facility. The area is interrupted only by major drainage channels and markings of former beaches of glacial lakes. The closest major watercourse, the River Rouge, is some 15 miles away from the site.

The lands immediately surrounding the facility are at an approximate elevation of 656 feet AMSL. The building floor, which forms the base of the secondary containment area is an elevation of approximately 659 feet AMSL.

To the west of the facility, one railroad track moves in a northeast direction. One railroad spur enters the property directly north of the facility building. The elevation of the spur is approximately 656 feet AMSL.

Topographic maps for the facility are provided in Attachments B-1 and B-2 of this operating license application.

K-2a(2) Geology

As described previously, the main overburden material in Wayne County consists primarily of silts and clays with the occasional glacial moraine deposits. This thick layer of lacustrine material mantles a bedrock of sandstones, limestones, shales and dolomites. The downward sequence of the various bedrock formations beneath Wayne County includes the following:

Mississippian

Coldwater Shale - This unit exists at the northwest corner of Wayne County. The unit outcrops and subcrops in this area. The unit generally has low permeability.

Devonian

Berea Sandstone - This moderately fine-grained sandstone can be 100 feet in thickness in spots.

Traverse Group - This alternating sequence of shales and limestones outcrops in the central portions of Wayne County.

Dundee Limestone - This unit is a fossiliferous limestone with high permeability.

Detroit River Group - This group includes sandstones, limestones and dolomite.

Sylvania Sandstone - This unit outcrops in the southeast reaches of Michigan.

Silurian

Bass Leland Group - This group is composed of fine-grained dolomites.

Of the formations listed above, the following formations are reported to be used as a water supply source in Wayne County: Berea Sandstone, Traverse Group, Dundee Limestone, Detroit River Group, and the Sylvania Sandstone.

Several injection wells are located within Wayne County. Six Class I injection wells are used to inject industrial, nuclear or municipal wastes beneath the deepest stratum containing an underground drinking water source. Eight injection wells used for injecting fluids for solution mining, oil shale gasification or geothermal energy recovery are also reported for Wayne County. Thirty wells are reported to be used for Liquified Petroleum Gas storage. No brine injection wells are recorded in Wayne County.

K-2a(3) Soils

The soils in the Detroit area reflect strong glacial influences with lacustrine clay deposits and minor moraine deposits. Small quantities of sand reflect former beach areas. The composition of the soil provides for substantial strength and stability for structural development.

The facility is located within the Detroit City limits; therefore they have little significance in terms of agriculture. The soils at the facility serve as a base for structures and roads.

K-2b Climate

The climate of Detroit is influenced mainly by its location with respect to major storm tracks and the influence of the Great Lakes.

The major storm tracks occurring in this region originate from the northwest or the southeast of the region. In the winter, the northwest winds bring snowfall accumulations to all parts of Michigan; however, the heaviest precipitation in the City of Detroit is caused by the southeast winds. Although snowfall is the most common form of precipitation, rain, freezing rain and sleet may also occur. In the summer months, the northwest winds carry little precipitation to the City of Detroit. As the storms approach the city, they are often weakened and dissipate. Consequently, the weather is normally warm and humid reaching temperatures of 90°F and higher. Only occasional thunderstorms will alleviate the warm and humid stretches.

The most pronounced lake effect occurs in the winter when arctic air moves across the lakes and is warmed and moistened. This produces an excess of cloudiness but a moderation of cold wave temperatures. On warm summer days, occasional lake breezes help to lower temperatures in the eastern part of the city by 10 to 15 degrees.

Air pollution comes primarily from heavy industry spread along both shores of the waterway from Port Huron to Toledo. Wind dispersion is normally adequate to keep it from becoming a major problem.

Temperatures recorded at Detroit Metropolitan Airport range from -21°F in January 1984 to 102°F in July 1977. The average temperature for Detroit is 48.6°F with an average precipitation of 30.97 inches per year. (The average precipitation is based on a water equivalent measurement.)

K-2c Terrestrial Systems

The Detrex facility is situated on a 0.9-acre property in an industrial district of Detroit. The area is mostly devoid of vegetation and animal or bird life due to the development in the district.

For the purpose of providing an accurate detailed survey of the flora and fauna in the area surrounding the facility, Detrex contracted the firm Environmental Consultants, Inc. of Rochester, Michigan to conduct a site survey. This report, prepared by an experienced biologist, entitled "Terrestrial Systems, Detrex Corporation - Gold Shield Solvents Facility, Detroit, Michigan", is included as Attachment K-2.

K-2d Aquatic Systems

In Wayne County, a total of 52 bodies of water with an areal extent of 5 acres or greater have been documented. Of the 52 bodies, 5 are marshes and 47 are warm water lakes. Together these water bodies comprise only 0.6 percent of the county. However, within 10 miles of the site, no major watercourse or water body exists.

K-2e Hydrology

The City of Detroit covers much of Wayne County. Detroit derives its water from surface sources. As such, very little groundwater is exploited in Wayne County. Of the 42 communities in Wayne County, 38 of these communities purchased water from another community, and four of these communities were supplied by surface water (EPA, 1981). No community reported the use of groundwater as a municipal supply source.

A number of non-community sources outside the Detroit City limits however have been recorded. Those geologic units capable of supplying water were listed in the Geology section. The table below summarizes the information as provided by the EPA (1981).

Aquifer System	*# of Wells*	*Depth (ft)*	*Capacity (gpm)*
Glacial Drift Aquifer	15	62 - 122	13 - 4,000
Berea Sandstone	2	207 - 234	5 - 30
Traverse Group	1	126	100
Dundee Limestone	1	183	110
Detroit River Group	5	28 - 102	15 - 41
Sylvania Sandstone	2	66 - 135	50 - 300
Silurian-Devonian	1	475	40

The water quality from the bedrock aquifers is normally good. Water, which is extracted from great depths, tends to have higher sulphate concentrations due to the presence of gypsum at depth. Limestone bedrock aquifers also tend to have increases in total dissolved solids. In general, however, natural ground waters in Wayne County have inorganic concentration measurements below EPA established guidelines.

In conclusion, groundwater users are mainly located out of City limits.

Much of the information from this section was taken from a United States Environmental Protection Agency Report entitled "Hydrogeology for Underground Injection Control in Michigan: Part 1, 1981".

K-2f Air Quality

A Wayne County air quality summary taken from the Michigan Department of Natural Resources "Air Quality Report - 1986", outlines air quality from 1971 to 1986 and is presented below.

> Several networks monitor ambient air in Wayne County. The foremost is the Wayne County Air Pollution Control Division (WCAPCthat is operated by the county health department.

The WCAPC Division operates 20 suspended particulate samplers in Wayne County. Of these sites, two violated the primary annual geometric mean standard during 1986 - one in the City of Detroit (Site 82-005: Annual geometric mean 82 ug/m^3) and one in Dearborn (Site 82-032: Annual geometric mean 103 ug/m^3). A third site located in Detroit (82-091) had an annual geometric mean of 82 ug/m^3 but did not achieve 75% valid data retrieval. These same sites, which are located in a specific problem corridor, have been in violation during all previous years monitored. Years of suspended particulate monitoring data in Wayne County indicate approximately a 50% reduction of the annual average levels. In 1971, only three sites met the health-related standard under the clean air act; however, by 1981 the reverse held true.

None of the WCAPC total suspended particulate sites violated the primary 24-hour suspended particulate standard in Wayne County during 1986. Four Wayne County monitors registered violations of the 24-hour secondary standard; all in the downtown Detroit area. Although this is a slight increase from 1985, it is an improvement over previous years monitored.

Four PM10 monitors, those which measure particulate matter 10 microns or less, are operated by WCAPC in Wayne County. Included are three Detroit, one River Rouge and one Dearborn monitoring sites. The annual arithmetic mean for January through December 1986 ranged from 38 to 55 ug/m^3.

For the past three years the sulfur dioxide monitors in Wayne County met primary and secondary standards. Back in 1983, two excursions of the sulfur dioxide primary 24-hour standard were recorded at a site near ICL Trucking in Detroit. These excursions were running 24-hour averages and are therefore not recorded as a violation of the standard. A dispersion model is being used to identify future potential problems in the area. The other 18 sulfur dioxide sites that monitored Wayne County met all applicable standards. During the six years prior to 1983, continuous sulfur dioxide monitors from 14 sites throughout Wayne County indicated compliance with the standards.

The nitrogen dioxide annual standard was met at the two sites that operate in the city of Detroit. However, as was the problem in 1985, equipment malfunction again kept the sites from recording 75% valid data.

As in previous years, WCAPC operates continuous monitors for carbon monoxide. The past two years indicate compliance with the ambient standards. During 1984, one downtown Detroit site recorded a violation of the 8-hour standard. No violations were recorded during

1983. In 1982, one downtown location recorded a violation of the 8-hour standard. Sixteen excursions of the 8-hour standard occurred in 1979 at a downtown location. During both 1978 and 1977 over 70 excursions were recorded in the county - most at the downtown locations.

Monitoring for ozone was conducted at four sites in Wayne County during 1986. All sites were in compliance with the .12-ppm standard as in the previous two years. In 1983, the two Detroit sites exceeded the .12-ppm standard; one site once, and the other site three times. During the summer of 1982, the Allen Park site recorded two excursions of the standard while one Detroit site and the Livonia site recorded one excursion each. One Detroit location exceeded the ambient 1-hour standard back in 1981.

The Wayne County Air Pollution Control Division operates eight calendar-quarter lead sites. All sites have complied with the standard since 1980, when the site located near the Jeffries Freeway violated the standard. In 1979 the same highway lead site showed violations for two consecutive quarters.

K-2g Aesthetics

The area in which the Detrex facility is located is an intensive industrial area of northwestern Detroit. The aesthetic value of this area is somewhat limited. Within the industrial sector, virtually all plant life occurs as "weedy" growth along fences, railroad tracks, etc.

The facility is not a source of unreasonable noise or other nuisance factors. The amount of truck and rail traffic to and from this facility is not inconsistent with other industries in the area. Traffic information, in relation to the movement of hazardous wastes, is discussed in Section B of this operating license application.

