

# **Universal Waste & Transit, Inc.**

## **Operation Permit Application**

Located at:  
2002 North Orient Road  
Tampa, Florida 33619  
(813) 623-5302

### **Volume 5**

- Attachments


ATTACHMENT "E" - APPLICATION  
- ATTACHMENT VOLUME 5

**ACORD. CERTIFICATE OF INSURANCE**

ISSUE DATE (MM/DD/YY)

8/29/89

**PRODUCER**

 Farroon & Black of Michigan,  
Inc.  
P.O. Box 2727  
Livonia, MI 48151-2727

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS  
NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND,  
EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW

**COMPANIES AFFORDING COVERAGE****CODE****SUB-CODE****INSURED**

Universal Waste & Transit,  
Inc.  
2501 N. Orient Rd.  
Ste. A  
Tampa, FL 33619

COMPANY  
LETTER **A**

Planet Insurance Company

COMPANY  
LETTER **B**

National Union Fire

COMPANY  
LETTER **C**

INA


COMPANY  
LETTER **D**COMPANY  
LETTER **E****COVERAGES**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD  
INDICATED, NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS  
CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS,  
EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

CO LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	ALL LIMITS IN THOUSANDS
	<b>GENERAL LIABILITY</b>				<b>GENERAL AGGREGATE</b> \$ 5,000
	COMMERCIAL GENERAL LIABILITY				<b>PRODUCTS-COMP/OPS AGGREGATE</b> \$ 5,000
<b>A</b>	<input checked="" type="checkbox"/> CLAIMS MADE <input type="checkbox"/> OCCUR	NG1259250	4/1/89	4/1/90	<b>PERSONAL &amp; ADVERTISING INJURY</b> \$ 5,000
	OWNER'S & CONTRACTOR'S PROT.				<b>EACH OCCURRENCE</b> \$ 5,000
					<b>FIRE DAMAGE (Any one fire)</b> \$ 50
					<b>MEDICAL EXPENSE (Any one person)</b> \$ 5
	<b>OMOBILE LIABILITY</b>				<b>COMBINED SINGLE LIMIT</b> \$ 5,000
<b>A</b>	ANY AUTO	NK1258703	4/1/89	4/1/90	<b>BODILY INJURY (Per person)</b> \$
	ALL OWNED AUTOS				<b>BODILY INJURY (Per accident)</b> \$
	<input checked="" type="checkbox"/> SCHEDULED AUTOS				<b>PROPERTY DAMAGE</b> \$
	<input checked="" type="checkbox"/> HIRED AUTOS				
	<input checked="" type="checkbox"/> NON-OWNED AUTOS				
	GARAGE LIABILITY				
	<input checked="" type="checkbox"/> Michigan No-Fault				
	<b>EXCESS LIABILITY</b>				<b>EACH OCCURRENCE</b> \$
	OTHER THAN UMBRELLA FORM				<b>AGGREGATE</b> \$
	<b>WORKER'S COMPENSATION</b>				<b>STATUTORY</b>
<b>C</b>	AND	WOCC31271435	2/4/89	2/4/90	\$ 100 (EACH ACCIDENT)
	EMPLOYERS' LIABILITY				\$ 500 (DISEASE-POLICY LIMIT)
					\$ 100 (DISEASE-EACH EMPLOYEE)
	<b>OTHER</b>				
<b>B</b>	Pollution Legal Liability	PLL7166343	8/29/89	8/29/90	\$1,000,000. Each Loss \$2,000,000. Total For All Losses

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/RESTRICTIONS/SPECIAL ITEMS

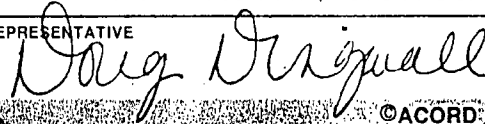
**CERTIFICATE HOLDER**

 Florida Department of Environ-  
mental Regulations  
Main Towers Office Building  
2600 Blairestone  
Tallahassee, FL 32399-240

**CANCELLATION**

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE  
EXPIRATION DATE THEREOF, THE ISSUING COMPANY WILL ENDEAVOR TO  
MAIL \_\_\_\_ DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE  
LEFT, BUT FAILURE TO MAIL SUCH NOTICE SHALL IMPOSE NO OBLIGATION OR  
LIABILITY OF ANY KIND UPON THE COMPANY, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE





VOLUME 5

ATTACHMENTS

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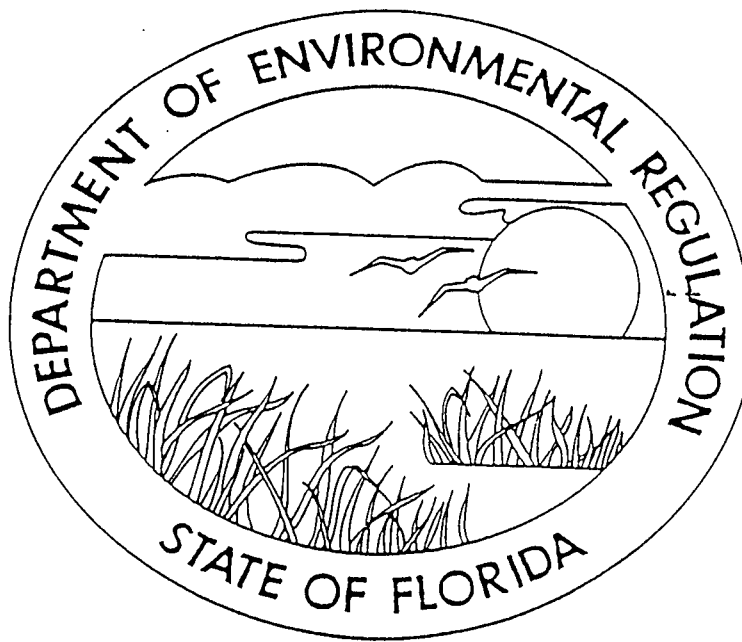
ATTACHMENT 1

LIST OF POTENTIAL  
HAZARDOUS WASTE GENERATORS  
IN TAMPA BAY REGION

0742	Veterinary Services
1611	Paving Contractors (asphalt)
2086	Bottled and Canned Soft Drinks
2431	Millwork
2491	Wood Preserving
2711	Newspapers: Publishing and Printing
2721	Periodicals
2731	Book Publishing
2741	Misc. Publishing
2751	Commercial Printing, letter press
2752	Commercial Printing, litographic
2753	Engraving and Plate Printing
2761	Manifold Business Forms
2793	Photoengraving
2813	Industrial Gases
2819	Industrial Inorganic Chemicals, NEC
2834	Pharmaceutical Preparations
2851	Paints and Allied Products
2869	Industrial Organic Chemicals, NEC
2879	Pesticides and Agriculture
2891	Adhesives and Sealants
2893	Printing Ink
2899	Chemical Preparations
2952	Asphalt Felts and Coatings
3011	Tires
3079	Misc. Plastic Products
3253	Ceramic Wall and Floor Tile
3271	Concrete Block and Brick
3272	Concrete Products
3273	Ready-Mixed Concrete
3292	Asbestos Products
3399	Nonferrous Metals
3429	Hardware Products
3433	Heating Equipment (non-electrical)
3441	Fabricated Structural Metal
3444	Sheet Metal Work
3446	Architectural Metal Work
3469	Metal Stampings
3471	Electroplating and Polishing
3479	Metal Coatings
3498	Fabricated Pipe and Fittings
3542	Machine Tools
3559	Special Industry Machinery
3564	Miscellaneous Fans and Circulators
3569	General Industrial Machinery
3589	Service Industry Machinery
3599	Machinery, Except Electrical

3612	Transformers
3613	Switchgear/Switchboard Apparatus
3621	Motors and Generators
3661	Telephone Apparatus
3662	Radio, Television Equipment
3670	Electronic Components
3691	Storage Batteries
3692	Primary Batteries
3713	Truck and Bus Bodies
3732	Boat Building and Repair
3842	Surgical Appliances and Supplies
3851	Ophthalmic Goods
3861	Photographic Equipment and Supplies
3914	Silverware and Plated Ware
3949	Sporting and Athletic Goods
3953	Marking Devices
3993	Signs and Advertising Displays
4171	Bus Terminal Facilities
4212	Trucking
4511	Air Transportation
4582	Airport Operations
4911	Electrical Services
4924	Natural Gas Distribution
4953	Refuse Systems
5051	Metals Service Center
5093	Scrap and Waste Materials
5161	Chemicals (wholesale)
5171	Bulk Petroleum Stations
5231	Paint, Glass and Wallpaper Stores
5261	Retail Nurseries and Garden Stores
5946	Camera Supply Stores
7213	Linen Supply
7215	Coin-Operated Laundries
7216	Dry Cleaning Operations
7217	Carpet Cleaning
7261	Funeral Services
7331	Direct Mail Advt. Services
7332	Blueprinting and Photocopying
7333	Commercial Photography
7339	Stenograph and Reproduction
7342	Exterminating Service
7349	Building Maintenance Service
7374	Data Processing Service
7395	Photofinishing Laboratories
7397	Commercial Testing Laboratories
7699	Repair Services (septic tanks)
8049	Offices of Health Practitioners
8051	Nursing Homes
8059	Nursing and Personal Care
8062	Medical and Surgical Hospitals
8069	Specialty Hospitals, except Psych.
8071	Medical Laboratories
8091	Health Services
8221	Universities

ATTACHMENT 2



APPLICATION FOR

A HAZARDOUS WASTE FACILITY PERMIT

AND INSTRUCTIONS

DER FORM 17-30.401(2) EFFECTIVE October 1, 1987

D. E. R.

OCT - 6 1987

SOUTH FLORIDA DISTRICT

## ATTACHMENT 2

APPLICATION FOR A HAZARDOUS WASTE FACILITY PERMIT  
PART I - GENERAL  
TO BE COMPLETED BY ALL APPLICANTS

Please Type or Print

## A. GENERAL INFORMATION

## 1. TYPE OF FACILITY:

DISPOSAL ☐ LANDFILL ☐ LAND TREATMENT ☐ SURFACE IMPOUNDMENT ☐  
STORAGE ☐ TANKS ☐ PILES ☐ SURFACE IMPOUNDMENT ☐  
CONTAINERS ☒ TREATMENT ☐  
TANKS ☐ PILES ☐ INCINERATION ☐ SURFACE IMPOUNDMENT ☐  
THERMAL ☐ CHEMICAL ☐ PHYSICAL ☒ BIOLOGICAL ☐

2. TYPE OF APPLICATION: ☐ TOP ☐ CONSTRUCTION ☒ OPERATION ☐ CLOSURE ☐ RD&D3. DATE CURRENT OPERATION BEGAN (OR IS EXPECTED TO BEGIN): January, 19884. FACILITY NAME: Universal Waste & Transit, Inc.5. EPA/DER I.D. NO.: Applied For6. FACILITY LOCATION OR STREET ADDRESS: 7208 - 9th Avenue Tampa, Florida 337. FACILITY MAILING ADDRESS: 7217 Gulf Blvd. Ste 7 St. Petersburg, FL 33706  
STREET OR P.O. BOX CITY STATE ZIP8. CONTACT PERSON: Mr. Robert Bedore TELEPHONE: ( ) 360-9100TITLE: PresidentMAILING ADDRESS: 7217 Gulf Blvd. Ste 7, St. Petersburg, FL 33706  
STREET OR P.O. BOX CITY STATE ZIP9. OPERATOR'S NAME: Mr. Robert Bedore TELEPHONE: ( ) 360-910010. OPERATOR'S ADDRESS: 7217 Gulf Blvd., Ste 7, St. Petersburg, FL 33706  
STREET OR P.O. BOX CITY STATE ZIP11. FACILITY OWNER'S NAME: Mr. Robert Bedore12. FACILITY OWNER'S ADDRESS: 7217 Gulf Blvd., Ste 7, St. Petersburg, FL 33706  
STREET OR P.O. BOX CITY STATE ZIP13. LEGAL STRUCTURE: ☒ CORPORATION ☐ NON-PROFIT CORPORATION ☐ PARTNERSHIP  
☐ INDIVIDUAL ☐ LOCAL GOVERNMENT ☐ STATE GOVERNMENT ☐ FEDERAL GOVERNMENT  
OTHER \_\_\_\_\_14. IF AN INDIVIDUAL, PARTNERSHIP, OR BUSINESS IS PERFORMED UNDER AN ASSUMED NAME,  
SPECIFY COUNTY AND STATE WHERE NAME IS REGISTERED. COUNTY: \_\_\_\_\_ STATE: \_\_\_\_\_15. IF A CORPORATION, INDICATE STATE OF INCORPORATION Delaware

16. IF AN INDIVIDUAL OR PARTNERSHIP, LIST OWNERS:

NAME: \_\_\_\_\_  
 ADDRESS: \_\_\_\_\_ STREET OR P.O. BOX \_\_\_\_\_ CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

NAME: \_\_\_\_\_  
 ADDRESS: \_\_\_\_\_ STREET OR P.O. BOX \_\_\_\_\_ CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

NAME: \_\_\_\_\_  
 ADDRESS: \_\_\_\_\_ STREET OR P.O. BOX \_\_\_\_\_ CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

NAME: \_\_\_\_\_  
 ADDRESS: \_\_\_\_\_ STREET OR P.O. BOX \_\_\_\_\_ CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

17. SITE OWNERSHIP STATUS: [ ] OWNED & TO BE PURCHASED [ ] TO BE LEASED \_\_\_\_\_ YE.  
☒ PRESENTLY LEASED: EXPIRATION DATE March, 1988 IF LEASED, GIVE:  
 LAND OWNER'S NAME Mamie V. Kerik  
 LAND OWNER'S ADDRESS \_\_\_\_\_ Atlanta, GA \_\_\_\_\_  
 \_\_\_\_\_ STREET OR P.O. BOX \_\_\_\_\_ CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

18. ENGINEER: James Winters REGISTRATION NO.: \_\_\_\_\_  
 ADDRESS: 4481 - 122nd Ave. N., Clearwater FL 33715  
 \_\_\_\_\_ STREET OR P.O. BOX \_\_\_\_\_ CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

ASSOCIATED WITH: Seminole Engineering, Inc.

19. FACILITY LOCATED ON INDIAN LAND: [ ] YES ☒ NO

20. EXISTING OR PENDING ENVIRONMENTAL PERMITS: (ATTACH A SEPARATE SHEET IF NECESSARY)  
 Hazardous Waste Transporter Applied For

NAME OF PERMIT	AGENCY	PERMIT NUMBER	DATE ISSUED	EXPIRATION DATE

B. SITE INFORMATION

1. FACILITY LOCATION: COUNTY: Hillsborough NEAREST COMMUNITY: Tampa  
LATITUDE: 27 deg. 57 min. 49 sec. LONGITUDE: 82 deg. 22 min. 23 sec.
2. AREA OF FACILITY SITE (ACRES): 1.4 acres MOL
3. ATTACH A SCALE DRAWING AND PHOTOGRAPHS OF THE FACILITY SHOWING THE LOCATION OF ALL PAST, PRESENT, AND FUTURE TREATMENT, STORAGE AND DISPOSAL AREAS. ALSO SHOW THE HAZARDOUS WASTES TRAFFIC PATTERN INCLUDING ESTIMATED VOLUME AND CONTROL.
4. ATTACH TOPOGRAPHIC MAP WHICH SHOW ALL THE FEATURES INDICATED IN THE INSTRUCTION SHEET FOR THIS PART.
5. IS THE SITE LOCATED IN A 100-YEAR FLOOD PLAIN? [ ] YES ☒ NO

C. LAND USE INFORMATION

1. PRESENT ZONING OF THE SITE? Heavy Industrial
2. IF A ZONING CHANGE IS NEEDED, WHAT SHOULD NEW ZONING BE? No Change Needed
3. PRESENT LAND USE OF SITE Vacant Land

D. OPERATING INFORMATION

1. IS WASTE GENERATED ON SITE? ☒ YES [ ] NO LIST THE SIC CODES (4-DIGIT)  
9511 8911 4953 7391
2. ATTACH A BRIEF DESCRIPTION OF THE FACILITY OPERATION, NATURE OF THE BUSINESS, AND ACTIVITIES THAT GENERATE OR OTHERWISE INVOLVE HAZARDOUS WASTE.
3. USING THE FOLLOWING TABLE AND CODES PROVIDED, SPECIFY, (1) EACH PROCESS USED FOR TREATING, STORING, OR DISPOSING OF HAZARDOUS WASTE (INCLUDING DESIGN CAPACITIES)) AT THE FACILITY, AND (2) THE HAZARDOUS WASTE (OR WASTES) LISTED OR DESIGNATED IN 40 CFR PART 261, INCLUDING THE ANNUAL QUANTITIES, TO BE TREATED, STORED, OR DISPOSED BY EACH PROCESS AT THE FACILITY. (SEE INSTRUCTIONS FOR LIST OF PROCESS CODES AND UNITS).