K-2h Land Use

Existing land use and zoning in the site area is shown on Attachments K-3 and K-4, respectively. The facility is located in an intensive industrial district (M4) with surrounding single family residential (R1). The nearest residence is located over 300 feet west of the facility.

K-2i Archaeological and Historical Resources and Site

The facility is an existing industrial operation in an intensive industrial area. The site has been reviewed by the State Historic Preservation Officer (SHPO) of the Michigan

Department of State, Michigan History Division. It is the SHPO's opinion that the site is not eligible for listing in the Natural Register of Historic Places. The result of their review is presented in Attachment K-5.

K-2jSocial-Economic Environment

The City of Detroit is a large metropolitan city encompassing a very large land area and a population estimated by the Detroit City Planning Department to be in excess of 1.2 million people.

The economics of the City are based on a largely diversified industrial and commercial structure.

The Detrex Corporation facility should not have any direct effect on any aspect of the local economic environment. The facility should not have any direct impact on local support systems such as school taxes, sewage disposal, or public utilities. Local police, fire and hospital officials have been given copies of the contingency plan for the facility to assure proper response procedures in the unlikely event of a major incident at the facility. Small incidents can be handled by in-house emergency procedures.

K-3 ALTERNATIVES CONSIDERED

Wastes are typically received in 55-gallon drums from off-site customers, although other size containers up to 550 gallons are permitted. The facility provides temporary storage for generators hazardous wastes in order for them to maintain compliance with the regulations regarding storage and time limitations. Detrex requires the temporary storage to accumulate enough wastes of a particular type to provide for economy of operations. The alternative to this would be to allow generators to store their wastes on site for longer periods of time prior to shipping off site for disposal.

Detrex now utilizes the two former hazardous waste storage tanks for the storage of solid wastes not meeting the definition of a hazardous waste.

K-4 ANTICIPATED ENVIRONMENTAL IMPACT OF THE EXISTING FACILITY

The storage areas are located within an enclosed building that provides adequate secondary containment. It is relatively free of the potential for negative impacts on topography, geology, climate, air quality, aesthetics, land use, archaeological, historical and social resources in the area.

K-4a Potential Secondary Impacts

The only potential for off-site secondary impacts to occur would be a result of mismanagement of operations that is considered under the failure mode assessment presented in a following section.

K-4b Environmental Review

The facility has been designed to minimize any potential impacts on the environment. Existing management operations and response procedures have also been designed to minimize potential impacts on the environment.

K-5 UNAVOIDABLE ADVERSE IMPACTS

There will be negligible adverse impacts from the operation of the storage areas, assuming attention is paid to site security, routine inspection and maintenance, proper containment of waste materials, and strict adherence to all applicable State and Federal regulations.

K-6 MITIGATING MEASURES

All feasible alternatives for the temporary storage of hazardous wastes at the facility have been considered. No other mitigating measures are available. The storage areas themselves are a mitigating measure that reduces the potential of a loss of hazardous waste to the environment.

K-7 FAILURE MODE ASSESSMENT

K-7a Description of System

The Detrex Corporation hazardous waste handling system consists of receiving containerized hazardous wastes, temporarily storing the wastes in a secure container storage area within the single enclosed building, and shipping the wastes off-site to another licensed TSDF for reclamation or disposal. No physical processing or disposal of waste occurs at this site.

K-7b Definition of Failure

A failure within the container storage area could occur as either a leakage of liquids or a leakage of vaporized liquids from the drums.

A failure during on-site transport to and from the outdoor concrete loading/unloading area could also occur as either a leakage of liquids and/or a leakage of vaporized liquids during transfer from the truck to the container storage areas.

K-7c Possible Causes of Failure

The potential failure modes could occur from poorly sealed DOT containers, DOT containers of poor structural integrity, or DOT containers that are accidentally punctured or in some other manner damaged during handling operations.

K-7d Methods for Detection of Failure

The possible modes of failure presented above would either be detected during regular inspections of the storage areas or immediately identified by plant personnel during transfer operations at the loading/unloading area. The storage areas are located within the single building in the vicinity of the process equipment. As such, plant personnel are in or near the storage area during all plant operating hoursK-7 FAILURE MODE ASSESSMENT

K-7e Environmental Effects of Failure

The possible modes of failure presented in previous sections could cause a release of hazardous waste onto the facility floor in the enclosed structure, or onto the concrete pad at the loading/unloading area.

The building floor, which encompasses the entire facility, is constructed of concrete with peripheral concrete curbing to provide secondary containment. All doorways are diked with concrete ramps. The peripheral concrete curbing is coated with Surewall Surface Bonding Cement Coating, or another type of coating that is compatible with the waste and will provide an impervious barrier. There are no floor drains or other such openings in the secondary containment area. All existing expansion joints and any cracks in the building floor will be cleaned out, saw cut if necessary to provide a clean opening. Subsequently, all expansion joints and any cracks will be filled with a compatible chemically resistant flex joint sealant. The selected sealant will be installed in accordance with the manufacturer's specification. The concrete slab and perimeter diking, with sealed joints, will serve as an impervious containment structure, thus eliminating the potential for the release of spilled liquids from within the facility.

A concrete pad directly underlies the total area where the truck sits during the unloading operation. Peripheral drive-over concrete curbing will be installed around the concrete pad. All expansion joints and any existing cracks in the concrete pad will be cleaned out, saw cut as necessary to provide a clean opening. Subsequently, all

expansion joints and any cracks will be filled with a compatible chemically resistant flex joint sealant. The selected sealant will be installed in accordance with the manufacturer's specifications. The concrete pad and peripheral concrete curbing, with sealed joints, will provide control against the contact of any potentially spilled liquids with the surrounding ground surface.

K-7f Possible Corrective Actions in the Event of Failure

A detailed description of the response actions that will be implemented in the event of a failure is presented in Section G (Contingency Plan) of this operating license application. Section G-4b(2) details the response in the event of an accidental release of liquids and Section G-4b(3) details the response in the event of an accidental release of vapors. Procedures to prevent the occurrence of hazards are described in Section F (Preparedness and Prevention Procedures).

In summary, the Preparedness and Prevention Procedures (Section F) addresses the following:

- Security and alarms
- Inspection requirements and schedule
- Emergency equipment
- Emergency prevention

The Contingency Plan addresses the following:

- Emergency Coordinators
- Notification, identification and assessment
- Control procedures
- Response Procedures
- Emergency procedures
- Evacuation plan

K-7g Human Exposure

The purpose of this evaluation is to discuss the potential magnitude and nature of the human exposure to chemicals of potential concern specifically; methylene chloride, perchloroethylene, Trichloroethylene, 1,1,1-trichloroethane and trichlorotrifluoroethane; resulting from accidental releases in the workplace. Due to the air regulations the types and amounts of chlorinated solvents handled at the facility has been greatly reduced. Today the facility typically only deals with Tetrachloroethylene and Trichloroethylene, although it does handle limited amounts of methylene chloride.

Other wastes handled by the facility will be limited to those meeting the characteristics of either corrosivity or toxicity

The aforementioned halogenated solvents are classified as volatile organic compounds (VOCs). These chemicals are colorless liquids at room temperature that are primarily used as industrial solvents. They evaporate quickly into the air producing ether-like odors.

The most significant route of exposure is inhalation. These VOCs do not penetrate the skin to any extent. Entry into the body via dermal contact is of minimal concern since VOCs evaporate off the skin quickly and the amount absorbed is usually small unless it is trapped against the skin by clothing or gloves. If direct exposure occurred to undiluted liquid, skin irritation may result.

Exposure to VOCs can be determined by measuring levels in the breath or by monitoring a number of breakdown products (metabolites) in the urine or blood.

These particular VOCs can cause Central Nervous System (CNS) effects producing symptoms from low dose short-term exposure such as dizziness, loss of balance and coordination, sluggishness, lightheadedness, nausea and headaches. However, these symptoms disappear fairly rapidly after exposure stops. Acute exposure to high doses include eye, nose and throat irritation. This demonstrates several warning properties that personnel should be aware of that can prevent prolonged exposure that could cause long-term health impacts.

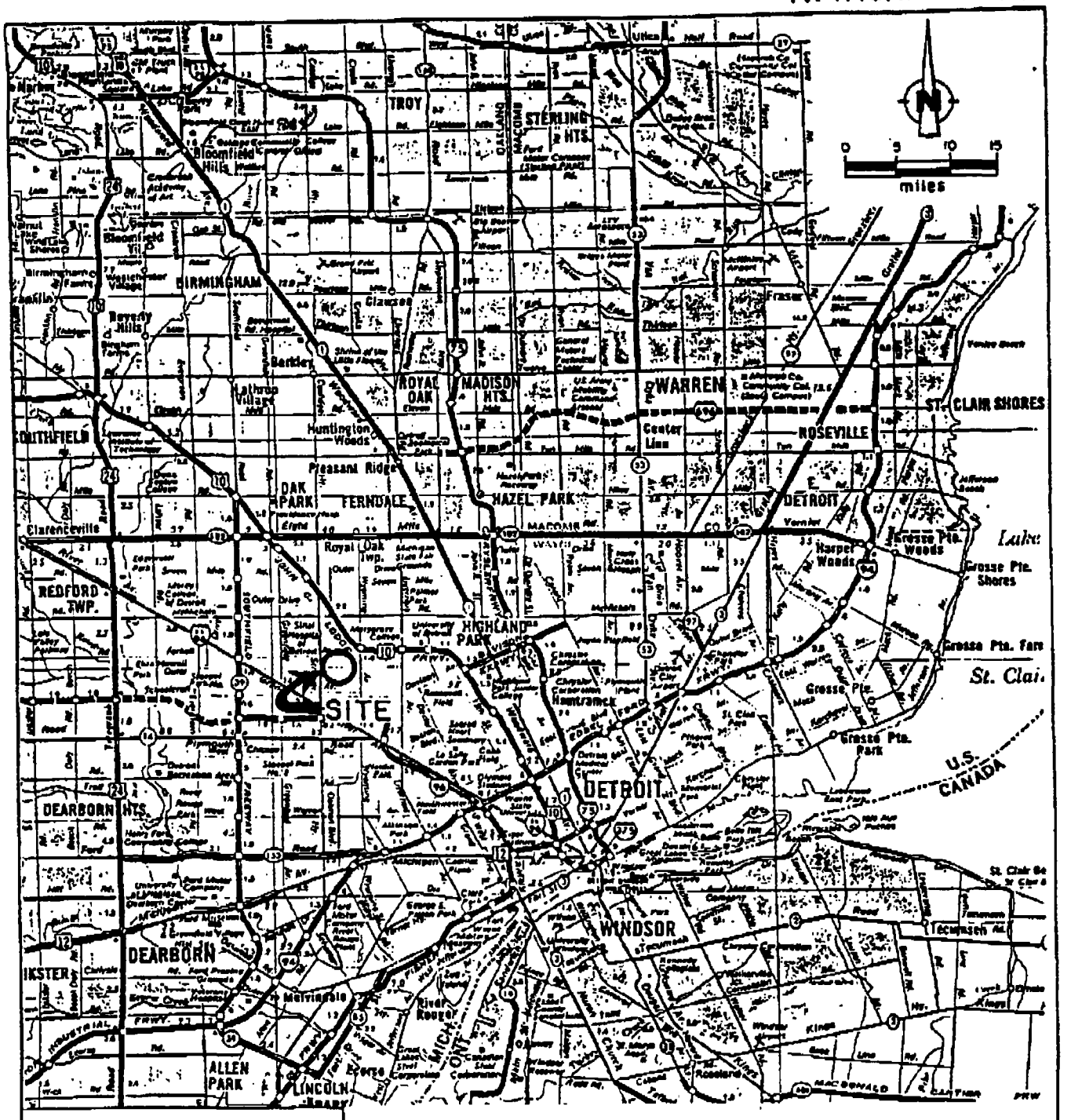
Methylene chloride, Tetrachloroethylene and Trichloroethylene are classified as carcinogens via inhalation route. Mice exposed to chronic low doses of methylene chloride produced lung and liver damage; Trichloroethylene effects include lung damage while Tetrachloroethylene effects lead to leukemia and liver lesions.

Table K-1 presents the Threshold Limit Values (TLVs) from the American Conference of Governmental Industrial Hygienists (ACGIH); the Permissible Exposure Limits (PELs) from the U.S. Department of Labor, Occupational Safety and Health Administration (OSHA); and the Maximum Concentration Values in the workplace (MAKs) from the Deutsche Forschungsgemeinshaft (DFG), Federal Republic of Germany, Commission for the Investigation of Health Hazards of Chemical Compounds in the Work Area.

In summary, care must be taken when handling the hazardous waste solvents managed at the Detrex facility. Continued exposure to highly elevated concentrations of these solvents in air may cause long-term health impacts, however the substances have warning signs that should prevent long-term exposure.

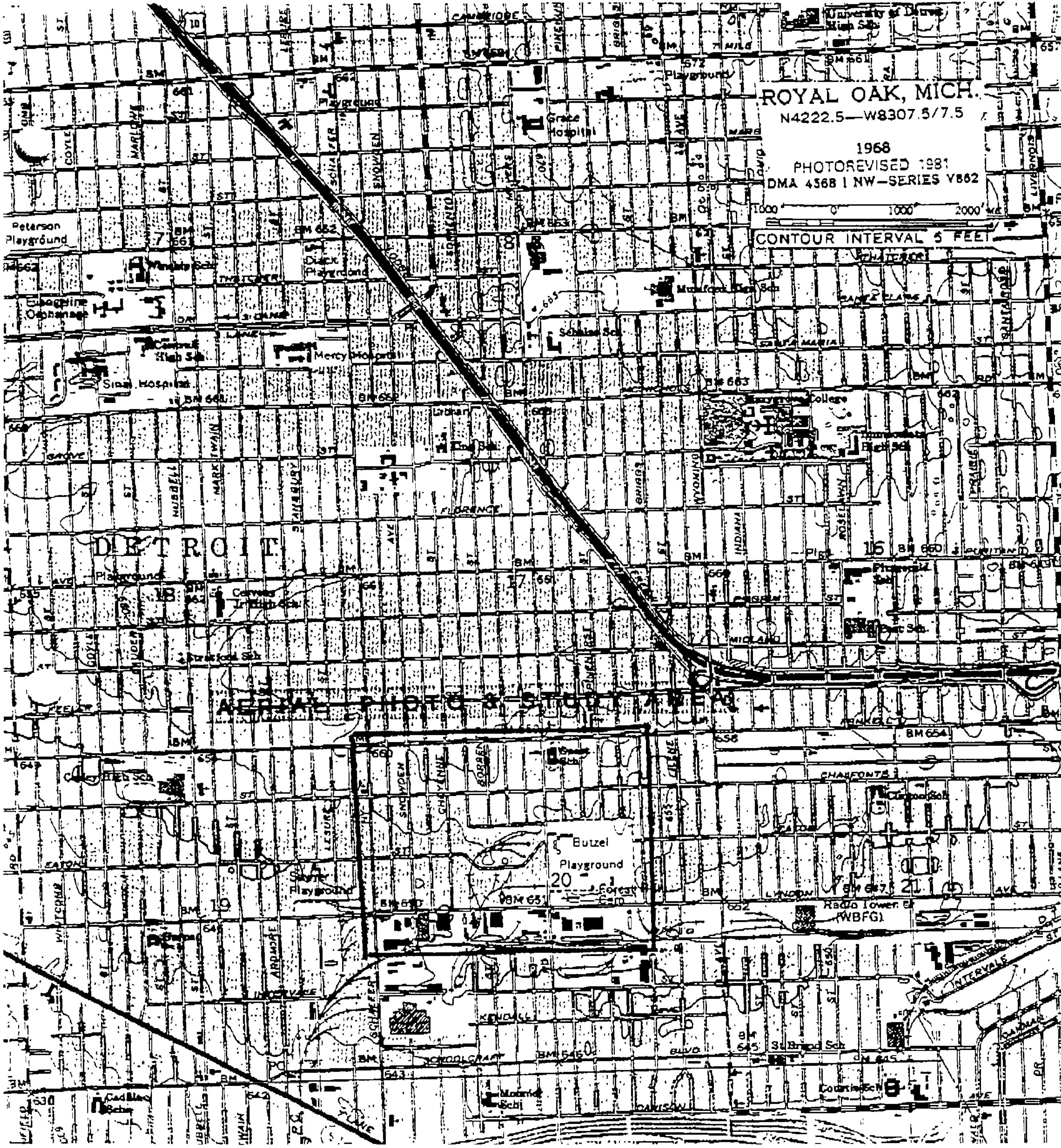
Exposure to the other classes of waste handled by facility personnel would generally create an exposure pathway through dermal contact. Preventions of exposure to these materials is easily accomplished using the appropriate Personal Protective Equipment (PPE). Facility personnel have received training on the proper use and limitations of PPE such as gloves, glasses/face shields/goggles, hard hats, and protective foot ware. As such this is not expected to create any foreseeable problems.

ATTACHMENT K-1



SITE LOCATION
Detrex Corporation
Eaton Avenue Facility, Detroit

K-


ROYAL OAK, MICH.
N4222.5—W8307.5/7.5
1968
PHOTOREVISED 1981
DMA 4368 I NW—SERIES V862
1000 0 1000 2000
CONTOUR INTERVAL 5 FEET
DETROIT
AERIAL PHOTO & STUDY AREA
Peterson Playground
Grace Hospital
Mercy Hospital
Sinai Hospital
Butzel Playground
Radio Tower
(WBFG)
SNOWDEN
WYOMING
INDIANA
FLORENCE
MIDLAND
CHALFONTE
LYNDON
INTERVALE
KENDALL
SCHAEFER
ST
AVE
BM
20
21
19
17
18
16

TERRESTRIAL SYSTEMS
DETREX CORPORATION - GOLD SHIELD SOLVENTS FACILITY
DETROIT, MICHIGAN

The Gold Shield Solvents Facility is located in an industrial zone in Northwest Detroit. The study area surrounding the Facility, as shown in the accompanying map, includes residential, commercial, and industrial sectors, as well as a large park and a cemetery. The area was studied on August 1, and 2, 1988.

TERRESTRIAL SYSTEMS

FLORA:

There are no natural plant communities in the usual sense within the study area, with flora being determined by land use within each sector.

Within the industrial (and commercial) zone, which includes the 0.9 acre Gold Shield Solvents Facility, virtually all flora are pioneer species, characterized by their ability to become established on very poor soil under very harsh conditions. Herbacious plants identified in this area include grasses, Yellow Nut Sedge, Milkweed, Goldenrod, Chicory, and Morning Glory. Woody plants, mostly under 5 feet in height, include Cottonwood, Box Elder, Chinese Elm, Sycamore, Mulberry, Raspberry, and Virginia Creeper. Virtually all plant life within the industrial sector occurs as "weedy" growth along fences, railroad tracks, and in out of the way corners. It is apparently cut and sprayed with herbicide regularly. Except for a very few Cottonwoods and Box Elders, no plants seem to be over 2 years old, and provide no animal habitat.

Within the residential area, flora consists of well maintained lawns, and introduced trees and shrubs. The shade trees, mostly Ash, Norway Maple, and Linden, range from 4" to 16" in diameter, and appear to range up to about 40 years in age.

The Butzel playground which lies within the study area is almost entirely grass, except for a few shade trees in the area and around the perimeter.

The cemetery contains an array of plant species similar to that of the residential area, but includes a few somewhat older trees, up to 24" trunk diameter, estimated to be 60 to 70 years old.

FAUNA

While no animal life was observed, the residential areas could be expected to support populations of various songbirds and probably squirrels.