PROCESS CODE	PROCESS DESIGN CAPACITY AND UNITS OF MEASURE	HAZARDOUS WASTE CODE	ANNUAL QUANTITY OF HAZARDOUS WASTE AND UNITS OF MEASURE
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Included as Attachment 14

APPLICATION FOR A HAZARDOUS WASTE FACILITY PERMIT  
PART II

A. - GENERAL

1. ATTACH A TOPOGRAPHIC MAP SHOWING A DISTANCE OF 1000 FEET AROUND THE HAZARDOUS WASTE MANAGEMENT AREA AT A SCALE OF 1 INCH TO 200 FEET. CONTOURS MUST BE SHOWN ON THE MAP WITH INTERVALS SUFFICIENT TO CLEARLY SHOW THE PATTERN OF SURFACE WATER FLOW IN THE VICINITY OF AND FROM EACH OPERATIONAL UNIT OF THE FACILITY (E.G., CONTOUR INTERVALS OF 5 FEET IF RELIEF IS GREATER THAN 20 FEET OR AN INTERVAL OF 2 FEET IF RELIEF IS LESS THAN 20 FEET). THE MAP SHOULD CLEARLY SHOW THE FOLLOWING:

- 1) MAP SCALE AND DATE
- 2) 100-YEAR FLOODPLAIN AREA
- 3) ORIENTATION OF THE MAP
- 4) ACCESS CONTROL (FENCES, GATES)
- 5) INJECTION AND WITHDRAWAL WELLS BOTH ON-SITE AND OFF-SITE
- 6) BUILDING AND OTHER STRUCTURES (RECREATIONAL AREAS, ACCESS AND INTERNAL ROADS, STORM, SANITARY, AND PROCESS SEWERAGE SYSTEMS, FIRE CONTROL FACILITIES, ETC.)
- 7) CONTOURS SUFFICIENT TO SHOW SURFACE WATER FLOW
- 8) LOADING AND UNLOADING AREAS
- 9) DRAINAGE OR FLOOD CONTROL BARRIERS
- 10) HAZARDOUS WASTE UNITS INCLUDING CLEAN UP AREAS
- 11) RUNOFF CONTROL SYSTEM

A WIND ROSE SHOULD BE INCLUDED WITH THE MAPS, OR AS A SEPARATE ITEM, INDICATING THE LOCAL PREVAILING WIND SPEED AND DIRECTION, LEGEND, AND DATE.

TOPOGRAPHIC MAPS MAY BE OBTAINED AT THE FOLLOWING ADDRESS:

BRANCH OF DISTRIBUTION  
U.S.G.S.  
1200 SOUTH EADS  
ARLINGTON, VIRGINIA 22202  
PHONE NO. (703) 557-2751

INFORMATION ON LATITUDES AND LONGITUDES MAY BE OBTAINED FROM THE U.S.G.S. NATIONAL CARTOGRAPHIC INFORMATION CENTER AT (703) 860-6336.



## 2. FINANCIAL RESPONSIBILITY INFORMATION

- a) ATTACH THE MOST RECENT CLOSURE COST ESTIMATES FOR THE FACILITY (\$264.142) AND A COPY OF THE FINANCIAL MECHANISM USED TO ESTABLISH FINANCIAL ASSURANCE FOR CLOSURE OF THE FACILITY [\$264.143 AND \$270.14(b)(15)]. USE DER FORM NUMBERS 17-30.401(4) (a,b,c,d,e,f,g,h,i or n) ONLY. RETYPED DOCUMENTS ARE NOT ACCEPTABLE. SEND THE ORIGINALLY SIGNED DOCUMENTS TO: HAZARDOUS WASTE FINANCIAL RESPONSIBILITY COORDINATOR, DEPARTMENT OF ENVIRONMENTAL REGULATION, DIVISION OF ENVIRONMENTAL PERMITTING, 2600 BLAIR STONE ROAD, TALLAHASSEE, FLORIDA, 32399-2400.
- b) IF APPLICABLE, ATTACH THE MOST RECENT POST-CLOSURE CARE COST ESTIMATE FOR THE FACILITY (\$264.144) AND A COPY OF THE FINANCIAL MECHANISM USED TO ESTABLISH FINANCIAL ASSURANCE FOR POST-CLOSURE CARE OF THE FACILITY [\$264.145, \$264.146 AND \$270.14(b)(16)]. USE DER FORM NUMBERS 17-30.401(4) (a,b,c,d,e,f,g,h,i or n) ONLY. RETYPED DOCUMENTS ARE NOT ACCEPTABLE. SEND THE ORIGINALLY SIGNED DOCUMENTS TO THE ADDRESS IN 1. ABOVE.
- c) ATTACH A COPY OF THE DOCUMENTS USED TO DEMONSTRATE LIABILITY COVERAGE (\$264.147). USE DER FORM NUMBERS 17-30.401(4) (i,j,k,l,m OR n) ONLY. RETYPED DOCUMENTS ARE ARE NOT ACCEPTABLE. SEND THE ORIGINALLY SIGNED DOCUMENTS TO THE ADDRESS IN 1. ABOVE. IF FORMS 17-30.401(4) (j,k,l OR m) ARE USED, ALSO SEND A SIGNED DUPLICATE ORIGINAL OF THE INSURANCE POLICY WITH THE ORIGINALLY SIGNED DOCUMENTS TO THE ADDRESS IN 1. ABOVE [\$264.147(a)(1)(i) AND (\$270.14(b)(17))].

3. ATTACH A FLOOD MAP. INFORMATION ON FLOOD AREAS MAY BE OBTAINED FROM A FLOOD MAP PRODUCED BY THE FEDERAL INSURANCE ADMINISTRATION (FIA) OF THE FEDERAL EMERGENCY MANAGEMENT AGENCY. IF A FIA FLOOD MAP IS NOT AVAILABLE FOR AN AREA, AN EQUIVALENT MAPPING TECHNIQUE MAY BE USED TO DETERMINE WHETHER THE FACILITY IS WITHIN THE 100-YEAR FLOODPLAIN, AND IF SO, WHAT THE 100-YEAR FLOOD ELEVATION WOULD BE. INFORMATION REQUESTED IN THIS SECTION MAY BE OBTAINS FROM THE U.S. GEOLOGICAL SURVEY, THE SOIL CONSERVATION SERVICE, THE WATER MANAGEMENT DISTRICTS, OR THE REGIONAL PLANNING COUNCILS.

IF THE SITE IS LOCATED IN THE 100-YEAR FLOODPLAIN, IDENTIFY THE 100-YEAR FLOOD LEVEL AND ANY OTHER SPECIAL FLOODING FACTORS (E.G., WAVE ACTION) WHICH MUST BE CONSIDERED IN DESIGNING, CONSTRUCTION, OPERATING, OR MAINTAINING THE FACILITY TO WITHSTAND WASHOUT FROM A 100-YEAR FLOOD. ADDITIONALLY, PROVIDE THE FOLLOWING INFORMATION:

- a) ENGINEERING ANALYSIS TO INDICATE THE VARIOUS HYDRODYNAMIC AND HYDROSTATIC FORCES EXPECTED TO RESULT AT THE SITE AS A CONSEQUENCE OF A 100-YEAR FLOOD.
- b) STRUCTURAL OF OTHER ENGINEERING STUDIES SHOWING THE DESIGN OF OPERATIONAL UNITS (I.E., TANKS, INCINERATORS) AND FLOOD PROTECTION DEVICES (I.E., FLOODWALLS, DIKES) AT THE FACILITY AND HOW THESE WILL PREVENT WASHOUT.
- c) IF APPLICABLE, AND IN LIEU OF PARAGRAPHS (1) AND (2) ABOVE, A DETAILED DESCRIPTION OF PROCEDURES TO BE FOLLOWED TO REMOVE HAZARDOUS WASTE TO SAFETY BEFORE THE FACILITY IS FLOODED, INCLUDING:

- (1) TIMING OF SUCH MOVEMENT RELATIVE TO FLOOD LEVELS, INCLUDING THE ESTIMATED TIME TO MOVE THE WASTE TO SHOW THAT SUCH MOVEMENT CAN BE

COMPLETED BEFORE FLOODWATERS REACH THE FACILITY;

(2) A DESCRIPTION OF THE LOCATION(S) TO WHICH THE WASTE WILL BE MOVED AND DEMONSTRATION THAT THOSE FACILITIES WILL BE ELIGIBLE TO RECEIVE HAZARDOUS WASTE IN ACCORDANCE WITH THE REGULATIONS UNDER 40 CFR PARTS 264 AND 265;

(3) THE PLANNED PROCEDURES, EQUIPMENT, AND PERSONNEL TO BE USED AND THE MEANS TO ENSURE THAT SUCH RESOURCES WILL BE AVAILABLE IN TIME FOR USE; AND

(4) THE POTENTIAL FOR ACCIDENTAL DISCHARGES OF THE WASTE DURING MOVEMENT.

IF THE SITE IS NOT LOCATED IN THE 100-YEAR FLOODPLAIN, PROVIDE THE SOURCE OF DATA FOR SUCH A DETERMINATION AND INCLUDE A COPY OF THE RELEVANT FIA FLOOD MAP OR THE CALCULATIONS AND MAPS USED WHERE A FIA MAP IS NOT AVAILABLE.

#### 4. FACILITY SECURITY INFORMATION

a) ATTACH A DESCRIPTION OF THE SECURITY PROCEDURES AND EQUIPMENT REQUIRED BY §264.14 [270.14(b)(4)].

b) ATTACH A COPY OF THE CONTINGENCY PLAN REQUIRED BY 40 CFR PART 264, SUBPART D. [270.14(b)(7)].

c) ATTACH A DESCRIPTION OF PROCEDURES, STRUCTURES, OR EQUIPMENT USED AT THE FACILITY TO:

(1) MITIGATE EFFECTS OF EQUIPMENT FAILURE AND POWER OUTAGES;

(2) PREVENT HAZARDS IN UNLOADING OPERATIONS (i.e., RAMPS, SPECIAL FORKLIFTS);

(3) PREVENT UNDUE EXPOSURE OF PERSONNEL TO HAZARDOUS WASTE (i.e., PROTECTIVE CLOTHING);

(4) PREVENT CONTAMINATION OF WATER SUPPLIES;

(5) PREVENT RUN-OFF FROM HAZARDOUS WASTE HANDLING AREAS TO OTHER AREAS OF THE FACILITY OR ENVIRONMENT, OR TO PREVENT FLOODING (i.e., BERMS, DIKES, TRENCHES);

(6) PREVENT ACCIDENTAL IGNITION OR REACTION OF IGNITABLE, REACTIVE, OR INCOMPATIBLE WASTES.

d) ATTACH A DESCRIPTION OF THE PREPAREDNESS AND PREVENTION PROCEDURES REQUIRED BY 40 CFR PART 264, SUBPART C, INCLUDING DESIGN AND OPERATION OF THE FACILITY, REQUIRED EQUIPMENT, TESTING AND MAINTENANCE OF EQUIPMENT, ACCESS TO COMMUNICATIONS OR ALARM SYSTEM, REQUIRED AISLE SPACE, AND ARRANGEMENT WITH LOCAL AUTHORITIES [270.14(b)(6)].

e) ATTACH AN OUTLINE OF BOTH THE INTRODUCTORY AND CONTINUING TRAINING PROGRAM USED TO PREPARE PERSONS TO OPERATE OR MAINTAIN THE HAZARDOUS WASTE MANAGEMENT FACILITY IN A SAFE MANNER AS REQUIRED TO DEMONSTRATE COMPLIANCE WITH §264.16 [270.14(b)(12)].

5. ATTACH A COPY OF THE REPORTS OF THE CHEMICAL AND PHYSICAL ANALYSES OF THE HAZARDOUS WASTES HANDLED AT THE FACILITY, INCLUDING ALL INFORMATION WHICH MUST BE KNOWN TO TREAT, STORE, OR DISPOSE OF THE WASTES IN ACCORDANCE WITH §264.13 [270.14.b(3)].
6. ATTACH A COPY OF THE WASTE ANALYSIS PLAN REQUIRED BY §264.13 [270.14.b(3)]. SUCH INFORMATION SHOULD INCLUDE THE FOLLOWING:
  - a) PARAMETERS FOR WHICH EACH HAZARDOUS WASTE WILL BE ANALYZED AND THE RATIONALE FOR THE SELECTION OF THESE PARAMETERS;
  - b) TEST METHODS USED;
  - c) SAMPLING METHODS USED;
  - d) FREQUENCY OF ANALYSIS TO ENSURE ACCURACY;
  - e) WASTE ANALYSES THAT GENERATORS SUPPLY;
  - f) METHODS USED TO MEET ADDITIONAL WASTE ANALYSIS REQUIREMENTS; AND, IF APPLICABLE,
  - g) FOR OFF-SITE FACILITIES, THE PROCEDURES USED TO INSPECT AND ENSURE THAT THE WASTES RECEIVED MATCH THE ACCOMPANYING MANIFEST.
7. ATTACH A COPY OF THE PROCEDURES USED TO COMPLY WITH §264.12 AND 40 CFR PART 264, SUBPART E (MANIFEST SYSTEM, RECORD KEEPING, AND REPORTING).

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B. - CONTAINERS

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THE APPLICANT MUST PROVIDE THE FOLLOWING INFORMATION IN ACCORDANCE WITH 40 CFR 264 SUBPART I (§270.15).

1. ATTACH THE REQUIREMENTS OF EITHER (a) OR (b):

a) DEMONSTRATE COMPLIANCE WITH §264.175(c) BY ATTACHING:

- 1) TEST PROCEDURES AND RESULTS OR OTHER DOCUMENTATION OR INFORMATION TO SHOW THAT THE WASTES DO NOT CONTAIN FREE LIQUIDS; AND
- 2) A DESCRIPTION OF HOW THE STORAGE AREA IS DESIGNED OR OPERATED TO DRAIN AND REMOVE LIQUIDS OR HOW CONTAINERS ARE KEPT FROM CONTACT WITH STANDING LIQUIDS.

b) DESCRIBE THE CONTAINMENT SYSTEM TO SHOW COMPLIANCE WITH §264.175(b) BY ATTACHING:

- 1) BASIC DESIGN PARAMETERS, DIMENSIONS, AND MATERIALS OF CONSTRUCTION.
- 2) HOW THE DESIGN PROMOTES DRAINAGE OR HOW CONTAINERS ARE KEPT FROM CONTACT WITH STANDING LIQUIDS IN THE CONTAINMENT SYSTEM.
- 3) CAPACITY OF THE CONTAINMENT SYSTEM RELATIVE TO THE NUMBER AND VOLUME OF CONTAINERS TO BE STORED.
- 4) PROVISIONS FOR PREVENTING OR MANAGING RUN-ON.
- 5) HOW ACCUMULATED LIQUIDS CAN BE ANALYZED AND REMOVED TO PREVENT OVERFLOW.

2. ATTACH SKETCHES, DRAWINGS, OR DATA DEMONSTRATING COMPLIANCE WITH §264.176 (SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTES) AND §264.177 (SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTES) WHERE APPLICABLE.
3. WHERE INCOMPATIBLE WASTES ARE STORED OR OTHERWISE MANAGED IN CONTAINERS, ATTACH A DESCRIPTION OF THE PROCEDURES USED TO ENSURE COMPLIANCE WITH §264.177(a) AND (b) (SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTE) AND §264.17(b) and (c) (GENERAL REQUIREMENTS FOR IGNITABLE, REACTIVE, OR INCOMPATIBLE WASTE).
4. ATTACH A DESCRIPTION OF THE PROCEDURES USED TO COMPLY WITH §264.171 (CONDITION OF CONTAINERS), §264.172 (COMPATIBILITY OF WASTE WITH CONTAINERS), AND §264.173 (MANAGEMENT) OF CONTAINERS.
5. ATTACH A COPY OF THE INSPECTION PROCEDURES AS REQUIRED IN §264.174 (INSPECTIONS) AND §264.15 (GENERAL INSPECTION REQUIREMENTS).
6. ATTACH A COPY OF THE CLOSURE PLAN AS REQUIRED BY §§264.112 and 264.178.

## C. - TANKS

THE APPLICANT MUST PROVIDE THE FOLLOWING INFORMATION IN ACCORDANCE WITH 40 CFR 264 SUBPART J (§270.16).