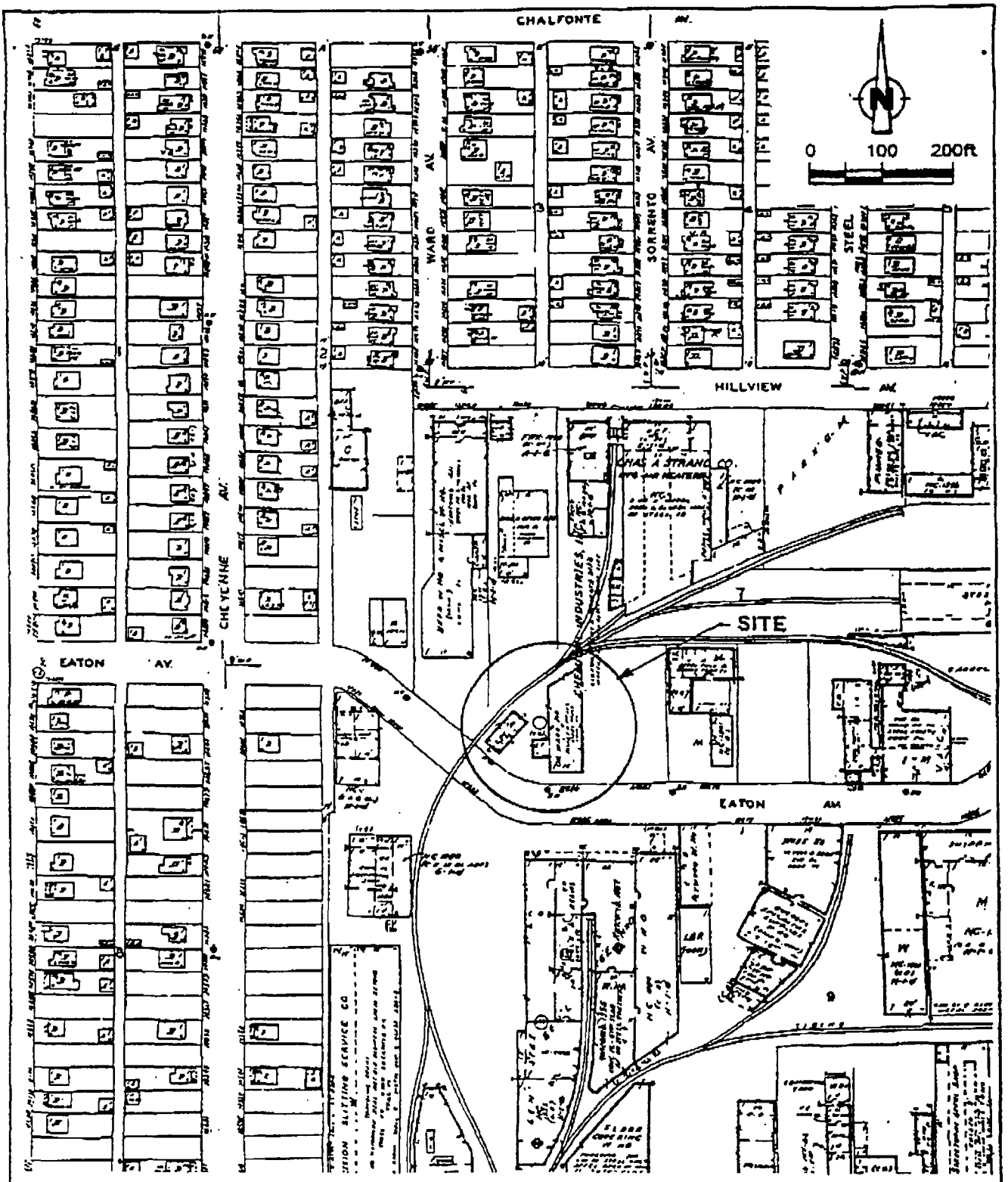
Due to the highly developed and intensely used nature of the study area, it is highly unlikely that any rare or endangered species exist in the vicinity.

AQUATIC SYSTEMS

There are no aquatic systems of any kind within the study area.

Robert Cobb, M.S.
Environmental Consultants, Inc.

ATTACHMENT K 3



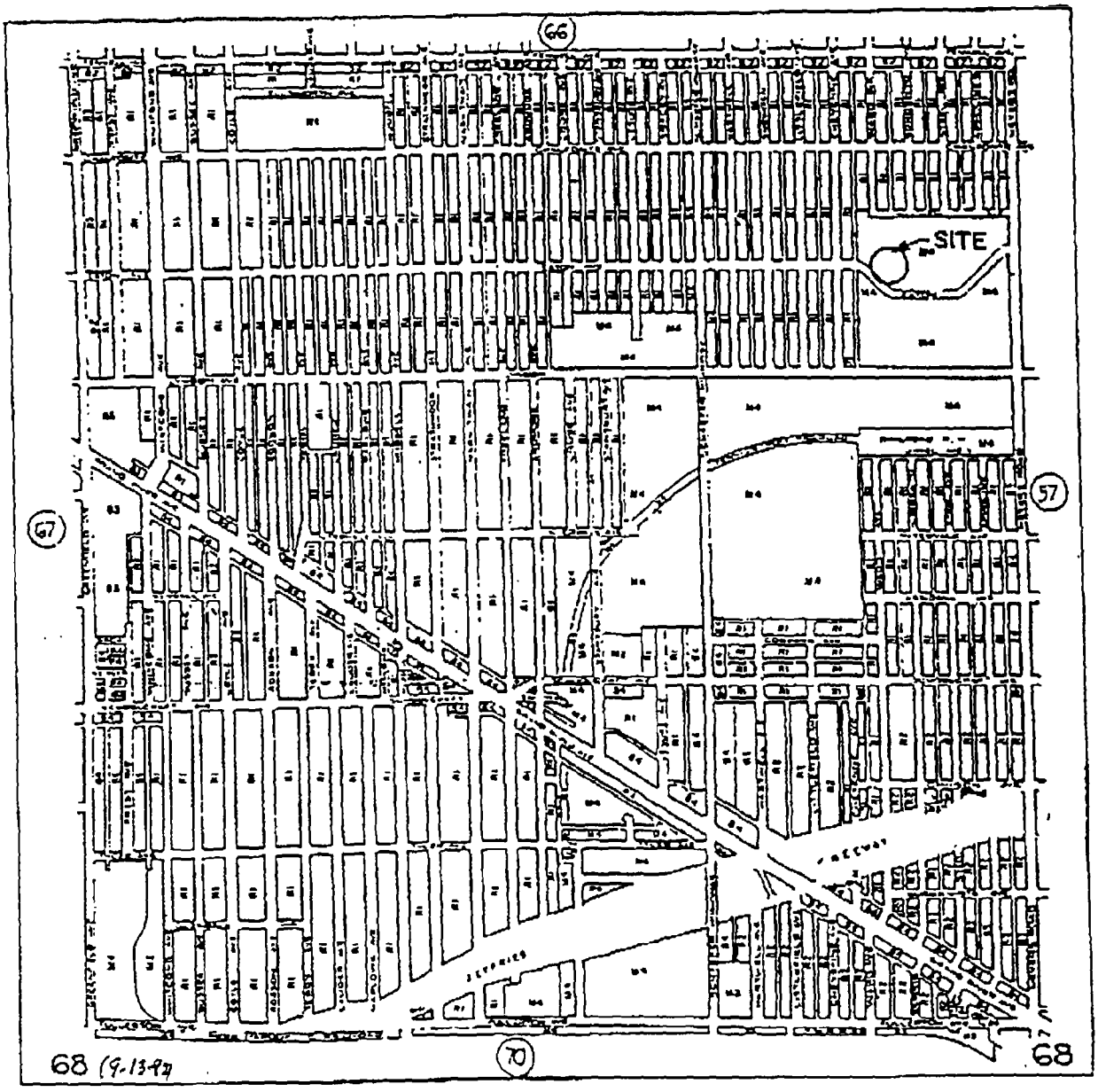
SURROUNDING LAND USE
Detrex Corporation
Eaton Avenue Facility, Detroit

CRA

ATTACHMENT K-4

DETROIT ZONING ORDINANCE

N. T. S.



ZONING MAP

Detrex Corporation
Eaton Avenue Facility, Detroit

CRA

2471-28/07/88-1-D-1

MICHIGAN DEPARTMENT OF STATE

RICHARD H. AUSTIN SECRETARY OF STATE

LANSING
MICHIGAN 48918

BUREAU OF HISTORY

ADMINISTRATION, PUBLICATIONS
ARCHAEOLOGY AND HISTORIC PRESERVATION
208 N. Capitol Avenue
517—373-0510

STATE ARCHIVES
3405 N. Logan Street
517—335-9165

MICHIGAN HISTORICAL MUSEUM
208 N. Capitol Avenue
517—373-3559

RECEIVED
APR 10 2000
Waste Management Division

August 10, 1988

Mr. Bruce McConnell, B.A.S.C.
Conestoga-Rovers & Associates Limited
651 Colby Drive
Waterloo, Ontario, Canada N2V 1C2

RE: ER-88468 Environmental Assessment-Detrex Corporation Gold Shield Solvents Facility, Detroit, Wayne County

Dear Mr. McConnell:

We have reviewed the above-cited project which includes the above-cited site(s) under authority of the National Historic Preservation Act of 1966, as amended. It is the opinion of the State Historic Preservation Officer (SHPO) that the site(s) is not eligible for listing in the National Register of Historic Places. It is, therefore, further the opinion of the SHPO that this project will not affect any historic properties and is cleared under Federal Regulation 36 CFR 800 for the "Protection of Historic Properties."

Please maintain a copy of this letter with your environmental review record for this project. Should the scope of work change in any way, or if artifacts or bones are discovered, contact this office immediately. This letter evidences your compliance with 36 CFR 800.4 "Identifying Historic Properties," and the SHPO hereby waives your responsibility to notify this office under 36 CFR 800.4(d) with a determination of "No Historic Properties Found."

If you have any questions, please contact Robin S. Peebles, Environmental Review Coordinator, at (517) 335-2721. Thank you for this opportunity to review and comment.

Sincerely,

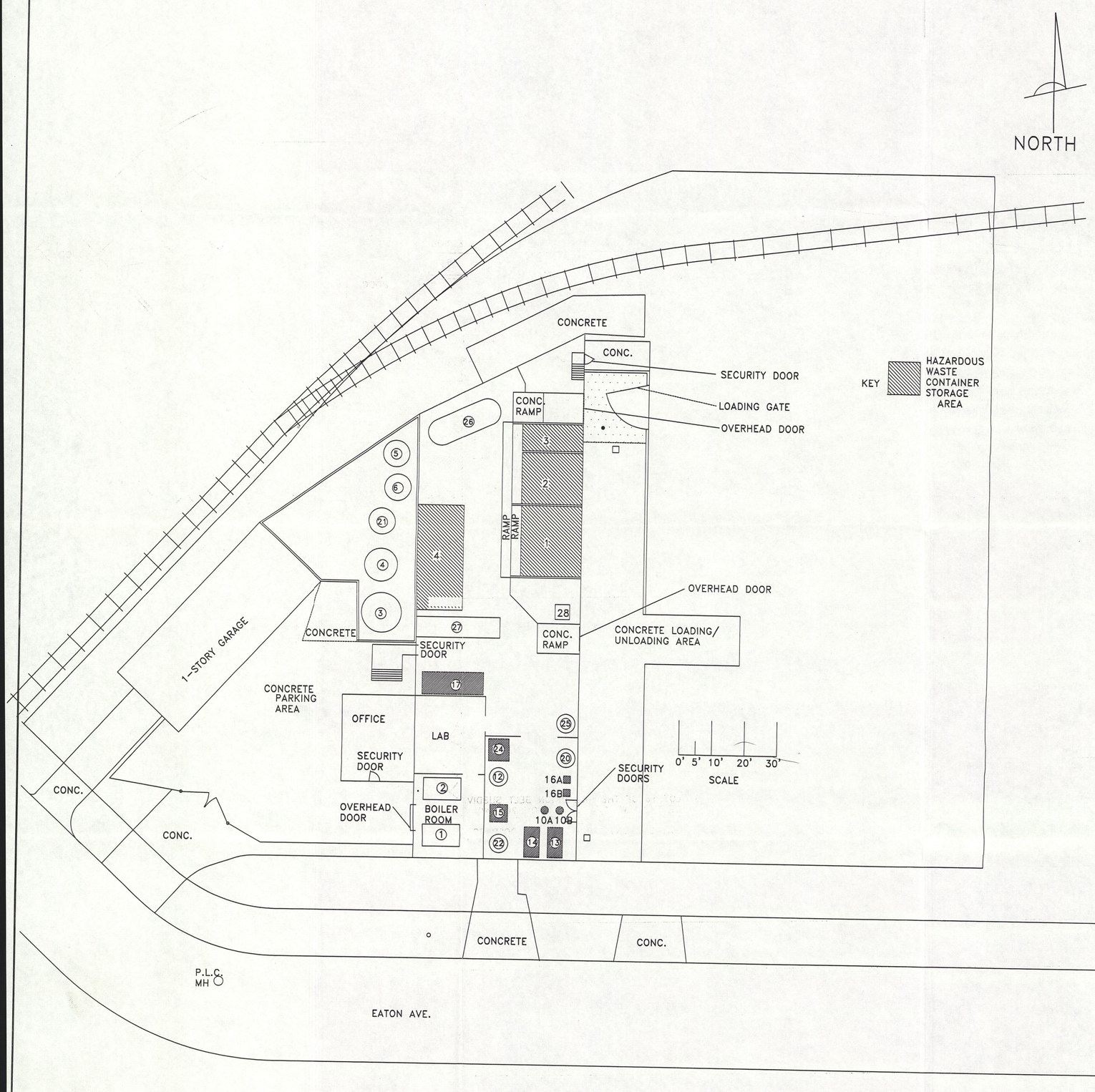
Martha M. Bigelow
Director, Bureau of History
and
State Historic Preservation Officer

by:
Kathryn B. Eckert
Kathryn B. Eckert, Deputy
State Historic Preservation Officer
Bureau of History

MMB/KBE/JRH/BDC/RSP/cc

SECTION L

OWNER / OPERATOR CERTIFICATION



EQUIPMENT LIST

1. GENERATOR
2. AIR COMPRESSOR
3. 20,000 GAL.–PRODUCT TANK
4. 10,000 GAL.–PRODUCT TANK
5. 4,500 GAL.–PRODUCT TANK
6. 4,500 GAL.–PRODUCT TANK
10A 600 GAL.–RECEIVER TANK
10B 600 GAL.–RECEIVER TANK
12 2,300 GAL.–WASTE TANK F001 & F002
13 350 GAL.–DETREX STILL
14 350 GAL.–DETREX STILL
15 DCI STILL
16A DRYING COLUMN
16B DRYING COLUMN
17 5,000 GAL.–STILL BOTTOM TANK F002
20 2,500 GAL.–PRODUCT TANK
21 4,500 GAL.–PRODUCT TANK
22 4,500 GAL.–WASTE TANK F001&F002
24 DCI STILL
25 3,000 GAL.–PRODUCT TANK
26 SVRM–CARBON ABSORPTION
27 DRUM FILLING STATION
28 PRODUCT BLENDING VESSEL

KEY DECONTAMINATED EQUIPMENT

NOTES:

1)ALL FENCING IS TOPED BY BARB WIRE
2)ALL SECURITY AND OVERHEAD DOORS REMAIN LOCKED WHEN THE FACILITY IS UNATTENDED
3)ALL FENCE GATES REMAIN LOCKED AT ALL TIMES

LOT 16 OF THE HILL UNION BELT SUBDIVISION OF THE N. 1/2 OF THE S.E. 1/4 OF THE N.W. 1/4 OF SECTION 20.TOWN ONE SOUTH,RANGE ELEVEN EAST ACCORDING TO THE PLAT THEREOF RECORDED IN THE OFFICE OF REGISTER OF DEEDS FOR WAYNE COUNTY MICHIGAN IN LEDGER 60 OF PLATS ON PAGE 62 EXCEPT FOR PENN. R.R. RIGHT OF WAY ON THE NORTHERLY SIDE OF LOT.

WASTE MANAGEMENT DIVISION DEC 27 1996 RECEIVED

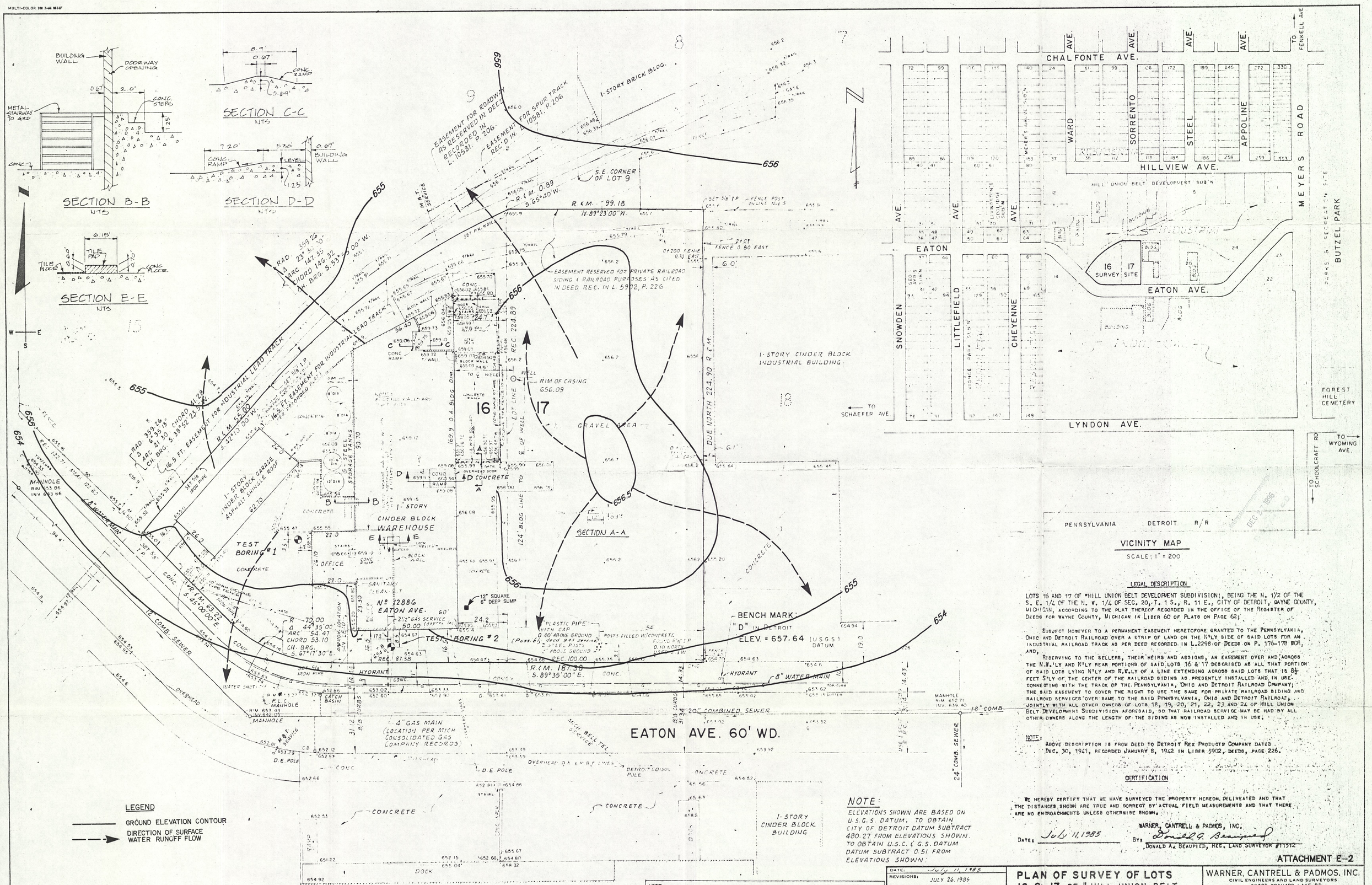
FACILITY PLAN
A–2

DATE	REV. NO.	CHANGE RECORD	BY	DATE	REV. NO.	CHANGE RECORD	BY

DR. E.L.R.
CHK. ~

DETREX CORPORATION
PROJECT ENGINEERING DEPARTMENT
DETROIT, MICHIGAN

PROJECT No. 9601



VICINITY MAP

SCALE: 1" = 200'