1. A WRITTEN ASSESSMENT THAT IS REVIEWED AND CERTIFIED BY AN INDEPENDENT, QUALIFIED, REGISTERED PROFESSIONAL ENGINEER TO THE STRUCTURAL INTEGRITY AND SUITABILITY FOR HANDLING HAZARDOUS WASTE OF EACH TANK SYSTEM, AS REQUIRED UNDER §§264.191 AND 264.192:
2. DIMENSIONS AND CAPACITY OF EACH TANK;
3. DESCRIPTION OF FEED SYSTEMS, SAFETY CUTOFF, BYPASS SYSTEMS, AND PRESSURE CONTROLS (e.g., VENTS);
4. A DIAGRAM OF PIPING, INSTRUMENTATION, AND PROCESS FLOW FOR EACH TANK SYSTEM;
5. A DESCRIPTION OF MATERIALS AND EQUIPMENT USED TO PROVIDE EXTERNAL CORROSION PROTECTION, AS REQUIRED UNDER §264.191(c);
6. FOR NEW TANK SYSTEMS, A DETAILED DESCRIPTION OF HOW THE TANK SYSTEM(S) WILL BE INSTALLED IN COMPLIANCE WITH §264.192(b), (c), (d), AND (e);
7. DETAILED PLANS AND DESCRIPTION OF HOW THE SECONDARY CONTAINMENT SYSTEM FOR EACH TANK SYSTEM IS OR WILL BE DESIGNED, CONSTRUCTED, AND OPERATED TO MEET THE REQUIREMENTS OF §264.193(a), (b), (c), (d), (e), AND (f);
8. FOR TANK SYSTEMS FOR WHICH A VARIANCE FROM THE REQUIREMENTS OF §264.193 IS SOUGHT AS PROVIDED BY §264.193(g):
  - a) DETAILED PLANS AND ENGINEERING AND HYDROGEOLOGIC REPORTS, AS APPROPRIATE, DESCRIBING ALTERNATE DESIGN AND OPERATING PRACTICES THAT WILL IN CONJUNCTION WITH LOCATION ASPECTS, PREVENT THE MIGRATION OF ANY HAZARDOUS WASTES OR HAZARDOUS CONSTITUENTS INTO THE GROUND WATER OR SURFACE WATER DURING THE LIFE OF THE FACILITY, OR
  - b) A DETAILED ASSESSMENT OF THE SUBSTANTIAL PRESENT OR POTENTIAL HAZARDS POSED TO HUMAN HEALTH OR THE ENVIRONMENT SHOULD A RELEASE ENTER THE ENVIRONMENT.
9. DESCRIPTION OF CONTROLS AND PRACTICES TO PREVENT SPILLS AND OVERFLOWS, AS REQUIRED UNDER §264.194(b); AND
10. FOR TANK SYSTEMS IN WHICH IGNITABLE, REACTIVE, OR INCOMPATIBLE WASTES ARE TO BE STORED OR TREATED, A DESCRIPTION OF HOW OPERATING PROCEDURES AND TANK SYSTEM AND FACILITY DESIGN WILL ACHIEVE COMPLIANCE WITH THE REQUIREMENTS OF §§264.198 AND 264.199.
11. A SCHEDULE AND PROCEDURE FOR MEETING INSPECTION REQUIREMENTS AS REQUIRED BY §264.195.
12. ATTACH A COPY OF THE CLOSURE AND POST-CLOSURE PLAN AS REQUIRED BY §§264.112 AND 264.197.

## D. - SURFACE IMPOUNDMENTS

THE APPLICANT MUST PROVIDE THE FOLLOWING INFORMATION IN ACCORDANCE WITH 40 CFR 264 SUBPART K (§270.17).

1. ATTACH A LIST OF THE HAZARDOUS WASTES PLACED OR TO BE PLACED IN EACH SURFACE IMPOUNDMENT.
2. ATTACH DETAILED PLANS AND AN ENGINEERING REPORT DESCRIBING HOW THE SURFACE IMPOUNDMENT IS OR WILL BE DESIGNED, CONSTRUCTED, OPERATED, AND MAINTAINED TO MEET THE REQUIREMENTS OF §264.221. THIS SUBMISSION MUST ADDRESS THE FOLLOWING ITEMS AS SPECIFIED IN §264.221:
  - a) THE LINER SYSTEM (EXCEPT FOR AN EXISTING PORTION OF A SURFACE IMPOUNDMENT). IF AN EXEMPTION FROM THE REQUIREMENT FOR A LINER IS SOUGHT AS PROVIDED BY §264.221(b), SUBMIT DETAILED PLANS AND ENGINEERING AND HYDROGEOLOGIC REPORTS AS APPROPRIATE, DESCRIBING ALTERNATE DESIGN AND OPERATION PRACTICES THAT WILL, IN CONJUNCTION WITH LOCATION ASPECTS, PREVENT THE MIGRATION OF ANY HAZARDOUS CONSTITUENTS INTO THE GROUND WATER OR SURFACE WATER AT ANY FUTURE TIME;
  - b) PREVENTION OF OVERTOPPING; AND
  - c) STRUCTURAL INTEGRITY OF DIKES.
3. ATTACH A DESCRIPTION OF HOW EACH SURFACE IMPOUNDMENT, INCLUDING THE LINER AND COVER SYSTEMS AND APPURTENANCES FOR CONTROL OF OVERTOPPING, WILL BE INSPECTED IN ORDER TO MEET THE REQUIREMENTS OF §§264.226(a) AND (b). THIS INFORMATION SHOULD INCLUDE THE INSPECTION PLAN REQUIRED UNDER §264.15.
4. ATTACH A CERTIFICATION BY A QUALIFIED ENGINEER WHICH ATTESTS TO THE STRUCTURAL INTEGRITY OF EACH DIKE, AS REQUIRED UNDER §264.226(c). FOR NEW UNITS, THE OWNER OR OPERATOR MUST SUBMIT A STATEMENT BY A QUALIFIED ENGINEER THAT HE WILL PROVIDE SUCH CERTIFICATION UPON COMPLETION OF CONSTRUCTION IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.
5. ATTACH A DESCRIPTION OF THE PROCEDURE TO BE USED FOR REMOVING A SURFACE IMPOUNDMENT FROM SERVICE, AS REQUIRED UNDER §§264.227(b) AND (c).
6. ATTACH A DESCRIPTION OF HOW HAZARDOUS WASTE RESIDUES AND CONTAMINATED MATERIALS WILL BE REMOVED FROM THE UNIT AT CLOSURE, AS REQUIRED UNDER §264.228(a)(1). FOR ANY WASTES NOT TO BE REMOVED FROM THE UNIT UPON CLOSURE, THE OWNER OR OPERATOR MUST SUBMIT DETAILED PLANS AND AN ENGINEERING REPORT DESCRIBING HOW §264.228(a)(2) AND (b) WILL BE COMPLIED WITH. THIS INFORMATION SHOULD INCLUDE THE CLOSURE PLAN AND, WHERE APPLICABLE, THE POST-CLOSURE PLAN REQUIRED UNDER §§264.112\* AND 264.228\*.

7. IF IGNITABLE OR REACTIVE WASTES ARE TO BE PLACED IN A SURFACE IMPOUNDMENT, ATTACH AN EXPLANATION OF HOW §§264.229 AND 264.17 WILL BE COMPLIED WITH.
8. IF INCOMPATIBLE WASTES, OR INCOMPATIBLE WASTES AND MATERIALS WILL BE PLACED IN A SURFACE IMPOUNDMENT, ATTACH AN EXPLANATION OF HOW §§264.230 AND 264.17 WILL BE COMPLIED WITH.
9. ATTACH A COPY OF THE NOTICE THAT HAS BEEN PLACED IN THE DEED OR OTHER INSTRUMENT REQUIRED BY §264.119.
10. ATTACH A WASTE MANAGEMENT PLAN FOR EPA HAZARDOUS WASTE NOS. F020, F021, F022, F023, F026, AND F027 DESCRIBING HOW THE SURFACE IMPOUNDMENT IS OR WILL BE DESIGNED, CONSTRUCTED, OPERATED, AND MAINTAINED TO MEET THE REQUIREMENTS OF §264.231. THIS SUBMISSION MUST ADDRESS THE FOLLOWING ITEMS AS SPECIFIED IN §264.231:
  - a) THE VOLUME, PHYSICAL, AND CHEMICAL CHARACTERISTICS OF THE WASTES, INCLUDING THEIR POTENTIAL TO MIGRATE THROUGH SOIL OR TO VOLATILIZE OR ESCAPE INTO THE ATMOSPHERE;
  - b) THE ATTENUATIVE PROPERTIES OF UNDERLYING AND SURROUNDING SOILS OR OTHER MATERIALS;
  - c) THE MOBILIZING PROPERTIES OF OTHER MATERIALS CO-DISPOSED WITH THESE WASTES; AND
  - d) THE EFFECTIVENESS OF ADDITIONAL TREATMENT, DESIGN, OR MONITORING TECHNIQUES.

\*THIS INFORMATION SHOULD BE INCLUDED IN THE CONTINGENCY PLAN SUBMITTED UNDER §264.227.

## E - WASTE PILES

THE APPLICANT MUST PROVIDE THE FOLLOWING INFORMATION IN ACCORDANCE WITH 40 CFR 264 SUBPART L (\$270.18).

1. ATTACH A LIST OF HAZARDOUS WASTES PLACED OR TO BE PLACED IN EACH WASTE PILE.
2. IF AN EXEMPTION IS SOUGHT TO §264.251 AND SUBPART F OF PART 264 AS PROVIDED BY §264.250(c) OR §264.90(b)(2) ATTACH AN EXPLANATION OF HOW THE REQUIREMENTS OF §264.250(c) WILL BE COMPLIED WITH OR DETAILED PLANS AND AN ENGINEERING REPORT DESCRIBING HOW THE REQUIREMENT OF §264.90(b)(2) WILL BE MET.
3. ATTACH DETAILED PLANS AND AN ENGINEERING REPORT DESCRIBING HOW THE PILE IS OR WILL BE DESIGNED, CONSTRUCTED, OPERATED AND MAINTAINED TO MEET THE REQUIREMENTS OF §264.251. THIS SUBMISSION MUST ADDRESS THE FOLLOWING ITEMS AS SPECIFIED IN §264.251:
  - a) THE LINER SYSTEM (EXCEPT FOR AN EXISTING PORTION OF A PILE). IF AN EXEMPTION FROM THE REQUIREMENT FOR A LINER IS SOUGHT, AS PROVIDED BY §264.251(b), THE OWNER OR OPERATOR MUST SUBMIT DETAILED PLANS AND ENGINEERING AND HYDROGEOLOGIC REPORTS AS APPROPRIATE, DESCRIBING ALTERNATE DESIGN AND OPERATING PRACTICES THAT WILL, IN CONJUNCTION WITH LOCATION ASPECTS, PREVENT THE MIGRATION OF ANY HAZARDOUS CONSTITUENTS INTO THE GROUND WATER OR SURFACE WATER AT ANY FUTURE TIME;
  - b) CONTROL OF RUN-ON;
  - c) CONTROL OF RUN-OFF;
  - d) MANAGEMENT OF COLLECTION AND HOLDING UNITS ASSOCIATED WITH RUN-ON AND RUN-OFF CONTROL SYSTEMS; AND
  - e) CONTROL OF WIND DISPERSAL OF PARTICULATE MATTER, WHERE APPLICABLE.
4. ATTACH A DESCRIPTION OF HOW EACH WASTE PILE, INCLUDING THE LINER AND APPURTENANCES FOR CONTROL OF RUN-ON AND RUN-OFF, WILL BE INSPECTED IN ORDER TO MEET THE REQUIREMENTS OF §264.254(a) AND (b). THIS INFORMATION SHOULD INCLUDE THE INSPECTION PLAN REQUIRED UNDER §264.15.
5. IF TREATMENT IS CARRIED OUT ON OR IN THE PILE, ATTACH DETAILS OF THE PROCESS AND EQUIPMENT USED, AND THE NATURE AND QUALITY OF THE RESIDUALS.
6. IF IGNITABLE OR REACTIVE WASTES ARE TO BE PLACED IN A WASTE PILE, ATTACH AN EXPLANATION OF HOW THE REQUIREMENTS OF §§264.256 AND 264.17 WILL BE COMPLIED WITH.
7. IF COMPATIBLE WASTES, OR INCOMPATIBLE WASTES AND MATERIALS WILL BE PLACED IN A WASTE PILE, ATTACH AN EXPLANATION OF HOW §§264.257 AND 264.17 WILL BE COMPLIED WITH.
8. ATTACH A DESCRIPTION OF HOW HAZARDOUS WASTE RESIDUES AND CONTAMINATED MATERIALS WILL BE REMOVED FROM THE WASTE PILE AT CLOSURE, AS REQUIRED UNDER §264.258(a). FOR ANY WASTE NOT TO BE REMOVED FROM THE WASTE PILE UPON CLOSURE, THE OWNER OR OPERATOR MUST SUBMIT DETAILED PLANS AND AN ENGINEERING REPORT DESCRIBING HOW §264.310(a) AND (b) WILL BE COMPLIED WITH. THIS INFORMATION SHOULD INCLUDE THE CLOSURE PLAN AND, WHERE APPLICABLE, THE POST-CLOSURE PLAN REQUIRED UNDER §§264.112 AND 264.118.



9. A WASTE MANAGEMENT PLAN FOR EPA HAZARDOUS WASTE NOS. F020, F021, F022, F023, F026, AND F027 DESCRIBING HOW A LAND TREATMENT FACILITY IS OR WILL BE DESIGNED, CONSTRUCTED, OPERATED, AND MAINTAINED TO MEET THE REQUIREMENTS OF §264.283. THIS SUBMISSION MUST ADDRESS THE FOLLOWING ITEMS AS SPECIFIED IN §264.283:
- a) THE VOLUME, PHYSICAL, AND CHEMICAL CHARACTERISTICS OF THE WASTES, INCLUDING THEIR POTENTIAL TO MIGRATE THROUGH SOIL OR TO VOLATILIZE OR ESCAPE INTO THE ATMOSPHERE;
  - b) THE ATTENUATIVE PROPERTIES OF UNDERLYING AND SURROUNDING SOILS OR OTHER MATERIALS;
  - c) THE MOBILIZING PROPERTIES OF OTHER MATERIALS CO-DISPOSED WITH THESE WASTES;
  - d) THE EFFECTIVENESS OF ADDITIONAL TREATMENT, DESIGN, OR MONITORING TECHNIQUES

## G. - LANDFILLS

THE APPLICANT MUST PROVIDE THE FOLLOWING INFORMATION IN ACCORDANCE WITH 40 CFR 264 SUBPART N (§270.21).

1. ATTACH A LIST OF THE HAZARDOUS WASTES PLACED OR TO BE PLACED IN EACH LANDFILL OR LANDFILL CELL.
2. ATTACH DETAILED PLANS AND AN ENGINEERING REPORT DESCRIBING HOW THE LANDFILL IS OR WILL BE DESIGNED, CONSTRUCTED, OPERATED, AND MAINTAINED TO COMPLY WITH THE REQUIREMENTS OF §264.301. THIS SUBMISSION MUST ADDRESS THE FOLLOWING ITEMS AS SPECIFIED IN §264.301:
  - a) THE LINER SYSTEM AND LEACHATE COLLECTION AND REMOVAL SYSTEM (EXCEPT FOR AN EXISTING PORTION OF A LANDFILL). IF AN EXEMPTION FROM THE REQUIREMENTS FOR A LINER AND A LEACHATE COLLECTION AND REMOVAL SYSTEM IS SOUGHT AS PROVIDED BY §264.301(b), SUBMIT DETAILED PLANS AND ENGINEERING AND HYDROGEOLOGIC REPORTS AS APPROPRIATE, DESCRIBING ALTERNATE DESIGN AND OPERATING PRACTICE THAT WILL, IN CONJUNCTION WITH LOCATION ASPECTS, PREVENT THE MIGRATION OF ANY HAZARDOUS CONSTITUENT INTO THE GROUND WATER OR SURFACE WATER AT ANY FUTURE TIME;
  - b) CONTROL OF RUN-ON;
  - c) CONTROL OF RUN-OFF;
  - d) MANAGEMENT OF COLLECTION AND HOLDING FACILITIES ASSOCIATED WITH RUN-ON AND RUN-OFF CONTROL SYSTEMS;
  - e) CONTROL OF WIND DISPERSAL OF PARTICULATE MATTER, WHERE APPLICABLE.
3. IF AN EXEMPTION FROM SUBPART F OF PART 264 IS SOUGHT, AS PROVIDED BY §264.90(b)(2), THE OWNER OR OPERATOR MUST SUBMIT DETAILED PLANS AND AN ENGINEERING REPORT EXPLAINING THE LOCATION OF THE SATURATED ZONE IN RELATION TO THE LANDFILL, THE DESIGN OF A DOUBLE-LINER SYSTEM THAT INCORPORATES A LEAK DETECTION SYSTEM BETWEEN THE LINERS, AND A LEACHATE COLLECTION AND REMOVAL SYSTEM ABOVE THE LINERS.
4. ATTACH A DESCRIPTION OF HOW EACH LANDFILL, INCLUDING THE LINER AND COVER SYSTEMS, WILL BE INSPECTED IN ORDER TO MEET REQUIREMENTS OF §264.303(a) AND (b). THIS INFORMATION SHOULD INCLUDE THE INSPECTION PLAN REQUIRED UNDER §264.15.
5. ATTACH DETAILED PLANS AND AN ENGINEERING REPORT DESCRIBING THE FINAL COVER WHICH WILL BE APPLIED TO EACH LANDFILL OR LANDFILL CELL AT CLOSURE IN ACCORDANCE WITH §264.310(a), AND A DESCRIPTION OF HOW EACH LANDFILL WILL BE MAINTAINED AND MONITORED AFTER CLOSURE IN ACCORDANCE WITH §264.310(b). THIS INFORMATION SHOULD INCLUDE THE CLOSURE AND POST-CLOSURE PLANS REQUIRED UNDER §§264.112 AND 264.118.
6. IF IGNITABLE OR REACTIVE WASTES WILL BE LANDFILLED, ATTACH AN EXPLANATION OF HOW THE REQUIREMENTS OF §§264.312 AND 264.170 WILL BE COMPLIED WITH.

7. IF INCOMPATIBLE WASTES, OR INCOMPATIBLE WASTES AND MATERIALS WILL BE LANDFILLED, ATTACH AN EXPLANATION OF HOW §§264.313 AND 264.170 WILL BE COMPLIED WITH.
8. IF BULK OR NON-CONTAINERIZED LIQUID WASTE OR WASTE CONTAINING FREE LIQUIDS IS TO BE LANDFILLED, ATTACH AN EXPLANATION OF HOW THE REQUIREMENTS OF CHAPTER 17-30.180(3) WILL BE COMPLIED WITH.
9. IF CONTAINERS OF HAZARDOUS WASTE ARE TO BE LANDFILLED, ATTACH AN EXPLANATION OF HOW THE REQUIREMENTS OF §§264.315 OR 264.316, AS APPLICABLE, WILL BE COMPLIED WITH.
10. ATTACH A COPY OF THE NOTICE THAT HAS BEEN PLACED IN THE DEED OR OTHER INSTRUMENT REQUIRED BY §264.119.
11. ATTACH A WASTE MANAGEMENT PLAN FOR EPA HAZARDOUS WASTE NOS F020, F021, F022, F023, F026, AND F027 DESCRIBING HOW A LANDFILL IS OR WILL BE DESIGNED, CONSTRUCTED, OPERATED, AND MAINTAINED TO MEET THE REQUIREMENTS OF §264.317. THIS SUBMISSION MUST ADDRESS THE FOLLOWING ITEMS AS SPECIFIED IN §264.317:
  - a) THE VOLUME, PHYSICAL, AND CHEMICAL CHARACTERISTICS OF THE WASTES, INCLUDING THEIR POTENTIAL TO MIGRATE THROUGH SOIL OR TO VOLATILIZE OR ESCAPE INTO THE ATMOSPHERE;
  - b) THE ATTENUATIVE PROPERTIES OF UNDERLYING AND SURROUNDING SOILS OR OTHER MATERIALS;
  - c) THE MOBILIZING PROPERTIES OF OTHER MATERIALS CO-DISPOSED WITH THESE WASTES
  - d) THE EFFECTIVENESS OF ADDITIONAL TREATMENT, DESIGN, OR MONITORING TECHNIQUE

## H - INCINERATORS

THE APPLICANT MUST PROVIDE THE FOLLOWING INFORMATION IN ACCORDANCE WITH 40 CFR 264 SUBPART O (§270.19).

1. THE APPLICANT MUST FULFILL THE REQUIREMENTS OF EITHER SECTION a), b), OR c):

a) WHEN SEEKING AN EXEMPTION UNDER §264.340(b) OR (c) (IGNITABLE, CORROSIVE OR REACTIVE WASTES ONLY), ATTACH DOCUMENTATION SHOWING:

- 1) THAT THE WASTE IS LISTED AS A HAZARDOUS WASTE IN PART 261, SUBPART D, SOLELY BECAUSE IT IS IGNITABLE (HAZARD CODE I), CORROSIVE (HAZARD CODE C), OR BOTH; OR
- 2) THAT THE WASTE IS LISTED AS A HAZARDOUS WASTE IN PART 261, SUBPART D, SOLELY BECAUSE IT IS REACTIVE (HAZARD CODE R) FOR CHARACTERISTICS OTHER THAN THOSE LISTED IN §261.23(a)(4) AND (5), AND WILL NOT BE BURNED WHEN OTHER HAZARDOUS WASTES ARE PRESENT IN THE COMBUSTION ZONE; OR
- 3) THAT THE WASTE IS A HAZARDOUS WASTE SOLELY BECAUSE IT POSSESSES THE CHARACTERISTIC OF IGNITABILITY, CORROSIVITY, OR BOTH, AS DETERMINED BY THE TESTS FOR CHARACTERISTICS OF HAZARDOUS WASTES UNDER PART 261, SUBPART C; OR
- 4) THAT THE WASTE IS A HAZARDOUS WASTE SOLELY BECAUSE IT POSSESSES THE REACTIVITY CHARACTERISTICS LISTED IN §261.23(a)(1), (2), (3), (6), (7), OR (8), AND THAT IT WILL NOT BE BURNED WHEN OTHER HAZARDOUS WASTES ARE PRESENT IN THE COMBUSTION ZONE.

b) SUBMIT THE RESULTS OF A TRIAL BURN CONDUCTED IN ACCORDANCE WITH AND INCLUDING ALL THE DETERMINATIONS REQUIRED BY THE FOLLOWING:

- 1) THE TRIAL BURN MUST BE CONDUCTED IN ACCORDANCE WITH A TRIAL BURN PLAN PREPARED BY THE APPLICANT AND APPROVED BY THE DEPARTMENT. THE TRIAL BURN PLAN WILL THEN BECOME A CONDITION OF THE PERMIT. THE TRIAL BURN PLAN WILL INCLUDE THE FOLLOWING INFORMATION:

(a) AN ANALYSIS OF EACH WASTE, OR MIXTURE OF WASTES, TO BE BURNED WHICH INCLUDES:

- (1) HEAT VALUE OF THE WASTE IN THE FORM AND COMPOSITION IN WHICH IT WILL BE BURNED:
- (2) VISCOSITY (IF APPLICABLE), OR DESCRIPTION OF PHYSICAL FORM OF THE WASTE:

- (3) AN IDENTIFICATION OF ANY HAZARDOUS ORGANIC CONSTITUENTS LISTED IN 40 CFR PART 261, APPENDIX VIII, WHICH ARE PRESENT IN THE WASTE TO BE BURNED, EXCEPT THAT THE APPLICANT NEED NOT ANALYZE FOR CONSTITUENTS LISTED IN 40 CFR PART 261, APPENDIX VIII, WHICH WOULD REASONABLY NOT BE EXPECTED TO BE FOUND IN THE WASTE. THE CONSTITUENTS EXCLUDED FROM ANALYSIS MUST BE IDENTIFIED AND THE BASIS FOR THEIR EXCLUSION STATED. THE WASTE ANALYSIS MUST RELY ON ANALYTICAL TECHNIQUES SPECIFIED IN "TEST METHODS FOR THE EVALUATION OF SOLID WASTE, PHYSICAL/CHEMICAL METHODS" (INCORPORATED BY REFERENCE), OR THEIR EQUIVALENT.
  - (4) AN APPROXIMATE QUANTIFICATION OF THE HAZARDOUS CONSTITUENTS IDENTIFIED IN THE WASTE, WITHIN THE PRECISION PRODUCED BY THE ANALYTICAL METHODS SPECIFIED IN "TEST METHODS FOR THE EVALUATION OF SOLID WASTE, PHYSICAL/CHEMICAL METHODS" (INCORPORATED BY REFERENCE), OR THEIR EQUIVALENT.
- (b) A DETAILED ENGINEERING DESCRIPTION OF THE INCINERATOR FOR WHICH THE PERMIT IS SOUGHT, INCLUDING:
- (1) MANUFACTURER'S NAME AND MODEL NUMBER OF INCINERATOR (IF AVAILABLE)
  - (2) TYPE OF INCINERATOR;
  - (3) LINEAR DIMENSIONS OF THE INCINERATOR UNIT INCLUDING THE CROSS SECTIONAL AREA OF COMBUSTION CHAMBER;
  - (4) DESCRIPTION OF THE AUXILIARY FUEL SYSTEM (TYPE/FEED);
  - (5) CAPACITY OF PRIME MOVER;
  - (6) DESCRIPTION OF AUTOMATIC WASTE FEED CUT-OFF SYSTEM(S);

- (7) STACK GAS MONITORING AND POLLUTION CONTROL EQUIPMENT;
  - (8) NOZZLE AND BURNER DESIGN;
  - (9) CONSTRUCTION MATERIALS; AND
  - (10) LOCATION AND DESCRIPTION OF TEMPERATURE, PRESSURE, AND FLOW INDICATING AND CONTROL DEVICES.
- (c) A DETAILED DESCRIPTION OF SAMPLING AND MONITORING PROCEDURES, INCLUDING SAMPLING AND MONITORING LOCATIONS IN THE SYSTEM, THE EQUIPMENT TO BE USED, SAMPLING AND MONITORING FREQUENCY, AND PLANNED ANALYTICAL PROCEDURES FOR SAMPLE ANALYSIS.
  - (d) A DETAILED TEST SCHEDULE FOR EACH WASTE FOR WHICH THE TRIAL BURN IS PLANNED INCLUDING DATE(S), DURATION, QUANTITY OF WASTE TO BE BURNED, AND OTHER FACTORS RELEVANT TO THE DEPARTMENT'S DECISION UNDER PARAGRAPH (4) OF THIS SECTION.
  - (e) A DETAILED TEST PROTOCOL, INCLUDING, FOR EACH WASTE IDENTIFIED, THE RANGES OF TEMPERATURE, WASTE FEED RATE, COMBUSTION GAS VELOCITY, USE OF AUXILIARY FUEL, AND ANY OTHER RELEVANT PARAMETERS THAT WILL BE VARIED TO AFFECT THE DESTRUCTION AND REMOVAL EFFICIENCY OF THE INCINERATOR.
  - (f) A DESCRIPTION OF, AND PLANNED OPERATING CONDITIONS FOR, ANY EMISSION CONTROL EQUIPMENT WHICH WILL BE USED.
  - (g) PROCEDURES FOR RAPIDLY STOPPING WASTE FEED, SHUTTING DOWN THE INCINERATOR, AND CONTROLLING EMISSIONS IN THE EVENT OF AN EQUIPMENT MALFUNCTION.
  - (h) SUCH OTHER INFORMATION AS THE DEPARTMENT REASONABLY FINDS NECESSARY TO DETERMINE WHETHER TO APPROVE THE TRIAL BURN PLAN IN LIGHT OF THE PURPOSES OF THIS PARAGRAPH AND THE CRITERIA IN PARAGRAPH (4) OF THIS SECTION.
- 2) THE DEPARTMENT, IN REVIEWING THE TRIAL BURN PLAN, SHALL EVALUATE THE SUFFICIENCY OF THE INFORMATION PROVIDED AND MAY REQUIRE THE APPLICANT TO SUPPLEMENT THIS INFORMATION, IF NECESSARY, TO ACHIEVE THE PURPOSES OF THIS PARAGRAPH.
  - 3) BASED ON THE WASTE ANALYSIS DATA IN THE TRIAL BURN PLAN, THE DEPARTMENT WILL SPECIFY AS TRIAL PRINCIPAL ORGANIC HAZARDOUS CONSTITUENTS (TRIAL POHC'S), THOSE CONSTITUENTS FOR WHICH DESTRUCTION AND REMOVAL EFFICIENCIES MUST BE CALCULATED DURING THE TRIAL BURN. THESE TRIAL POHC'S WILL BE SPECIFIED BY THE DEPARTMENT BASED ON ITS ESTIMATE OF THE DIFFICULTY OF INCINERATION OF THE CONSTITUENTS IDENTIFIED IN THE WASTE ANALYSIS, THEIR CONCENTRATION OR MASS IN THE WASTE FEED, AND, FOR WASTES LISTED IN 40 CFR PART 261, SUBPART D, THE HAZARDOUS WASTE ORGANIC CONSTITUENT OF CONSTITUENTS IDENTIFIED IN APPENDIX VII OF THAT PART AS THE BASIS FOR LISTING.
  - 4) THE DEPARTMENT SHALL APPROVE A TRIAL BURN PLAN IF IT FINDS THAT:

- (a) THE TRIAL BURN IS LIKELY TO DETERMINE WHETHER THE INCINERATOR PERFORMANCE STANDARD REQUIRED BY §264.343 CAN BE MET.
  - (b) THE TRIAL BURN ITSELF WILL NOT PRESENT AN IMMINENT HAZARD TO HUMAN HEALTH OR THE ENVIRONMENT.
  - (c) THE TRIAL BURN WILL HELP THE DEPARTMENT TO DETERMINE OPERATING REQUIREMENTS TO BE SPECIFIED UNDER §264.345.
  - (d) THE INFORMATION SOUGHT IN PARAGRAPHS (4)(a) AND (c) OF THIS SECTION CANNOT REASONABLY BE DEVELOPED THROUGH OTHER MEANS.
- 5) DURING EACH APPROVED TRIAL BURN (OR AS SOON AFTER THE BURN AS IS PRACTICABLE), THE APPLICANT MUST MAKE THE FOLLOWING DETERMINATIONS:
- (a) A QUANTITATIVE ANALYSIS OF THE TRIAL POHC'S IN THE WASTE FEED TO THE INCINERATOR;
  - (b) A QUANTITATIVE ANALYSIS OF THE EXHAUST GAS FOR THE CONCENTRATION AND MASS EMISSIONS OF THE TRIAL POHC'S, OXYGEN (O<sub>2</sub>) AND HYDROGEN CHLORIDE (HCl);
  - (c) A QUANTITATIVE ANALYSIS OF THE SCRUBBER WATER (IF ANY), ASH RESIDUES, AND OTHER RESIDUES, FOR THE PURPOSE OF ESTIMATING THE FATE OF TRIAL POHC'S;
  - (d) A COMPUTATION OF DESTRUCTION AND REMOVAL EFFICIENCY (DRE), IN ACCORDANCE WITH THE DRE FORMULA SPECIFIED IN §264.343(a);
  - (e) IF THE HCl EMISSION RATE EXCEEDS 1.8 KILOGRAMS OF HCl PER HOUR (4 LBS PER HOUR), A COMPUTATION OF HCl REMOVAL EFFICIENCY, IN ACCORDANCE WITH §264.343(b);
  - (f) A COMPUTATION OF PARTICULATE EMISSIONS, IN ACCORDANCE WITH §264.343(c);
  - (g) AN IDENTIFICATION OF SOURCES OF FUGITIVE EMISSIONS AND THEIR MEANS OF CONTROL;
  - (h) A MEASUREMENT OF AVERAGE, MAXIMUM, AND MINIMUM TEMPERATURES, AND COMBUSTION GAS VELOCITY;
  - (i) A CONTINUOUS MEASUREMENT OF CARBON MONOXIDE (CO) IN THE EXHAUST GAS; AND
  - (j) SUCH OTHER INFORMATION AS THE DEPARTMENT MAY SPECIFY AS NECESSARY TO ENSURE THAT THE TRIAL BURN WILL DETERMINE COMPLIANCE WITH THE PERFORMANCE STANDARD IN §264.343 AND TO ESTABLISH THE OPERATING CONDITIONS REQUIRED BY §264.345 AS NECESSARY TO MEET THAT PERFORMANCE STANDARD.
- 6) THE APPLICANT SHALL SUBMIT TO THE DEPARTMENT A CERTIFICATION THAT THE TRIAL BURN HAS BEEN CARRIED OUT IN ACCORDANCE WITH THE APPROVED TRIAL BURN PLAN, AND THE RESULTS OF ALL THE DETERMINATIONS REQUIRED IN PARAGRAPH (5)(a) OF THIS SECTION. THIS SUBMISSION SHALL BE MADE WITHIN 90 DAYS OF THE COMPLETION OF THE TRIAL BURN, OR LATER IF APPROVED BY THE DEPARTMENT.