LEGAL DESCRIPTION

LOTS 16 AND 17 OF "HILL UNION BELT DEVELOPMENT SUBDIVISION", BEING THE N. 1/2 OF THE S. E. 1/4 OF THE N. W. 1/4 OF SEC. 20, T. 1 S., R. 11 E., CITY OF DETROIT, WAYNE COUNTY, MICHIGAN, ACCORDING TO THE PLAT THEREOF RECORDED IN THE OFFICE OF THE REGISTER OF DEEDS FOR WAYNE COUNTY, MICHIGAN IN LIBER 60 OF PLATS ON PAGE 62;

SUBJECT HOWEVER TO A PERMANENT EASEMENT HERETOFORE GRANTED TO THE PENNSYLVANIA, OHIO AND DETROIT RAILROAD OVER A STRIP OF LAND ON THE N'LY SIDE OF SAID LOTS FOR AN INDUSTRIAL RAILROAD TRACK AS PER DEED RECORDED IN L.2298 OF DEEDS ON P. 176-178 WCR, AND,

RESERVING TO THE SELLERS, THEIR HEIRS AND ASSIGNS, AN EASEMENT OVER AND ACROSS THE N.W.'LY AND N'LY REAR PORTIONS OF SAID LOTS 16 & 17 DESCRIBED AS ALL THAT PORTION OF SAID LOTS LYING N'LY AND N.W.'LY OF A LINE EXTENDING ACROSS SAID LOTS THAT IS 8½ FEET S'LY OF THE CENTER OF THE RAILROAD SIDING AS PRESENTLY INSTALLED AND IN USE CONNECTING WITH THE TRACK OF THE PENNSYLVANIA, OHIO AND DETROIT RAILROAD COMPANY; THE SAID EASEMENT TO COVER THE RIGHT TO USE THE SAME FOR PRIVATE RAILROAD SIDING AND RAILROAD SERVICES OVER SAME TO THE SAID PENNSYLVANIA, OHIO AND DETROIT RAILROAD, JOINTLY WITH ALL OTHER OWNERS OF LOTS 18, 19, 20, 21, 22, 23 AND 24 OF HILL UNION BELT DEVELOPMENT SUBDIVISION AFOREAID, SO THAT RAILROAD SERVICE MAY BE HAD BY ALL OTHER OWNERS ALONG THE LENGTH OF THE SIDING AS NOW INSTALLED AND IN USE.

NOTE: ABOVE DESCRIPTION IS FROM DEED TO DETROIT REX PRODUCTS COMPANY DATED DEC. 30, 1941, RECORDED JANUARY 8, 1942 IN LIBER 5902, DEEDS, PAGE 226.

CERTIFICATION

WE HEREBY CERTIFY THAT WE HAVE SURVEYED THE PROPERTY HEREON, DELINEATED AND THAT THE DISTANCES SHOWN ARE TRUE AND CORRECT BY ACTUAL FIELD MEASUREMENTS AND THAT THERE ARE NO ENCROACHMENTS UNLESS OTHERWISE SHOWN.

DATE: July 11, 1985

WARNER, CANTRELL & PADMOS, INC.
BY: Donald A. Beaupied
DONALD A. BEAUPIED, REG. LAND SURVEYOR #11512

NOTE:

ELEVATIONS SHOWN ARE BASED ON U.S.G.S. DATUM. TO OBTAIN CITY OF DETROIT DATUM SUBTRACT 480.27 FROM ELEVATIONS SHOWN. TO OBTAIN U.S.C. & G.S. DATUM DATUM SUBTRACT 0.51 FROM ELEVATIONS SHOWN.

NOTE: THE WAYNE COUNTY AIR POLLUTION CONTROL OFFICE (224-4650) REPORTS THROUGH THEIR METEOROLOGIST, DAVID DERENZO, THAT THE PREVAILING WINDS ARE OUT OF THE SOUTHWEST. THIS INFORMATION IS BASED ON NATIONAL WEATHER SERVICE RECORDS ON FILE IN THEIR OFFICE.

DATE: July 11, 1985
REVISIONS: JULY 26, 1985
ADD TEST BORING & WELL LOCATION INFO APRIL 10, 1989
UPDATED FOR TRUCK WELL & PAVEMENT CONSTRUCTION APRIL 24, 1990
ADDED CROSS SECTIONS B-B, C-C, D-D & E-E SHOW TRUCK WELL & WALLS

PLAN OF SURVEY OF LOTS 16 & 17 OF "HILL UNION BELT DEVELOPMENT SUBDIVISION" BEING THE N. ½ OF THE S.E. 1/4 OF THE N.W. 1/4 OF SEC. 20, T.1S., R.11E., CITY OF DETROIT, WAYNE CO., MICH (L. 60, P. 62)

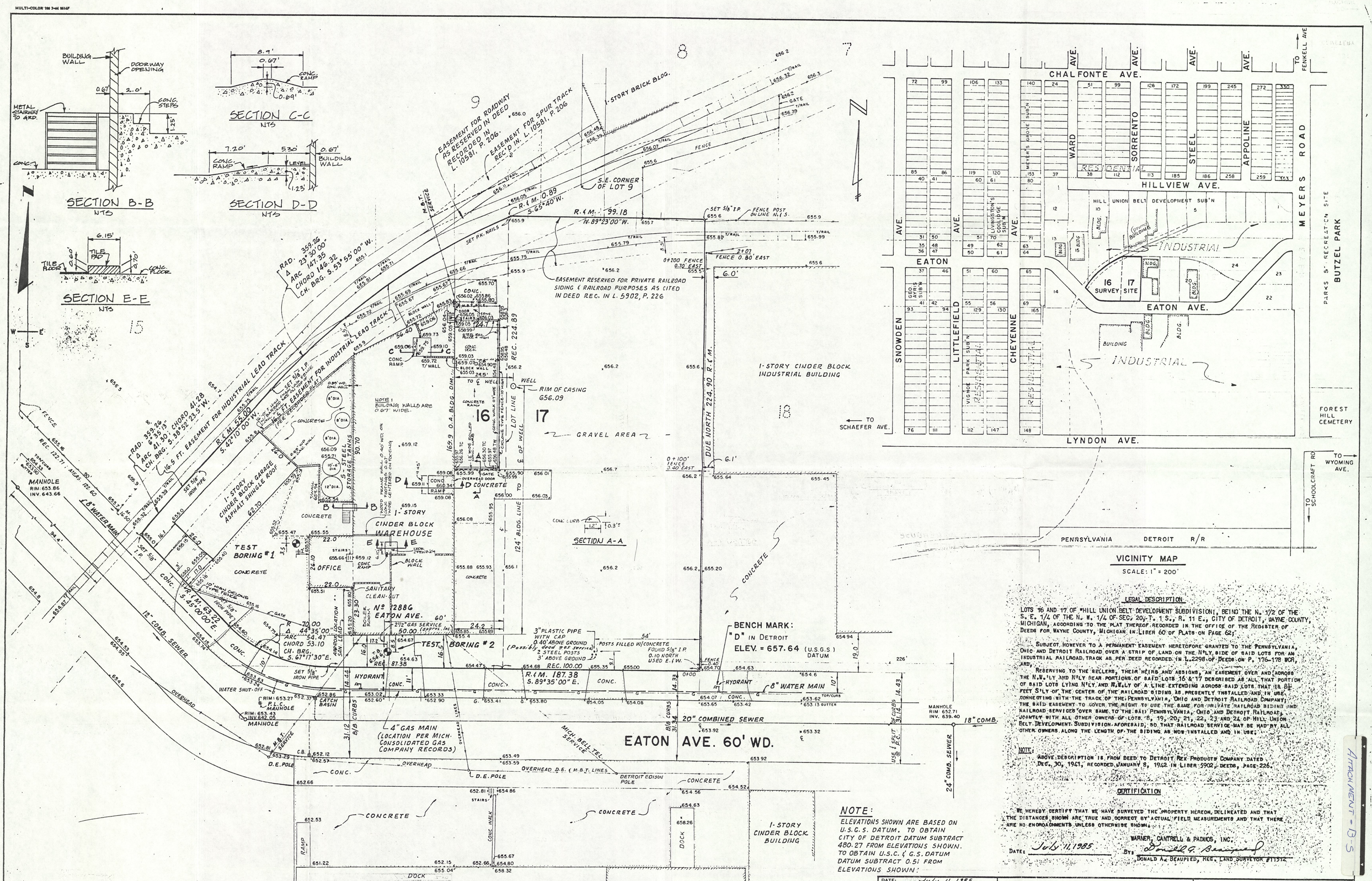
SCALE: 1" = 20' DATUM: U.S.G.S. (SEE NOTE ABOVE)

WARNER, CANTRELL & PADMOS, INC.
CIVIL ENGINEERS AND LAND SURVEYORS
20788 ORCHARD LAKE RD.
313-478-9494 FARMINGTON HILLS, MI. 48336

JOB NO.
PLAN FILE
SHEET 1 OF 1
N. B. G.N.

ATTACHMENT E-2

CRA PROJECT No. 2471 DWG No. 59 FILE: S



LEGAL DESCRIPTION

LOTS 16 AND 17 OF "HILL UNION BELT DEVELOPMENT SUBDIVISION", BEING THE N. 1/2 OF THE S. E. 1/4 OF THE N. W. 1/4 OF SEC. 20, T. 1 S., R. 11 E., CITY OF DETROIT, WAYNE COUNTY, MICHIGAN, ACCORDING TO THE PLAT THEREOF, RECORDED IN THE OFFICE OF THE REGISTER OF DEEDS FOR WAYNE COUNTY, MICHIGAN IN LIBER 60 OF PLATS ON PAGE 62.

SUBJECT, HOWEVER TO A PERMANENT EASEMENT HERETOFORE GRANTED TO THE PENNSYLVANIA, OHIO AND DETROIT RAILROAD OVER A STRIP OF LAND ON THE N'LY SIDE OF SAID LOTS FOR AN INDUSTRIAL RAILROAD TRACK AS PER DEED RECORDED IN L. 2298 OF DEEDS ON P. 176-178 WCR, AND,

RESERVING TO THE SELLERS, THEIR HEIRS AND ASSIGNS, AN EASEMENT OVER AND ACROSS THE N.W.'LY AND N'LY REAR PORTIONS OF SAID LOTS 16 & 17 DESCRIBED AS ALL THAT PORTION OF SAID LOTS LYING N'LY AND N.W.'LY OF A LINE EXTENDING ACROSS SAID LOTS THAT IS 8½ FEET S'LY OF THE CENTER OF THE RAILROAD SIDING AS PRESENTLY INSTALLED AND IN USE, CONNECTING WITH THE TRACK OF THE PENNSYLVANIA, OHIO AND DETROIT RAILROAD COMPANY; THE SAID EASEMENT TO COVER THE RIGHT TO USE THE SAME FOR PRIVATE RAILROAD SIDING AND RAILROAD SERVICES OVER SAME, TO THE SAID PENNSYLVANIA, OHIO AND DETROIT RAILROAD, JOINTLY WITH ALL OTHER OWNERS OF LOTS 18, 19, 20, 21, 22, 23 AND 24 OF HILL UNION BELT DEVELOPMENT SUBDIVISION AFORESAID, SO THAT RAILROAD SERVICE MAY BE MAD BY ALL OTHER OWNERS ALONG THE LENGTH OF THE SIDING AS NOW INSTALLED AND IN USE.

NOTE: ABOVE DESCRIPTION IS FROM DEED TO DETROIT REX PRODUCTS COMPANY DATED DEC. 30, 1941, RECORDED JANUARY 8, 1942 IN LIBER 5902, DEEDS, PAGE 226.

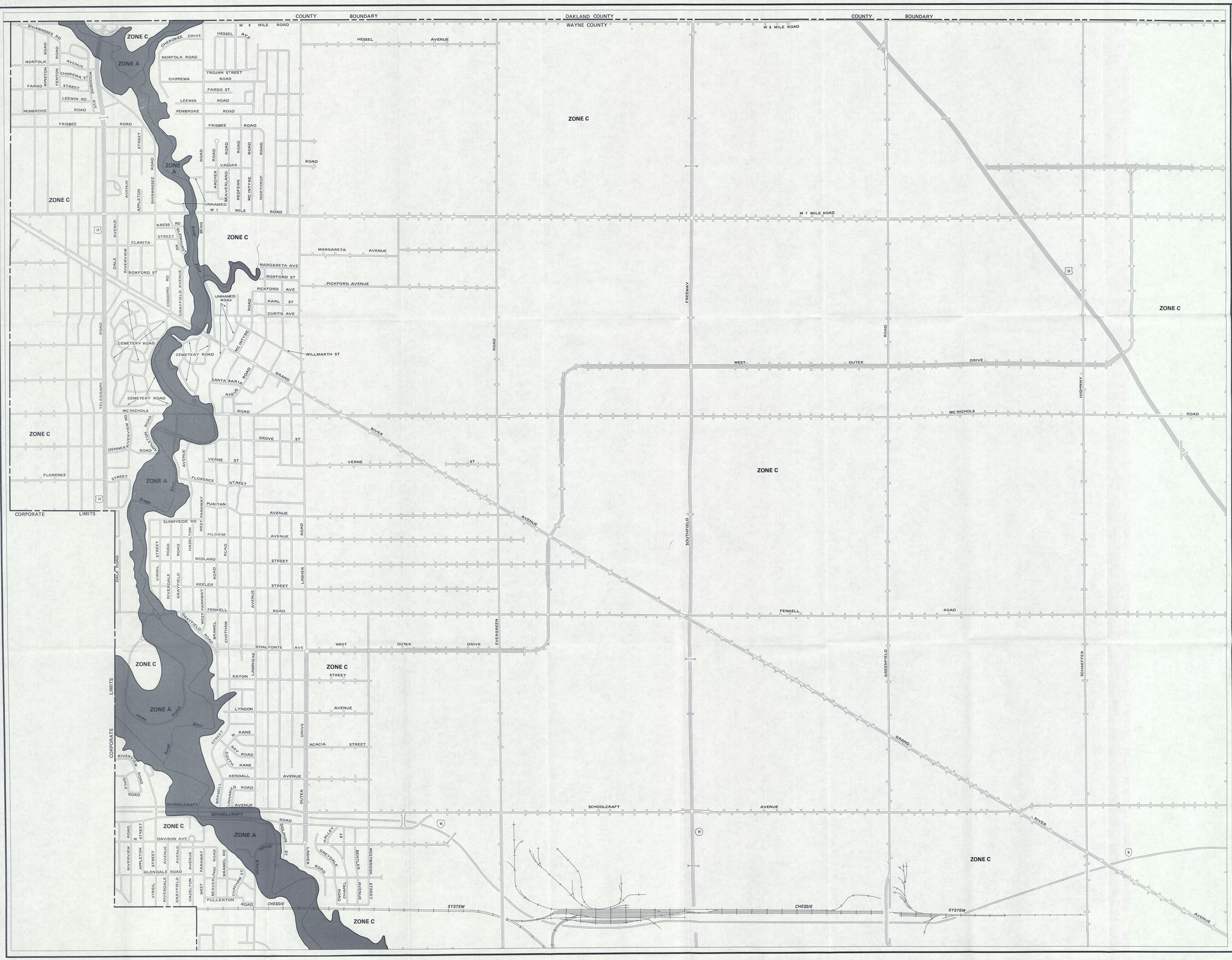
CERTIFICATION

WE HEREBY CERTIFY THAT WE HAVE SURVEYED THE PROPERTY HEREON, DELINEATED AND THAT THE DISTANCES SHOWN ARE TRUE AND CORRECT BY ACTUAL FIELD MEASUREMENTS AND THAT THERE ARE NO ENCROACHMENTS UNLESS OTHERWISE SHOWN.

WARNER, CANTRELL & PADMOS, INC.

DATE: July 11, 1985 BY: Donald A. Beaupied

DONALD A. BEAUPIED, REG. LAND SURVEYOR #11512



KEY TO MAP

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

ZONE B
ZONE A1 DATE
ZONE A6 DATE
ZONE B

Base Flood Elevation Line With Elevation In Feet** — 513

Base Flood Elevation In Feet Where Uniform Within Zone** — (EL 987)

Elevation Reference Mark — RM7×

River Mile — • M1.5

**Referenced to the National Geodetic Vertical Datum of 1929

*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.

NOTES TO USER

Certain areas not in the special flood hazard areas (zones A and V) may be protected by flood control structures.

This map is for flood insurance purposes only; it does not necessarily show all areas subject to flooding in the community or all planimetric features outside special flood hazard areas.

For adjoining map panels, see separately printed Index To Map Panels.

INITIAL IDENTIFICATION:
JULY 26, 1974

FLOOD HAZARD BOUNDARY MAP REVISIONS:
FEBRUARY 7, 1975

FLOOD INSURANCE RATE MAP EFFECTIVE:
JULY 2, 1981

FLOOD INSURANCE RATE MAP REVISIONS:

Refer to the FLOOD INSURANCE RATE MAP EFFECTIVE date shown on this map to determine when actuarial rates apply to structures in the zones where elevations or depths have been established.

To determine if flood insurance is available in this community, contact your insurance agent, or call the National Flood Insurance Program, at (800) 638-6620.

APPROXIMATE SCALE
1000 0 1000 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

CITY OF
DETROIT,
MICHIGAN
WAYNE COUNTY

PANEL 5 OF 45
(SEE MAP INDEX FOR PANELS NOT PRINTED)