- 7) ALL DATA COLLECTED DURING ANY TRIAL BURN MUST BE SUBMITTED TO THE DEPARTMENT FOLLOWING THE COMPLETION OF THE TRIAL BURN.
  - 8) ALL SUBMISSIONS REQUIRED BY THIS PARAGRAPH SHALL BE CERTIFIED ON BEHALF OF THE APPLICANT BY THE SIGNATURE OF A PERSON AUTHORIZED TO SIGN A PERMIT APPLICATION OR A REPORT.
- c) IN LIEU OF A TRIAL BURN, THE APPLICANT MAY SUBMIT THE FOLLOWING INFORMATION:
- 1) AN ANALYSIS OF EACH WASTE OR MIXTURE OF WASTES TO BE BURNED INCLUDING:
    - (a) HEAT VALUE OF THE WASTE IN THE FORM AND COMPOSITION IN WHICH IT WILL BE BURNED;
    - (b) VISCOSITY (IF APPLICABLE), OR DESCRIPTION OF PHYSICAL FORM OF THE WASTE
    - (c) AN IDENTIFICATION OF ANY HAZARDOUS ORGANIC CONSTITUENTS LISTED IN PART 261, APPENDIX VIII, WHICH ARE PRESENT IN THE WASTE TO BE BURNED, EXCEPT THAT THE APPLICANT NEED NOT ANALYZE FOR CONSTITUENTS LISTED IN PART 261, APPENDIX VIII, WHICH WOULD REASONABLY NOT BE EXPECTED TO BE FOUND IN THE WASTE. THE CONSTITUENTS EXCLUDED FROM ANALYSIS MUST BE IDENTIFIED AND THE BASIS FOR THEIR EXCLUSION STATED. THE WASTE ANALYSIS MUST RELY ON ANALYTICAL TECHNIQUES SPECIFIED IN "TEST METHODS FOR THE EVALUATION OF SOLID WASTE, PHYSICAL/CHEMICAL METHODS" (INCORPORATED BY REFERENCE) OR THEIR EQUIVALENT;
    - (d) AN APPROXIMATE QUANTIFICATION OF THE HAZARDOUS CONSTITUENTS IDENTIFIED IN THE WASTE, WITHIN THE PRECISION PRODUCED BY THE ANALYTICAL METHODS SPECIFIED IN "TEST METHODS FOR THE EVALUATION OF SOLID WASTE, PHYSICAL/CHEMICAL METHODS" (INCORPORATED BY REFERENCE); AND
    - (e) A QUANTIFICATION OF THOSE HAZARDOUS CONSTITUENTS IN THE WASTE WHICH MAY BE DESIGNATED AS POHC'S BASED ON DATA SUBMITTED FROM OTHER TRIAL OR OPERATIONAL BURNS WHICH DEMONSTRATE COMPLIANCE WITH THE PERFORMANCE STANDARD IN §264.343.
  - 2) A DETAILED ENGINEERING DESCRIPTION OF THE INCINERATOR, INCLUDING:
    - (a) MANUFACTURER'S NAME AND MODEL NUMBER OF INCINERATOR;
    - (b) TYPE OF INCINERATOR;
    - (c) LINEAR DIMENSION OF INCINERATOR UNIT INCLUDING CROSS SECTIONAL AREA OF COMBUSTION CHAMBER;
    - (d) DESCRIPTION OF AUXILIARY FUEL SYSTEM (TYPE/FEED);
    - (e) CAPACITY OF PRIME MOVER;
    - (f) DESCRIPTION OF AUTOMATIC WASTE FEED CUTOFF SYSTEM(S);
    - (g) STACK GAS MONITORING AND POLLUTION CONTROL MONITORING SYSTEM;
    - (h) NOZZLE AND BURNER DESIGN;
    - (i) CONSTRUCTION MATERIALS: AND



- (j) LOCATION AND DESCRIPTION OF TEMPERATURE, PRESSURE, AND FLOW INDICATING DEVICES AND CONTROL DEVICES.
- 3) A DESCRIPTION AND ANALYSIS OF THE WASTE TO BE BURNED COMPARED WITH THE WASTE FOR WHICH DATA FROM OPERATIONAL OR TRIAL BURNS ARE PROVIDED TO SUPPORT THE CONTENTION THAT A TRIAL BURN IS NOT NEEDED. THE DATA SHOULD INCLUDE THOSE ITEMS LISTED IN THIS PART. THIS ANALYSIS SHOULD SPECIFY THE POHC'S WHICH THE APPLICANT HAS IDENTIFIED IN THE WASTE FOR WHICH A PERMIT IS SOUGHT, AND ANY DIFFERENCES FROM THE POHC'S IN THE WASTE FOR WHICH BURN DATA ARE PROVIDED.
  - 4) THE DESIGN AND OPERATING CONDITIONS OF THE INCINERATOR UNIT TO BE USED, COMPARED WITH THAT FOR WHICH COMPARATIVE BURN DATA ARE AVAILABLE.
  - 5) A DESCRIPTION OF THE RESULTS SUBMITTED FROM ANY PREVIOUSLY CONDUCTED TRIAL BURN(S), INCLUDING:
    - (a) SAMPLING AND ANALYSIS TECHNIQUES USED TO CALCULATE PERFORMANCE STANDARDS IN §264.343;
    - (b) METHODS AND RESULTS OF MONITORING TEMPERATURES, WASTE FEED RATES, CARBON MONOXIDE, AND AN APPROPRIATE INDICATOR OF COMBUSTION GAS VELOCITY (INCLUDING A STATEMENT CONCERNING THE PRECISION AND ACCURACY OF THIS MEASUREMENT); AND
    - (c) THE CERTIFICATION AND RESULTS REQUIRED BY PARAGRAPH (B)(5)(b).
  - 6) THE EXPECTED INCINERATOR OPERATION INFORMATION TO DEMONSTRATE COMPLIANCE WITH §§264.343 AND 264.345, INCLUDING:
    - (a) EXPECTED CARBON MONOXIDE (CO) LEVEL IN THE STACK EXHAUST GAS;
    - (b) WASTE FEED RATE;
    - (c) COMBUSTION ZONE TEMPERATURE;
    - (d) INDICATION OF COMBUSTION GAS VELOCITY;
    - (e) EXPECTED STACK GAS VOLUME, FLOW RATE, AND TEMPERATURE;
    - (f) COMPUTED RESIDENCE TIME FOR WASTE IN THE COMBUSTION ZONE;
    - (g) EXPECTED HYDROCHLORIC ACID REMOVAL EFFICIENCY;
    - (h) EXPECTED FUGITIVE EMISSIONS AND THEIR CONTROL PROCEDURES; AND
    - (i) PROPOSED WASTE FEED CUT-OFF LIMITS BASED ON THE IDENTIFIED SIGNIFICANT OPERATING PARAMETERS.
  - 7) SUCH SUPPLEMENTAL INFORMATION AS THE DEPARTMENT FINDS NECESSARY TO ACHIEVE THE PURPOSES OF THIS PARAGRAPH.

9. IF APPLICABLE, ATTACH A COPY OF THE NOTICE THAT HAS BEEN PLACED IN THE DEED OR OTHER INSTRUMENT REQUIRED BY §264.119.
10. A WASTE MANAGEMENT PLAN FOR EPA HAZARDOUS WASTES NOS. F020, F021, F022, F023, F026, AND F027 DESCRIBING HOW A WASTE PILE THAT IS NOT ENCLOSED, AS DEFINED IN §264.250(c), IS OR WILL BE DESIGNED, CONSTRUCTED, OPERATED, AND MAINTAINED TO MEET THE REQUIREMENTS OF §264.259. THIS SUBMISSION MUST ADDRESS THE FOLLOWING ITEMS AS SPECIFIED IN §264.259:
- a) THE VOLUME, PHYSICAL, AND CHEMICAL CHARACTERISTICS OF THE WASTES TO BE DISPOSED IN THE WASTE PILE, INCLUDING THEIR POTENTIAL TO MIGRATE THROUGH SOIL OR TO VOLATILIZE OR ESCAPE INTO THE ATMOSPHERE;
  - b) THE ATTENUATIVE PROPERTIES OF UNDERLYING AND SURROUNDING SOILS OR OTHER MATERIALS;
  - c) THE MOBILIZING PROPERTIES OF OTHER MATERIALS CO-DISPOSED WITH THESE WASTES; AND
  - d) THE EFFECTIVENESS OF ADDITIONAL TREATMENT, DESIGN, OR MONITORING TECHNIQUES.

## F. - LAND TREATMENT

THE APPLICANT MUST PROVIDE THE FOLLOWING INFORMATION IN ACCORDANCE WITH 40 CFR 264.270.

1. ATTACH A DESCRIPTION OF PLANS TO CONDUCT TREATMENT DEMONSTRATION AS REQUIRED UNDER §264.272. THE DESCRIPTION MUST INCLUDE THE FOLLOWING INFORMATION:

- a) THE WASTES FOR WHICH THE DEMONSTRATION WILL BE MADE AND THE POTENTIAL HAZARDOUS CONSTITUENTS IN THE WASTES;
- b) THE DATA SOURCES TO BE USED TO MAKE THE DEMONSTRATION (e.g., LITERATURE LABORATORY DATA, FIELD DATA, OR OPERATING DATA);
- c) ANY SPECIFIC LABORATORY OR FIELD TEST THAT WILL BE CONDUCTED, INCLUDING:
  - 1) THE TYPE OF TEST (e.g., COLUMN LEACHING, DEGRADATION);
  - 2) MATERIALS AND METHODS, INCLUDING ANALYTICAL PROCEDURES;
  - 3) EXPECTED TIME FOR COMPLETION;
  - 4) CHARACTERISTICS OF THE UNIT THAT WILL BE SIMULATED IN THE DEMONSTRATION, INCLUDING TREATMENT ZONE CHARACTERISTICS, CLIMATIC CONDITIONS, AND OPERATING PRACTICES.

2. ATTACH A DESCRIPTION OF A LAND TREATMENT PROGRAM, AS REQUIRED UNDER §264.271. INFORMATION MUST BE SUBMITTED WITH THE PLANS FOR THE TREATMENT DEMONSTRATION, A UPDATED FOLLOWING THE TREATMENT DEMONSTRATION. THE LAND TREATMENT PROGRAM MUST ADDRESS THE FOLLOWING ITEMS:

- a) THE WASTES TO BE LAND TREATED;
- b) DESIGN MEASURES AND OPERATING PRACTICES NECESSARY TO MAXIMIZE TREATMENT ACCORDANCE WITH §264.273(a) INCLUDING:
  - 1) WASTE APPLICATION METHOD AND RATE;
  - 2) MEASURES TO CONTROL SOIL pH;
  - 3) ENHANCEMENT OF MICROBIAL OR CHEMICAL REACTIONS;
  - 4) CONTROL OF MOISTURE CONTENT.
- c) PROVISIONS FOR UNSATURATED ZONE MONITORING, INCLUDING:
  - 1) SAMPLING EQUIPMENT, PROCEDURES, AND FREQUENCY;
  - 2) PROCEDURES FOR SELECTING SAMPLING LOCATIONS;
  - 3) ANALYTICAL PROCEDURES;
  - 4) CHAIN OF CUSTODY CONTROL;
  - 5) PROCEDURES FOR ESTABLISHING BACKGROUND VALUES;
  - 6) STATISTICAL METHODS FOR INTERPRETING RESULTS;
  - 7) THE JUSTIFICATION FOR ANY HAZARDOUS CONSTITUENTS RECOMMENDED FOR SELECTION AS PRINCIPAL HAZARDOUS CONSTITUENTS, IN ACCORDANCE WITH CRITERIA FOR SUCH SELECTION IN §265.278(a).
- d) A LIST OF HAZARDOUS CONSTITUENTS REASONABLY EXPECTED TO BE IN, OR DERIVED FROM, THE WASTES TO BE LAND TREATED BASED ON WASTE ANALYSIS PERFORMED PURSUANT TO §264.13.
- e) THE PROPOSED DIMENSIONS OF THE TREATMENT ZONE.

3. ATTACH A DESCRIPTION OF HOW THE UNIT IS OR WILL BE DESIGNED, CONSTRUCTED, OPERATED, AND MAINTAINED IN ORDER TO MEET THE REQUIREMENTS OF §264.273. THIS SUBMISSION MUST ADDRESS THE FOLLOWING ITEMS:
  - a) CONTROL OF RUN-ON;
  - b) COLLECTION AND CONTROL OF RUN-OFF;
  - c) MINIMIZATION OF RUN-OFF OF HAZARDOUS CONSTITUENTS FROM THE TREATMENT ZONE;
  - d) MANAGEMENT OF COLLECTION AND HOLD FACILITIES ASSOCIATED WITH RUN-ON AND RUN-OFF CONTROL SYSTEMS;
  - e) PERIODIC INSPECTION OF THE UNIT. THIS INFORMATION SHOULD INCLUDE A COPY OF THE INSPECTION PROCEDURES REQUIRED UNDER §264.15; --
  - f) CONTROL OF WIND DISPERSAL OF PARTICULATE MATTER, IF APPLICABLE.
4. IF FOOD-CHAINS CROPS ARE TO BE GROWN IN OR ON THE TREATMENT ZONE OF THE LAND TREATMENT UNIT, ATTACH A DESCRIPTION OF HOW THE DEMONSTRATION REQUIRED UNDER §264.276(a) WILL BE CONDUCTED INCLUDING:
  - a) CHARACTERISTICS OF THE FOOD-CHAIN CROP FOR WHICH THE DEMONSTRATION WILL BE MADE;
  - b) CHARACTERISTICS OF THE WASTE, TREATMENT ZONE, AND WASTE APPLICATION METHOD AND RATE TO BE USED IN THE DEMONSTRATION;
  - c) PROCEDURES FOR CROP GROWTH, SAMPLE COLLECTION, SAMPLE ANALYSIS, AND DATA EVALUATION;
  - d) CHARACTERISTICS OF THE COMPARISON CROP INCLUDING THE LOCATION AND CONDITIONS UNDER WHICH IT WAS OR WILL BE GROWN.
5. IF FOOD-CHAIN CROPS ARE TO BE GROWN, AND CADMIUM IS PRESENT IN THE LAND-TREATED WASTE, ATTACH A DESCRIPTION OF HOW THE REQUIREMENTS OF §264.276(b) WILL BE COMPLIED WITH.
6. A DESCRIPTION OF THE VEGETATIVE COVER TO BE APPLIED TO CLOSED PORTIONS OF THE FACILITY, AND A PLAN FOR MAINTAINING SUCH COVER DURING THE POST-CLOSURE CARE PERIOD, AS REQUIRED UNDER §264.280(a)(8) AND §264.280(c)(2). THIS INFORMATION SHOULD INCLUDE THE CLOSURE PLAN AND, WHERE APPLICABLE, THE POST-CLOSURE CARE PLAN REQUIRED UNDER §§264.112 AND 264.118.
7. IF IGNITABLE OR REACTIVE WASTES WILL BE PLACED IN OR ON THE TREATMENT ZONE, AN EXPLANATION OF HOW THE REQUIREMENTS OF §§264.281 AND 264.17 WILL BE COMPLIED WITH.
8. IF INCOMPATIBLE WASTES, OR INCOMPATIBLE WASTES AND MATERIALS, WILL BE PLACED IN OR ON THE SAME TREATMENT ZONE, AND EXPLANATION OF HOW §§265.282 AND 264.17 WILL BE COMPLIED WITH.

- 8) WASTE ANALYSIS DATA, INCLUDING THAT SUBMITTED IN PARAGRAPH(1) OF THIS SECTION, SUFFICIENT TO ALLOW THE DEPARTMENT TO SPECIFY AS PERMIT PRINCIPAL ORGANIC HAZARDOUS CONSTITUENTS (PERMIT POHC'S) THOSE CONSTITUENTS FOR WHICH DESTRUCTION AND REMOVAL EFFICIENCIES WILL BE REQUIRED.
- 9) THE DEPARTMENT SHALL APPROVE A PERMIT APPLICATION WITHOUT A TRIAL BURN IF IT FINDS THAT:
  - (a) THE WASTES ARE SUFFICIENTLY SIMILAR; AND
  - (b) THE INCINERATOR UNITS ARE SUFFICIENTLY SIMILAR, AND THE DATA FROM OTHER TRIAL BURNS ARE ADEQUATE TO SPECIFY (UNDER §264.345) OPERATING CONDITIONS THAT WILL ENSURE THAT THE PERFORMANCE STANDARDS IN §264.343 WILL BE MET BY THE INCINERATOR.
2. ATTACH A COPY OF THE INSPECTION SCHEDULE WHICH DEMONSTRATES COMPLIANCE WITH §264.15 (GENERAL INSPECTION REQUIREMENTS). UNLESS EXEMPTED IN ACCORDANCE WITH §264.340, INCLUDE A DEMONSTRATION OF COMPLIANCE WITH §264.347 (MONITORING AND INSPECTIONS).
3. ATTACH A COPY OF THE CLOSURE PLAN AS REQUIRED IN §§264.112 AND 264.351.

## I. - THERMAL TREATMENT

THE APPLICANT MUST PROVIDE THE FOLLOWING INFORMATION IN ACCORDANCE WITH 40 CFR 265 SUBPART P.

1. ATTACH A DESCRIPTION OF THE DESIGN AND OPERATION PROCEDURES WHICH DEMONSTRATE COMPLIANCE WITH §265.373 (GENERAL OPERATING REQUIREMENTS).
2. ATTACH A COPY OF THE PROCEDURES WHICH DEMONSTRATE COMPLIANCE WITH §265.377 (MONITORING AND INSPECTIONS) AND §265.15 (GENERAL INSPECTION REQUIREMENTS).
3. ATTACH A WASTE ANALYSIS PLAN WHICH INCLUDES THE ANALYSIS OF ANY WASTE WHICH HAS NOT PREVIOUSLY BEEN TREATED IN THE THERMAL PROCESS IN ORDER TO ESTABLISH STEADY STATE (NORMAL) OR OTHER APPROPRIATE (FOR A NON-CONTINUOUS PROCESS) OPERATING CONDITIONS (INCLUDING WASTE AUXILIARY FUEL FEED) AND TO DETERMINE THE TYPE OF POLLUTANTS WHICH MIGHT BE LIMITED. AT A MINIMUM, THE ANALYSIS MUST DETERMINE:
  - a) HEATING VALUE OF THE WASTE;
  - b) HALOGEN CONTENT AND SULFUR CONTENT IN THE WASTE; AND
  - c) CONCENTRATIONS IN THE WASTE OF LEAD AND MERCURY, UNLESS THE OWNER OR OPERATOR HAS WRITTEN, DOCUMENTED DATA THAT SHOW THAT THE ELEMENTS ARE NOT PRESENT.
4. ATTACH A DESCRIPTION OF THE DESIGN AND OPERATION PROCEDURES WHICH DEMONSTRATE COMPLIANCE WITH §§265.382 (OPEN BURNING; WASTE EXPLOSIVES), AND 265.17.
5. ATTACH A COPY OF THE CLOSURE PLAN AS REQUIRED BY §§265.112 AND 265.381.

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J. - CHEMICAL, PHYSICAL AND BIOLOGICAL TREATMENT

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THE APPLICANT MUST PROVIDE THE FOLLOWING INFORMATION IN ACCORDANCE WITH 40 CFR 265 SUBPART Q.

1. ATTACH A DESCRIPTION OF THE DESIGN AND OPERATION PROCEDURES WHICH DEMONSTRATE COMPLIANCE WITH §265.401 (GENERAL OPERATING REQUIREMENTS).
2. ATTACH A COPY OF THE INSPECTION PROCEDURES REQUIRED IN §§265.403 AND 265.15.
3. FOR FACILITIES WHICH TREAT A WASTE WHICH IS SUBSTANTIALLY DIFFERENT FROM WASTES PREVIOUSLY TREATED, OR USE A SUBSTANTIALLY DIFFERENT PROCESS FROM THAT PREVIOUSLY USED, ATTACH WASTE ANALYSES AND TRIAL TREATMENT TESTS, OR ATTACH DOCUMENTED INFORMATION ON SIMILAR TREATMENT.
4. ATTACH A DESCRIPTION OF THE OPERATION PROCEDURES WHICH DEMONSTRATE COMPLIANCE WITH §265.405 (SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTES), §265.406 (SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTES), AND §265.17.
5. ATTACH A COPY OF THE CLOSURE PLAN AS REQUIRED BY §§265.112 AND 265.404.

## K. - CLOSURE

A FACILITY WHICH HAS OPERATED A HAZARDOUS WASTE MANAGEMENT UNIT, EITHER BY HAVING QUALIFIED FOR OR RECEIVED A TEMPORARY OPERATING PERMIT, THAT INTENDS TO CLOSE THE UNIT, MAY DEMONSTRATE CLEAN CLOSURE IN ACCORDANCE WITH 40 CFR 264 OR 265 STANDARDS. HOWEVER, IF THE FACILITY CAN NOT DEMONSTRATE CLEAN CLOSURE OF THE REGULATED UNIT(S), THEN THESE UNIT(S) SHALL BE CLOSED TO MEET THE REQUIREMENTS OF 40 CFR 264.

THE APPLICANT MUST PROVIDE THE FOLLOWING INFORMATION IN ACCORDANCE WITH 40 CFR 264 SUBPART G (§270.14(b)(13)).

1. ATTACH THE FOLLOWING INFORMATION TO MEET THE CLOSURE PERFORMANCE STANDARD OF 40 CFR 264.111, WHICH REQUIRES CONTROLLING, MINIMIZING OR ELIMINATING TO THE EXTENT NECESSARY TO PROTECT HUMAN HEALTH AND THE ENVIRONMENT, POST-CLOSURE ESCAPE OF HAZARDOUS WASTE, HAZARDOUS CONSTITUENTS, LEACHATE, CONTAMINATED RUN-OFF, OR HAZARDOUS WASTE DECOMPOSITION PRODUCTS TO THE GROUNDWATER, SURFACE WATERS OR TO THE ATMOSPHERE (THIS PLAN MUST INCLUDE ALL OF THE INFORMATION REQUIRED UNDER PART II SECTIONS A THROUGH I OF THIS APPLICATION) (270.14(b)(13)):

- a) A DESCRIPTION OF HOW EACH HAZARDOUS WASTE MANAGEMENT UNIT AT THE FACILITY WILL BE CLOSED IN ACCORDANCE WITH 40 CFR 264.111;
- b) A DESCRIPTION OF HOW FINAL CLOSURE OF THE FACILITY WILL BE CONDUCTED IN ACCORDANCE WITH 40 CFR 264.111. THE DESCRIPTION MUST IDENTIFY THE MAXIMUM EXTENT OF THE OPERATIONS WHICH WILL BE UNCLOSED DURING THE ACTIVE LIFE OF THE FACILITY;
- c) AN ESTIMATE OF THE MAXIMUM INVENTORY OF WASTES EVER ONSITE OVER THE ACTIVE LIFE OF THE FACILITY AND A DETAILED DESCRIPTION OF THE METHODS TO BE USED DURING PARTIAL CLOSURES AND FINAL CLOSURE, INCLUDING, BUT NOT LIMITED TO, METHODS FOR REMOVING, TRANSPORTING, TREATING, STORING, OR DISPOSING OF ALL HAZARDOUS WASTES, AND IDENTIFICATION OF THE TYPE(S) OF THE OFFSITE HAZARDOUS WASTE MANAGEMENT UNITS TO BE USED, IF APPLICABLE;
- d) A DETAILED DESCRIPTION OF THE STEPS NEEDED TO REMOVE OR DECONTAMINATE ALL HAZARDOUS WASTE RESIDUES AND CONTAMINATED CONTAINMENT SYSTEM COMPONENTS, EQUIPMENT, STRUCTURES, AND SOILS DURING PARTIAL AND FINAL CLOSURE, INCLUDING BUT NOT LIMITED TO, PROCEDURES FOR CLEANING EQUIPMENT AND REMOVING CONTAMINANTS FROM SOILS, METHODS FOR SAMPLING AND TESTING SURROUNDING SOILS, AND CRITERIA FOR DETERMINING THE EXTENT OF DECONTAMINATION REQUIRED TO SATISFY THE CLOSURE PERFORMANCE STANDARD;
- e) A DETAILED DESCRIPTION OF OTHER ACTIVITIES NECESSARY DURING THE CLOSURE PERIOD TO ENSURE THAT ALL PARTIAL CLOSURES AND FINAL CLOSURE SATISFY THE CLOSURE PERFORMANCE STANDARDS, INCLUDING, BUT NOT LIMITED TO, GROUNDWATER MONITORING, LEACHATE COLLECTION, AND RUN-ON AND RUN-OFF CONTROL;
- f) A SCHEDULE FOR CLOSURE OF EACH HAZARDOUS WASTE MANAGEMENT UNIT AND FOR FINAL CLOSURE OF THE FACILITY. THE SCHEDULE MUST INCLUDE, AT A MINIMUM, THE TOTAL TIME REQUIRED TO CLOSE EACH HAZARDOUS WASTE MANAGEMENT UNIT AND THE TIME REQUIRED FOR INTERVIEWING CLOSURE ACTIVITIES WHICH WILL ALLOW TRACKING OF PROGRESS OF PARTIAL AND FINAL CLOSURE.



- g) FOR FACILITIES THAT USE TRUST FUNDS TO ESTABLISH FINANCIAL ASSURANCE UNDER 264.143 OR 264.145 AND THAT ARE EXPECTED TO CLOSE PRIOR TO THE EXPIRATION OF THE PERMIT, AN ESTIMATE OF THE EXPECTED YEAR OF FINAL CLOSURE.
- 2. ATTACH, IF REQUIRED, A POST-CLOSURE PLAN IN ACCORDANCE WITH 264.118 AND 264.197 WHICH MUST CONTAIN THE FOLLOWING INFORMATION FOR EACH HAZARDOUS WASTE MANAGEMENT UNIT AT THE FACILITY SUBJECT TO THE REQUIREMENTS OF PART 264 (THIS PLAN MUST INCLUDE ALL INFORMATION REQUIRED BY PART II SECTIONS A THROUGH I OF THIS APPLICATION) (270.14(b)(13)):
  - a) THE ACTIVITIES WHICH WILL BE CARRIED ON AFTER CLOSURE FOR EACH DISPOSAL UNIT AND THE FREQUENCY OF THESE ACTIVITIES;
  - b) A DESCRIPTION OF THE PLANNED MONITORING ACTIVITIES AND FREQUENCIES AT WHICH THEY WILL BE PERFORMED TO COMPLY WITH SUBPARTS F, K, L, M, AND N OF PART 264 DURING THE POST-CLOSURE CARE PERIOD;
  - c) A DESCRIPTION OF THE PLANNED MAINTENANCE ACTIVITIES, AND FREQUENCIES AT WHICH THEY WILL BE PERFORMED TO ENSURE THE INTEGRITY OF THE CAP AND FINAL COVER OR OTHER CONTAINMENT SYSTEMS IN ACCORDANCE WITH THE REQUIREMENTS OF SUBPARTS K, L, M AND N OF PART 264 AND TO ENSURE THE FUNCTION OF THE MONITORING EQUIPMENT IN ACCORDANCE WITH THE REQUIREMENTS OF SUBPARTS F, K, L, M, AND N OF PART 264; AND
  - d) THE NAME, ADDRESS, AND PHONE NUMBER OF THE PERSON OR OFFICE TO CONTACT ABOUT THE HAZARDOUS WASTE DISPOSAL UNIT OR FACILITY DURING THE POST-CLOSURE CARE PERIOD.
- 3. IF CLOSURE OR POST-CLOSURE PLANS HAVE BEEN APPROVED BY THE DEPARTMENT AS PART OF A TOP, CONSTRUCTION, OR OPERATION PERMIT APPLICATION, ATTACH A COPY OF A CLOSURE AND POST-CLOSURE PLAN AS REQUIRED BY 264.112 AND 264.118. ALSO, EITHER;
  - a) ATTACH A CERTIFICATION STATING THAT NO CHANGES HAVE BEEN MADE TO THE PLANS WHICH HAVE BEEN PROVIDED TO THE DEPARTMENT; OR
  - b) PROVIDE AN AMENDED PLAN SHOWING ALL THE CHANGES WHICH HAVE BEEN MADE, OR HAVE BEEN PROPOSED, TO THE PLANS WHICH HAVE BEEN PROVIDED TO THE DEPARTMENT.

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L. - COMPLIANCE SCHEDULE

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1. THE APPLICANT MAY, AT HIS OPTION, PROPOSE A COMPLIANCE SCHEDULE FOR ACHIEVING COMPLIANCE WITH ANY STANDARDS THAT HAVE NOT BEEN MET AT THIS TIME. THE DEPARTMENT WILL TAKE THIS PROPOSAL INTO CONSIDERATION WHEN DEVELOPING A COMPLIANCE SCHEDULE.

## M. - GROUND WATER PROTECTION

THE APPLICANT MUST PROVIDE THE FOLLOWING INFORMATION IN ACCORDANCE WITH 40 CFR 264 SUBPART F (§270.14(c)).

THE FOLLOWING ADDITIONAL INFORMATION REGARDING PROTECTION OF GROUND WATER IS REQUIRED FROM OWNERS OR OPERATORS OF HAZARDOUS WASTE SURFACE IMPOUNDMENTS, PILES, LAND TREATMENT UNITS, AND LANDFILLS EXCEPT AS OTHERWISE PROVIDED IN §264.90(b) OR SECTION 17-30.180(7), FAC:

1. A SUMMARY OF THE GROUND WATER MONITORING DATA OBTAINED DURING THE INTERIM STATUS PERIOD UNDER §§265.90 THROUGH 265.94, WHERE APPLICABLE.
2. IDENTIFICATION OF THE UPPERMOST AQUIFER AND AQUIFERS HYDRAULICALLY INTERCONNECTED BENEATH THE FACILITY PROPERTY, INCLUDING GROUND WATER FLOW DIRECTION AND RATE, AND THE BASIS FOR SUCH IDENTIFICATION (i.e., THE INFORMATION OBTAINED FROM HYDROGEOLOGIC INVESTIGATIONS OF THE FACILITY AREA INCLUDING GROUNDWATER CONTOUR MAPS).
3. ON THE TOPOGRAPHIC MAP REQUIRED UNDER PART II-A-1, A DELINEATION OF THE WASTE MANAGEMENT AREA, THE PROPERTY BOUNDARY, THE PROPOSED "POINT OF COMPLIANCE" AS DEFINED UNDER §264.95, THE PROPOSED LOCATION OF GROUND WATER MONITORING WELLS AS REQUIRED UNDER §264.97 AND, TO THE EXTENT POSSIBLE, THE INFORMATION REQUIRED IN (2) ABOVE.
4. A DESCRIPTION OF ANY PLUME OF CONTAMINATION THAT HAS ENTERED THE GROUND WATER FROM A REGULATED UNIT AT THE TIME THAT THE APPLICATION IS SUBMITTED THAT:
  - a) DELINEATES THE VERTICAL AND HORIZONTAL EXTENT OF THE PLUME ON THE TOPOGRAPHIC MAP REQUIRED UNDER PART II-A-1;
  - b) IDENTIFIES THE CONCENTRATION OF EACH APPENDIX VIII OF PART 261 CONSTITUENT OR DEPARTMENT APPROVED EQUIVALENT THROUGHOUT THE PLUME OR IDENTIFIES THE MAXIMUM CONCENTRATIONS OF EACH APPENDIX VIII CONSTITUENT OR DEPARTMENT APPROVED EQUIVALENT IN THE PLUME.
5. DETAILED PLANS AND AN ENGINEERING REPORT DESCRIBING THE PROPOSED GROUND WATER MONITORING PROGRAM TO BE IMPLEMENTED TO MEET THE REQUIREMENTS OF §264.97.
6. IF THE PRESENCE OF HAZARDOUS CONSTITUENTS HAS NOT BEEN DETECTED IN THE GROUND WATER AT THE TIME OF PERMIT APPLICATION, THE OWNER OR OPERATOR MUST SUBMIT SUFFICIENT INFORMATION, SUPPORTING DATA, AND ANALYSES TO ESTABLISH A DETECTION MONITORING PROGRAM WHICH MEETS THE REQUIREMENTS OF §264.98. THIS SUBMISSION MUST ADDRESS THE FOLLOWING ITEMS AS SPECIFIED UNDER §264.98:
  - a) A PROPOSED LIST OF INDICATOR PARAMETERS, WASTE CONSTITUENTS, OR REACTION PRODUCTS THAT CAN PROVIDE A RELIABLE INDICATION OF THE PRESENCE OF HAZARDOUS CONSTITUENTS IN THE GROUND WATER;
  - b) A PROPOSED GROUND WATER MONITORING SYSTEM;
  - c) BACKGROUND VALUES FOR EACH PROPOSED MONITORING PARAMETER OR CONSTITUENT, OR PROCEDURES TO CALCULATE SUCH VALUES;
  - d) A DESCRIPTION OF PROPOSED SAMPLING, ANALYSIS AND STATISTICAL COMPARISON PROCEDURES TO BE UTILIZED IN EVALUATING GROUND WATER MONITORING DATA.