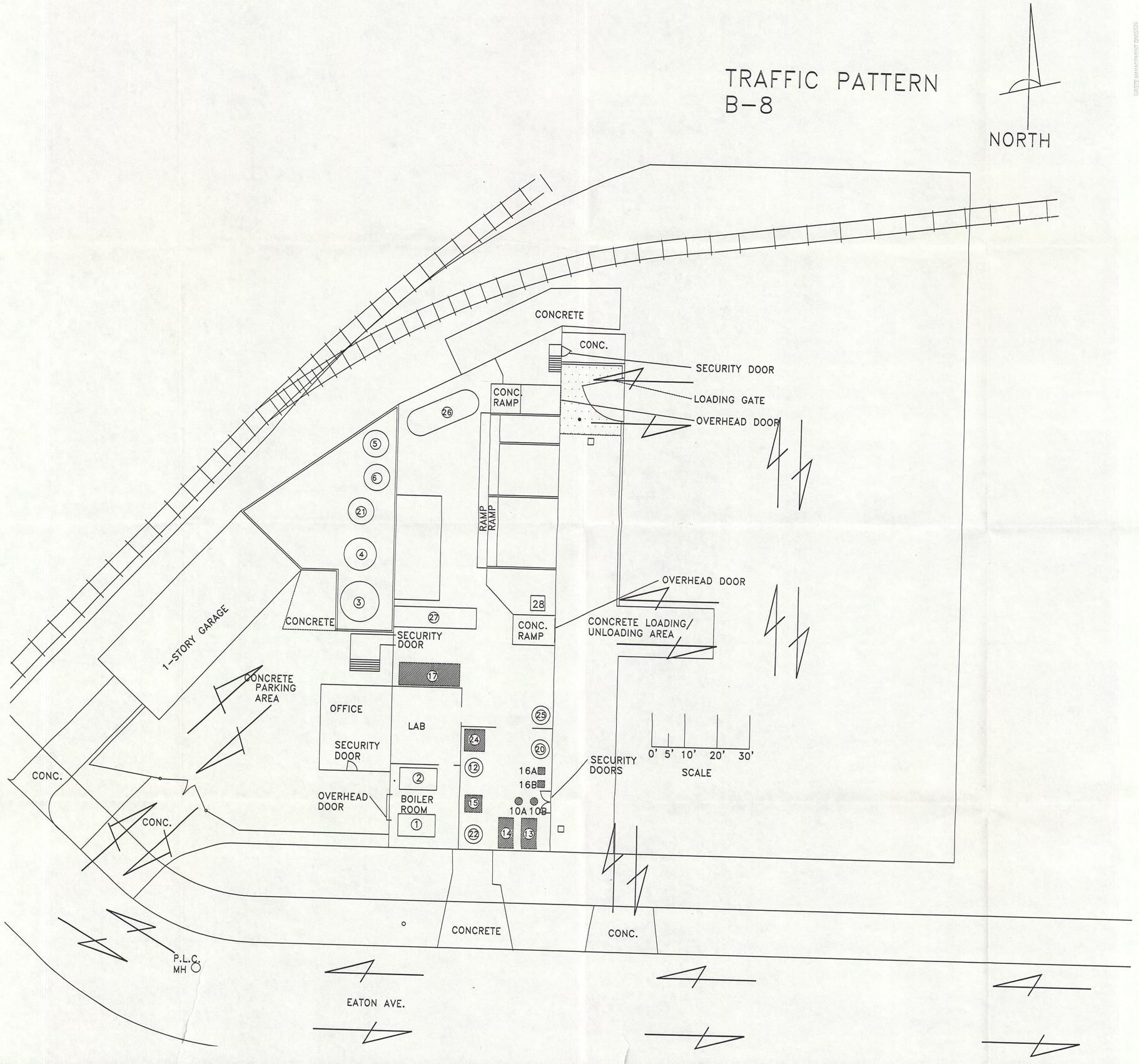
DEC 27 1996
RECEIVED

COMMUNITY-PANEL NUMBER
260222 0005 B

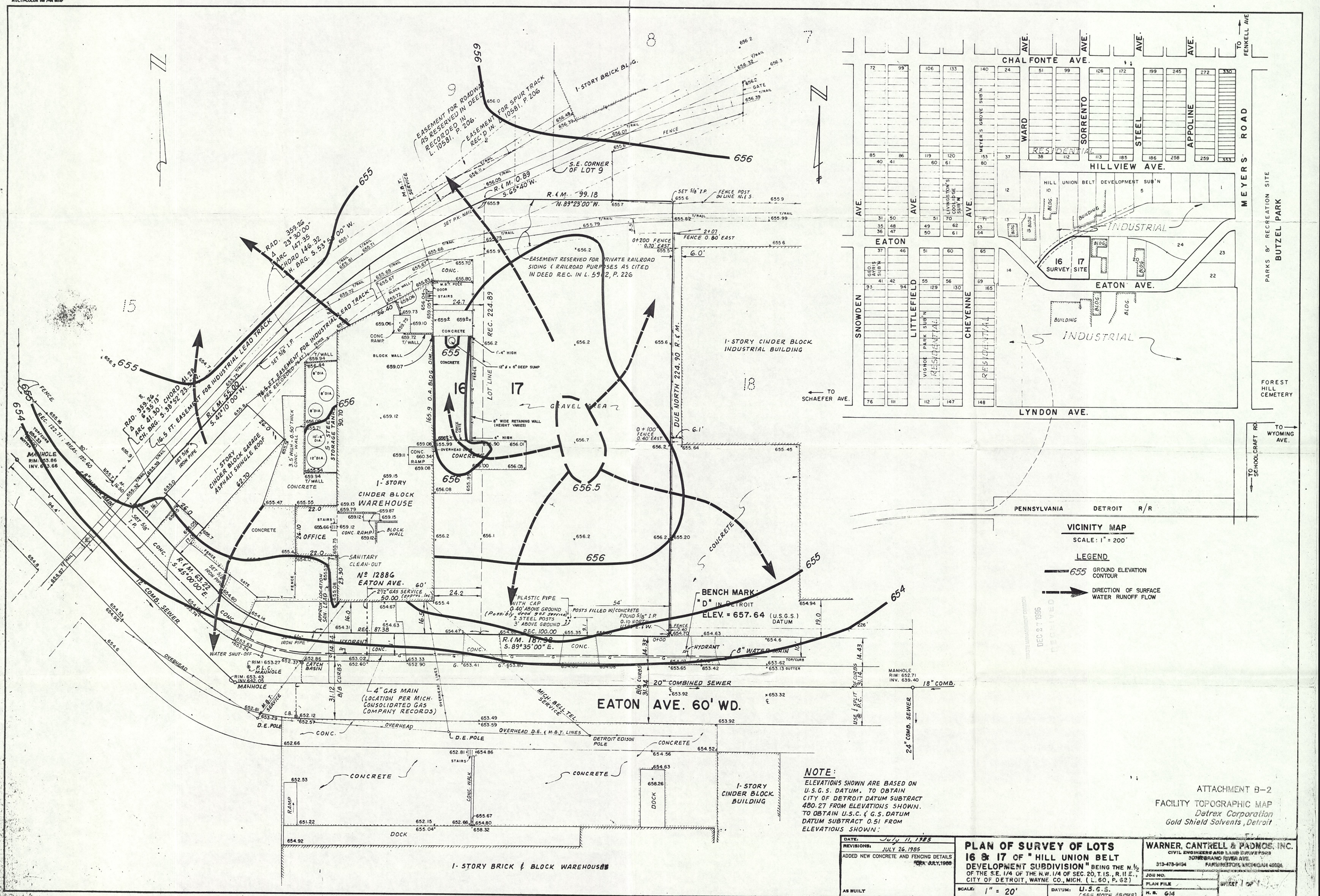
EFFECTIVE DATE:
JULY 2, 1981

federal emergency management agency
federal insurance administration

TRAFFIC PATTERN
B-8



WASTE MANAGEMENT DIVISION
DEC 27 1996
RECEIVED



ATTACHMENT B-2

FACILITY TOPOGRAPHIC MAP

Detrex Corporation

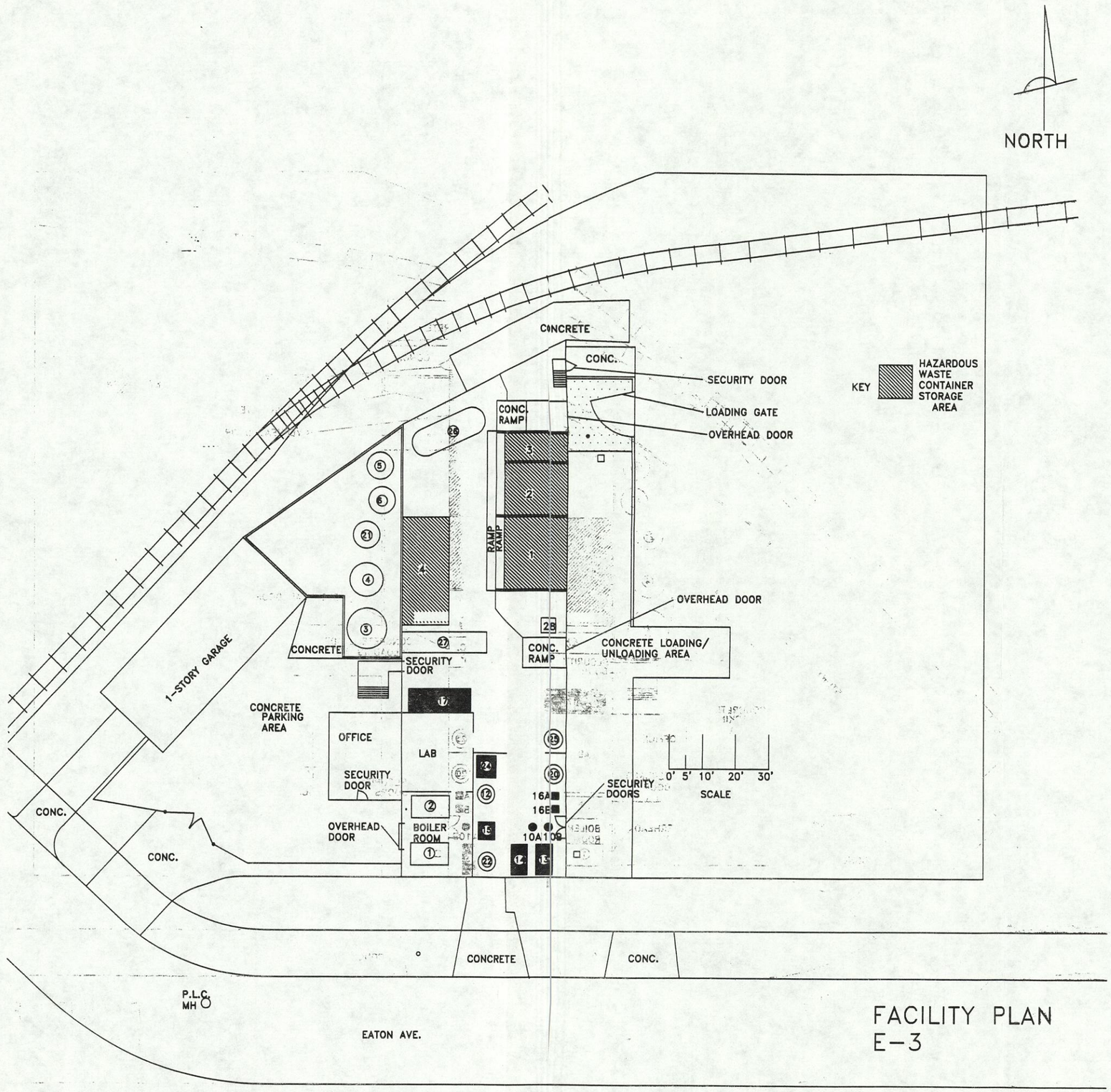
Gold Shield Solvents, Detroit

DATE: July 11, 1985	PLAN OF SURVEY OF LOTS 16 & 17 OF "HILL UNION BELT DEVELOPMENT SUBDIVISION" BEING THE N. 1/2 OF THE S.E. 1/4 OF THE N.W. 1/4 OF SEC. 20, T.1S., R.11E., CITY OF DETROIT, WAYNE CO., MICH. (L. 60, P. 62)
REVISIONS: JULY 26, 1985 — ADDED NEW CONCRETE AND FENCING DETAILS CRA JULY, 1985	
AS BUILT	SCALE: 1" = 20' — DATUM: U.S.G.S. (SEE NOTE ABOVE)

WARNER, CANTRELL & PADMOS, INC.
CIVIL ENGINEERS AND LAND SURVEYORS
30700 GRAND RIVER AVE.
313-478-9494 FARMINGTON, MICHIGAN 48024

JOB NO.
PLAN FILE
H. B. 614
SHEET 1 OF 1

C·R·A· PROJECT No. 2471 DWG. No. 02 FILE: 15



FACILITY PLAN
E-3

WASTE MANAGEMENT DIVISION
DEC 27 1996
RECEIVED