7. IF THE PRESENCE OF HAZARDOUS CONSTITUENTS HAS BEEN DETECTED IN THE GROUND WATER AT THE POINT OF COMPLIANCE AT THE TIME OF PERMIT APPLICATION, THE OWNER OR OPERATOR MUST SUBMIT SUFFICIENT INFORMATION, SUPPORTING DATA, AND ANALYSES TO ESTABLISH A COMPLIANCE MONITORING PROGRAM WHICH MEETS THE REQUIREMENTS OF §264.99. THE OWNER OR OPERATOR MUST ALSO SUBMIT AN ENGINEERING FEASIBILITY PLAN FOR A CORRECTIVE ACTION PROGRAM NECESSARY TO MEET THE REQUIREMENTS OF §264.100, AND CHAPTER 17-30.180(4) EXCEPT AS PROVIDED IN §264.98(h)(5). TO DEMONSTRATE COMPLIANCE WITH §264.99, THE OWNER OR OPERATOR MUST ADDRESS THE FOLLOWING ITEMS:

- a) A DESCRIPTION OF THE WASTES PREVIOUSLY HANDLED AT THE FACILITY;
- b) A CHARACTERIZATION OF THE CONTAMINATED GROUND WATER, INCLUDING CONCENTRATIONS OF HAZARDOUS CONSTITUENTS;
- c) A LIST OF HAZARDOUS CONSTITUENTS FOR WHICH COMPLIANCE MONITORING WILL BE UNDERTAKEN IN ACCORDANCE WITH §§264.97 AND 264.99;
- d) PROPOSED CONCENTRATION LIMITS FOR EACH HAZARDOUS CONSTITUENT, BASED ON THE CRITERIA SET FORTH IN §264.94(a), INCLUDING A JUSTIFICATION FOR ESTABLISHING ANY ALTERNATE CONCENTRATION LIMITS;
- e) DETAILED PLANS AND AN ENGINEERING REPORT DESCRIBING THE PROPOSED GROUND WATER MONITORING SYSTEM, IN ACCORDANCE WITH THE REQUIREMENTS OF §264.97;
- f) A DESCRIPTION OF PROPOSED SAMPLING, ANALYSIS AND STATISTICAL COMPARISON PROCEDURES TO BE UTILIZED IN EVALUATING GROUND WATER MONITORING DATA.

8. IF HAZARDOUS CONSTITUENTS HAVE BEEN MEASURED IN THE GROUND WATER WHICH EXCEED THE CONCENTRATION LIMITS ESTABLISHED UNDER §264.94 TABLE 1, OR IF GROUND WATER MONITORING CONDUCTED AT THE TIME OF PERMIT APPLICATION UNDER §§265.90-265.94 AT THE WASTE BOUNDARY INDICATES THE PRESENCE OF HAZARDOUS CONSTITUENTS FROM THE FACILITY IN GROUND WATER OVER BACKGROUND CONCENTRATIONS, THE OWNER OR OPERATOR MUST SUBMIT SUFFICIENT INFORMATION, SUPPORTING DATA, AND ANALYSES TO ESTABLISH A CORRECTIVE ACTION PROGRAM WHICH MEETS THE REQUIREMENTS OF §§264.100 AND 264.101, AND CHAPTER 17-30.180(4). HOWEVER, AN OWNER OR OPERATOR IS NOT REQUIRED TO SUBMIT INFORMATION TO ESTABLISH A CORRECTIVE ACTION PROGRAM IF HE DEMONSTRATES TO THE DEPARTMENT THAT ALTERNATE CONCENTRATION LIMITS WILL PROTECT HUMAN HEALTH AND THE ENVIRONMENT AFTER CONSIDERING THE CRITERIA LISTED IN §264.94(b). AN OWNER OR OPERATOR WHO IS NOT REQUIRED TO ESTABLISH A CORRECTIVE ACTION PROGRAM FOR THIS REASON MUST INSTEAD SUBMIT SUFFICIENT INFORMATION TO ESTABLISH A COMPLIANCE MONITORING PROGRAM WHICH MEETS THE REQUIREMENTS OF §264.99 AND (6) ABOVE. TO DEMONSTRATE COMPLIANCE WITH §§264.100 AND 264.101 AND CHAPTER 17-30.180(4), THE OWNER OR OPERATOR MUST ADDRESS AT A MINIMUM, THE FOLLOWING ITEMS:

- a) A CHARACTERIZATION OF THE CONTAMINATED GROUND WATER, INCLUDING CONCENTRATIONS OF HAZARDOUS CONSTITUENTS;
- b) THE CONCENTRATION LIMIT FOR EACH HAZARDOUS CONSTITUENT FOUND IN THE GROUND WATER AS SET FORTH IN §264.94;
- c) DETAILED PLANS AND AN ENGINEERING REPORT DESCRIBING THE CORRECTIVE ACTION TO BE TAKEN;
- d) A DESCRIPTION OF HOW THE GROUND WATER MONITORING PROGRAM WILL ASSESS THE ADEQUACY OF THE CORRECTIVE ACTION.
- e) A DESCRIPTION OF THE WASTES PREVIOUSLY HANDLED AT THE FACILITY.

9. CHAPTERS 17-3 and 17-4, FAC, REQUIREMENTS

IN ACCORDANCE WITH SECTION 17-30.180(4)(c) HAZARDOUS WASTE FACILITIES WHICH MAY IMPACT THE GROUND WATER MUST ALSO COMPLY WITH THE GROUND WATER PROVISIONS OF CHAPTERS 17-3 AND 17-4. THE DEPARTMENT'S SUPPLEMENTAL GROUND WATER MONITORING FORM (DER FORM 17-1.216(3)), MUST BE COMPLETED AS PART OF THE HAZARDOUS WASTE PERMIT APPLICATION UNLESS THE DEPARTMENT MAKES THE DETERMINATION THAT THE FACILITY'S EXISTING HAZARDOUS WASTE GROUND WATER MONITORING PROGRAM IS IN SUBSTANTIAL COMPLIANCE WITH SECTION 17-4.245(6).

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N. - RESEARCH, DEVELOPMENT AND DEMONSTRATION

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1. THE APPLICANT SHOULD SUBMIT, A LETTER TO THE DEPARTMENT SUMMARIZING THE PROPOSED RESEARCH PRIOR TO SUBMITTING THE FORMAL APPLICATION SO THAT THE DEPARTMENT MAY, ACCORDANCE WITH 17-30.330(2), DETERMINE IF ANY OF THE REQUIREMENTS OF THE APPLICATION CAN BE WAIVED. THIS LETTER SHOULD CONTAIN:
  - a) THE PURPOSE OF THE RESEARCH;
  - b) AN EXPLANATION OF WHY THE RESEARCH IS INNOVATIVE AND EXPERIMENTAL;
  - c) A SUMMARY OF THE RESEARCH OBJECTIVES.
2. AS PART OF THE FORMAL APPLICATION, THE APPLICANT SHOULD SUBMIT THE FOLLOWING INFORMATION:
  - a) THE PURPOSE OF THIS PROJECT.
  - b) AN EXPLANATION AS TO WHY THE PROPOSED ACTIVITY IS EXPERIMENTAL AND INNOVATIVE.
  - c) A GENERAL DESCRIPTION OF THE PROPOSED ACTIVITY.
  - d) THE ESTIMATED TIME OF OPERATION FOR THE EXPERIMENTAL ACTIVITIES.
  - e) ANY INFORMATION ON THE EXPECTED PERFORMANCE OF THE UNIT.
  - f) A DESCRIPTION OF PERFORMANCE DATA THAT MAY HAVE BEEN PREVIOUSLY GENERATED FROM THE OPERATION OF THE UNIT.
3. MONITORING AND INSPECTION REQUIREMENTS SHOULD BE ESTABLISHED AT A LEVEL CONSISTENT WITH THE PROPOSED ACTIVITY IN ORDER TO ASSURE PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT.
4. REPORTING AND RECORD KEEPING SHOULD BE PROPOSED IN A MANNER WHICH WILL SUFFICIENTLY PROVIDE THE DEPARTMENT WITH DATA ABOUT THE OPERATING EFFICIENCY OF THE RD&D ACTIVITY. TIME FRAMES FOR THE SUBMISSION OF DATA SHOULD BE PROPOSED AND SHOULD BE AT A FREQUENCY ADEQUATE TO ALLOW PROPER DEPARTMENT OVERSIGHT OF THE EXPERIMENTAL ACTIVITY.
5. PERSONNEL QUALIFICATIONS SHOULD BE GIVEN AND BE CONSISTENT WITH THE PROPOSED EXPERIMENTAL ACTIVITY. THE PERSONNEL RESPONSIBLE FOR CONDUCTING AND MANAGING THE EXPERIMENTAL TESTING SHOULD BE TECHNICALLY COMPETENT TO ASSURE THAT ANY SITUATIONS WHICH ARISE AS A RESULT OF THE EXPERIMENTAL ACTIVITY WILL BE PROPERLY HANDLED.
6. A CLOSURE PLAN SHOULD BE PREPARED IN ACCORDANCE WITH THE APPROPRIATE SECTIONS OF PART II OF THIS APPLICATION.

0. - EXPOSURE INFORMATION (§270.10(j))

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THE APPLICANT MUST PROVIDE THE FOLLOWING INFORMATION, IF THE FACILITY HAS A SURFACE IMPOUNDMENT OR A LANDFILL:

1. REASONABLY FORESEEABLE POTENTIAL RELEASES FROM BOTH NORMAL OPERATIONS AND ACCIDENTS AT THE UNIT, INCLUDING RELEASES ASSOCIATED WITH TRANSPORTATION TO OR FROM THE UNIT.
2. THE POTENTIAL PATHWAYS OF HUMAN EXPOSURE TO HAZARDOUS WASTES OR CONSTITUENTS RESULTING FROM THE RELEASE DESCRIBED UNDER PARAGRAPH (1).
3. THE POTENTIAL MAGNITUDE AND NATURE OF THE HUMAN EXPOSURE RESULTING FROM SUCH RELEASES.

P. - INFORMATION REGARDING POTENTIAL RELEASES FROM SOLID WASTE MANAGEMENT UNITS

FACILITY NAME: Universal Waste & Transit Inc.  
 EPA I.D. NUMBER: FLD-981-932-494  
 LOCATION: City Tampa  
 State Florida

1. Are there any of the following solid waste management units (existing or closed) at your facility? NOTE - DO NOT INCLUDE HAZARDOUS WASTES UNITS CURRENTLY SHOWN IN YOUR PART B APPLICATION

	YES	NO
• Landfill		X
• Surface Impoundment		X
• Land Farm		X
• Waste Pile		X
• Incinerator		X
• Storage Tank (Above Ground)		X
• Storage Tank (Underground)		X
• Container Storage Area		X
• Injection Wells		X
• WasteWater Treatment Units		X
• Transfer Stations		X
• Waste Recycling Operations		X
• Land Treatment Facility		X

2. If there are "Yes" answers to any of the items in Number 1 above, please provide a description of the wastes that were stored, treated or disposed of in each unit. In particular please focus on whether or not the wastes would be considered as hazardous wastes or hazardous constituents under RCRA. Also include any available data on quantities or volumes of wastes disposed of and the dates of disposal. Please also provide a description of each unit and include capacity, dimensions, location at facility, provide a site plan if available.

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NOTE: Hazardous waste are those identified in 40 CFR Part 261. Hazardous constituents are those listed in Appendix VIII of 40 CFR Part 261.



3. For the units noted in Number 1 above and also those hazardous waste units in your Part B application, please describe for each unit any data available on any prior or current releases of hazardous wastes or constituents to the environment that may have occurred in the past or still be occurring.

Please provide the following information:

- a. Date of release
- b. Type of waste released
- c. Quantity or volume of waste released
- d. Describe nature of release (i.e., spill, overflow, ruptured pipe or tank, etc)

No prior or current releases of hazardous wastes or

constituents to the environment have previously occurred

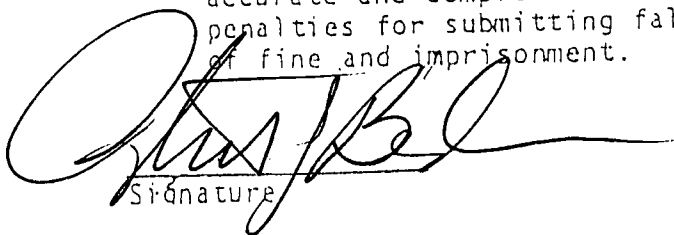
or are now occurring.

4. In regard to the prior releases described in Number 3 above, please provide (for each unit) any analytical data that may be available which would describe the nature and extent of environmental contamination that exists as a result of such releases. Please focus on concentrations of hazardous wastes or constituents present in contaminated soil or groundwater.

#### Signature and Certification

As with reports in RCRA Permit Applications, submittal of this information must contain the following certification and signature by a principal executive officer of at least the level of Vice President or by a duly authorized representative of that person:

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



Signature

Robert J. Bedore  
Vice President

Name and Title (Typed)

## CERTIFICATION

### 1. FACILITY OWNER & OPERATOR

THIS IS TO CERTIFY THAT UNDER PENALTY OF LAW I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED IN THIS DOCUMENT AND ALL ATTACHMENTS AND ALL REVISIONS SUBMITTED ON THE FOLLOWING DATES:

- MARCH 1, 3, 9, 14, 17 & 29
- APRIL 1, 5, 7 & 14

BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE INFORMATION IS TRUE, ACCURATE AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT. FURTHER, I AGREE TO COMPLY WITH THE PROVISIONS OF CHAPTER 403, FLORIDA STATUTES, AND ALL RULES AND REGULATIONS OF THE DEPARTMENT OF ENVIRONMENTAL REGULATION. IT IS UNDERSTOOD THAT THE PERMIT IS ONLY TRANSFERRABLE IN ACCORDANCE WITH SECTION 17-30, FAC, AND, IF GRANTED A PERMIT, THE DEPARTMENT OF ENVIRONMENTAL REGULATION WILL BE NOTIFIED PRIOR TO THE SALE OR LEGAL TRANSFER OF THE PERMITTED FACILITY.



Signature of Facility Owner & Operator

Robert J. Bedore, President

April 14, 1988

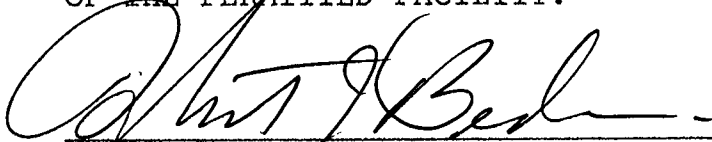
(813) 360-9100

CERTIFICATION

1. FACILITY OWNER & OPERATOR

THIS IS TO CERTIFY THAT UNDER PENALTY OF LAW I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED IN THIS DOCUMENT AND ALL ATTACHMENTS.

BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE INFORMATION IS TRUE, ACCURATE AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT. FURTHER, I AGREE TO COMPLY WITH THE PROVISIONS OF CHAPTER 403, FLORIDA STATUTES, AND ALL RULES AND REGULATIONS OF THE DEPARTMENT OF ENVIRONMENTAL REGULATION. IT IS UNDERSTOOD THAT THE PERMIT IS ONLY TRANSFERRABLE IN ACCORDANCE WITH SECTION 17-30, FAC, AND REGULATION WILL BE NOTIFIED PRIOR TO THE SALE OR LEGAL TRANSFER OF THE PERMITTED FACILITY.



Signature of Facility Owner & Operator

Robert J. Bedore, Vice President

June 29, 1989

(813)623-5302

## CERTIFICATION

OPERATOR

THIS IS TO CERTIFY THAT UNDER PENALTY OF LAW I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED IN THIS DOCUMENT AND ALL ATTACHMENTS AND THAT, BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE INFORMATION IS TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT. FURTHER, I AGREE TO COMPLY WITH THE PROVISIONS OF CHAPTER 403, FLORIDA STATUTES, AND ALL RULES AND REGULATIONS OF THE DEPARTMENT OF ENVIRONMENTAL REGULATION. IT IS UNDERSTOOD THAT THE PERMIT IS ONLY TRANSFERABLE IN ACCORDANCE WITH SECTION 17-30.30, FAC, AND, IF GRANTED A PERMIT, THE DEPARTMENT OF ENVIRONMENTAL REGULATION WILL BE NOTIFIED PRIOR TO THE SALE OR LEGAL TRANSFER OF THE PERMITTED FACILITY.



SIGNATURE OF THE OPERATOR OR AUTHORIZED REPRESENTATIVE\*

Robert J. Bedore Vice President

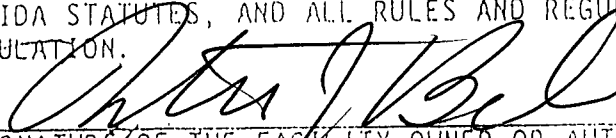
NAME AND TITLE (PLEASE TYPE OR PRINT)

DATE: \_\_\_\_\_ TELEPHONE NO. \_\_\_\_\_

\*ATTACH A LETTER OF AUTHORIZATION

FACILITY OWNER

THIS IS TO CERTIFY THAT I UNDERSTAND THIS APPLICATION IS SUBMITTED FOR THE PURPOSE OF OBTAINING A PERMIT TO CONSTRUCT, OPERATE, OR CLOSE A HAZARDOUS WASTE MANAGEMENT FACILITY ON THE PROPERTY AS DESCRIBED. AS OWNER OF THE FACILITY, I UNDERSTAND FULLY THAT THE FACILITY OPERATOR AND I ARE JOINTLY RESPONSIBLE FOR COMPLIANCE WITH THE PROVISIONS OF CHAPTER 403, FLORIDA STATUTES, AND ALL RULES AND REGULATIONS OF THE DEPARTMENT OF ENVIRONMENTAL REGULATION.



SIGNATURE OF THE FACILITY OWNER OR AUTHORIZED REPRESENTATIVE\*

Robert J. Bedore Vice President

NAME AND TITLE (PLEASE TYPE OR PRINT)

DATE: \_\_\_\_\_ TELEPHONE NO. \_\_\_\_\_

\*ATTACH A LETTER OF AUTHORIZATION

3 LAND OWNER

THIS IS TO CERTIFY THAT I, AS LAND OWNER, UNDERSTAND THAT THIS APPLICATION IS SUBMITTED FOR THE PURPOSE OF OBTAINING A PERMIT TO CONSTRUCT, OPERATE, OR CLOSE A HAZARDOUS WASTE MANAGEMENT FACILITY ON THE PROPERTY AS DESCRIBED. FOR HAZARDOUS WASTE DISPOSAL FACILITIES, I FURTHER UNDERSTAND THAT I AM RESPONSIBLE FOR PROVIDING THE NOTICE IN THE DEED TO THE PROPERTY REQUIRED BY 40 CFR §264.119 AND §265.119, AS ADOPTED BY REFERENCE IN CHAPTER 17-30, FAC.

SIGNATURE OF THE FACILITY OWNER OR AUTHORIZED REPRESENTATIVE

NAME AND TITLE (PLEASE TYPE OR PRINT)

DATE: \_\_\_\_\_ TELEPHONE NO. ( ) \_\_\_\_\_

\*ATTACH A LETTER OF AUTHORIZATION

4. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA (WHERE REQUIRED BY CHAPTER 471, F.S.)

THIS IS TO CERTIFY THAT THE ENGINEERING FEATURES OF THIS HAZARDOUS WASTE MANAGEMENT FACILITY HAVE BEEN DESIGNED/EXAMINED BY ME AND FOUND TO CONFORM TO ENGINEERING PRINCIPLES APPLICABLE TO SUCH FACILITIES. IN MY PROFESSIONAL JUDGMENT, THIS FACILITY, WHEN PROPERLY CONSTRUCTED, MAINTAINED AND OPERATED, OR CLOSED, WILL COMPLY WITH ALL APPLICABLE STATUTES OF THE STATE OF FLORIDA AND RULES OF THE DEPARTMENT OF ENVIRONMENTAL REGULATION.

SIGNATURE James Winter MAILING ADDRESS Seminole Engineering, Inc.  
NAME James M. Winter 14483 62nd St. N  
(PLEASE TYPE) \_\_\_\_\_  
STREET OR P.O. BOX  
Clearwater FL 34620  
CITY STATE ZIP  
(813) 539-0051 11/10/87  
TELEPHONE NO. DATE

FLORIDA REGISTRATION NUMBER: 18313

(Please Affix Seal)

3. LAND OWNER

THIS IS TO CERTIFY THAT I, AS LAND OWNER, UNDERSTAND THAT THIS APPLICATION IS SUBMITTED FOR THE PURPOSE OF OBTAINING A PERMIT TO CONSTRUCT, OPERATE, OR CLOSE A HAZARDOUS WASTE MANAGEMENT FACILITY ON THE PROPERTY AS DESCRIBED. FOR HAZARDOUS WASTE DISPOSAL FACILITIES, I FURTHER UNDERSTAND THAT I AM RESPONSIBLE FOR PROVIDING THE NOTICE IN THE DEED TO THE PROPERTY REQUIRED BY 40 CFR §264.120 AND §265.120, AS ADOPTED BY REFERENCE IN CHAPTER 17-30, FAC.

X *Mamie V. Perik*

*MAMIE V. PERIK - owner*  
NAME AND TITLE (PLEASE TYPE OR PRINT)

DATE: *9/29/87* TELEPHONE NO. *404) 448-9128*

\*ATTACH A LETTER OF AUTHORIZATION

4. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA (WHERE REQUIRED BY CHAPTER 471, F.S.)

THIS IS TO CERTIFY THAT THE ENGINEERING FEATURES OF THIS HAZARDOUS WASTE MANAGEMENT FACILITY HAVE BEEN DESIGNED/EXAMINED BY ME AND FOUND TO CONFORM TO ENGINEERING PRINCIPLES APPLICABLE TO SUCH FACILITIES. IN MY PROFESSIONAL JUDGMENT, THIS FACILITY, WHEN PROPERLY CONSTRUCTED, MAINTAINED AND OPERATED, OR CLOSED, WILL COMPLY WITH ALL APPLICABLE STATUTES OF THE STATE OF FLORIDA AND RULES OF THE DEPARTMENT OF ENVIRONMENTAL REGULATION.

SIGNATURE \_\_\_\_\_

MAILING ADDRESS \_\_\_\_\_

NAME \_\_\_\_\_  
(PLEASE TYPE)

STREET OR P.O. BOX \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

( ) \_\_\_\_\_  
TELEPHONE NO. \_\_\_\_\_ DATE \_\_\_\_\_

FLORIDA REGISTRATION NUMBER: \_\_\_\_\_

(Please Affix Seal)

*you have my permission to apply for the permits you require to operate your facility on my property at Lots 8, 9, 10, 11, 12, 13, & 14 - dream park Subdivision,*

*M. V. Perik*

ATTACHMENT 1

I, \_\_\_\_\_, a  
certified professional engineer, hereby certify, to the best of my  
knowledge and belief, that I have verified that Professional Engineer  
Closure Certificates were issued for all prior closure activities at  
\_\_\_\_\_ and  
\_\_\_\_\_ hazardous waste facility  
that I have made visual inspection(s) of the aforementioned facility,  
and closure of the aforementioned facility has been performed in  
accordance with the closure plan for the facility approved by the  
Regional Administrator for Region \_\_\_\_\_ of the United States  
Environmental Protection Agency.

\_\_\_\_\_  
signature

\_\_\_\_\_  
date

\_\_\_\_\_  
State Professional Engineer License No., issued by the State of

\_\_\_\_\_  
business address and telephone number

ATTACHMENT 3

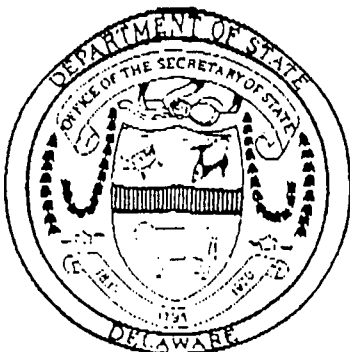
State of Delaware



# Office of Secretary of State

I, MICHAEL HARKINS, SECRETARY OF STATE OF THE STATE OF DELAWARE DO HEREBY CERTIFY UNIVERSAL WASTE & TRANSIT, INC. IS DULY INCORPORATED UNDER THE LAWS OF THE STATE OF DELAWARE AND IS IN GOOD STANDING AND HAS A LEGAL CORPORATE EXISTENCE SO FAR AS THE RECORDS OF THIS OFFICE SHOW, AS OF THE DATE SHOWN BELOW.

1 1 1 1 1 1 1 1 1 1



727281090

*Michael Harkins*  
Michael Harkins, Secretary of State

AUTHENTICATION: 11428525

DATE: 10/08/1987





Department of State

I certify the attached is a true and correct copy of Articles of Merger, filed on October 15, 1987, effective October 25, 1987, merging UNIVERSAL WASTE AND TRANSIT, INC., a Florida corporation into UNIVERSAL WASTE & TRANSIT, INC., the surviving Delaware corporation, which is authorized to transact business in Florida, as shown by the records of this office.

The document number for the surviving corporation is P16396.

Given under my hand and the  
Great Seal of the State of Florida,  
at Tallahassee, the Capital, this the  
15th day of October, 1987

Jim Smith  
Secretary of State

EFFECTIVE DATE

10/25/87

ARTICLES OF MERGER

FILED  
1987 OCT 15 AM 10 57  
TALLAHASSEE, FLORIDA

The undersigned Corporations, pursuant to Section 607.234 of the Florida General Corporation Act hererby execute the following Articles of Merger:

FIRST: The names of the corporations proposing to merge and the names of the states under the laws of which such corporations are organized are as follows:

NAME OF CORPORATION

STATE OF INCORPORATION

Universal Waste and Transit, Inc.

Florida

Universal Waste & Transit, Inc.

Delaware

SECOND: The laws of the state under which such foreign corporation is organized permit such merger.

THIRD: The name of the surviving corporation is Universal Waste & Transit, Inc. And it shall be governed by the laws of the State of Delaware.

FOURTH: The plan of merger is as follows:

See Exhibit A attached

FIFTH: The Agreement and Plan of Merger was adopted by the Board of Directors and the Shareholders of Universal Waste and Transit, Inc. the undersigned Florida Corporation, on the 12th day of October, 1987 , and was adopted by the Board of Directors of Universal Waste & Transit, Inc., the undersigned foreign corporation, on the 12th day of October, 1987.

SIXTH: All provisions of the law of the State of Florida and the State of Delaware applicable to the merger have been complied with.

SEVENTH: The Effective Date of the Certificate of Ownership and Merger shall be the 25th day of October, 1987.

EIGHTH: It is agreed that the surviving corporation will promptly pay to the dissenting shareholders of any such domestic corporation the amount, if any, to which they shall be entitled under the provisions of the Florida General Corporation Act with respect to the rights of dissenting shareholders.

Signed this 13th day of October, 1987.

(Surviving Corporation)

UNIVERSAL WASTE & TRANSIT, Inc.

By:

Robert J. Bedore  
Robert J. Bedore, President

Attest:

Robert J. Bedore  
Robert J. Bedore, Asst. Secretary  
(CORPORATE SEAL)

(Merged Corporation)

UNIVERSAL WASTE AND TRANSIT, INC.

By:

Robert J. Bedore  
Robert J. Bedore, President

Attest:

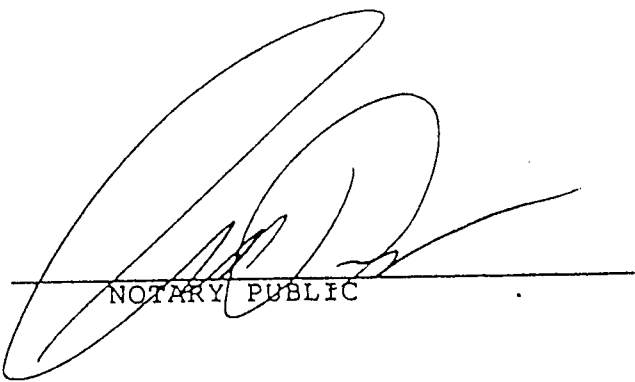
Robert J. Bedore  
Robert J. Bedore, Asst. Secretary  
(CORPORATE SEAL)

State of Florida  
County of Pinellas

The foregoing instrument was acknowledged before me this  
13th day of October, 1987 , by Robert J. Bedore, President of  
Universal Waste and Transit, Inc., on behalf of the corporation.

My commission expires

NOTARY PUBLIC STATE OF FLORIDA  
MY COMMISSION EXP. MAY 21, 1991  
BONDED THRU GENERAL INS. UND.



NOTARY PUBLIC

(SEAL)

State of Florida  
County of Pinellas

The foregoing instrument was acknowledged before me this 13th  
day of October, 1987, by Robert J. Bedore, President of  
Universal Waste & Transit, Inc. on behalf of the corporation.

My commission expires

NOTARY PUBLIC STATE OF FLORIDA  
MY COMMISSION EXP. MAY 21, 1991  
BONDED THRU GENERAL INS. UND.



NOTARY PUBLIC

(SEAL)

EXHIBIT A

AGREEMENT AND PLAN OF MERGER

AGREEMENT AND PLAN OF MERGER made this 13th day of October, 1987, by and between UNIVERSAL WASTE AND TRANSIT, INC., a Florida corporation ("Universal-Florida") and UNIVERSAL WASTE & TRANSIT, INC., a Delaware corporation ("Universal-Delaware").

WITNESSETH:

Universal-Delaware is a wholly-owned subsidiary of Universal-Florida organized by Universal-Florida to effectuate the present merger.

The authorized capital stock of Universal-Delaware consists of 5,000,000 shares of Common Stock, \$.001 par value per share ("Universal-Delaware's Stock"), of which 1,000,000 shares are issued and outstanding and owned by Universal-Florida, and 1,000,000 shares of preferred stock none of which are issued and outstanding.

The Board of Directors and the Shareholders of Universal-Florida and the Board of Directors of Universal-Delaware have deemed it advisable and in the best interests of Universal-Delaware and Universal-Florida that Universal-Florida

be merged with and into Universal-Delaware pursuant to the statutory merger provisions of the Florida General Corporation Act and the Delaware General Corporation Law and in the manner and upon the terms and conditions set forth herein (the "Merger").

NOW, THEREFORE, Universal-Florida and Universal-Delaware do hereby agree that Universal-Florida shall merge into and with Universal-Delaware and do hereby adopt this Agreement and Plan of Merger, and agree upon and prescribe the terms and conditions of the Merger, the mode of carrying the same into effect, the disposition of the shares of capital stock of Universal-Florida and such other details and provisions as follows:

#### ARTICLE I

Universal-Florida shall be merged into and with Universal-Delaware and the separate existence of Universal-Florida shall cease on the Effective Date of the Merger (hereinafter defined), and, thereupon, Universal-Florida and Universal-Delaware shall become a single corporation, which shall be Universal-Delaware, which shall survive the Merger and shall continue to exist under and be governed by the laws of the State of Delaware.

#### ARTICLE II

The Certificate of Incorporation of Universal-Delaware in effect immediately prior to the Effective Date of the Merger shall be and continue to be the Certificate of Incorporation of

Universal-Delaware as the surviving corporation until the same shall be further amended or changed as provided by law.

### ARTICLE III

The By-Laws of Universal-Delaware in effect immediately prior to the Effective Date of the Merger shall be and continue to be the By-Laws of Universal-Delaware as the surviving corporation until the same shall be altered, amended or repealed.

### ARTICLE IV

All of the shares of capital stock of Universal-Florida shall be surrendered and cancelled on the Effective Date of the Merger and the holders thereof shall receive, pro-rata, and Universal-Delaware shall issue pro-rata, one share of Universal-Delaware's Stock in exchange for each share of Universal-Florida stock surrendered and cancelled.

### ARTICLE V

The Board of Directors and the Officers of Universal-Delaware, upon the Effective Date of the Merger, shall be and continue to be the Board of Directors and Officers of Universal-Delaware as the surviving corporation until all or any of them shall be removed or their respective terms of office shall expire.



## ARTICLE VI

On the Effective Date of the Merger, Universal-Delaware shall thereupon and thereafter possess all the rights, privileges, immunities, powers, franchises and purposes, both public and private, of Universal-Delaware and Universal-Florida, and all of the property, real, personal and mixed, and franchises of Universal-Delaware and Universal-Florida, and all debts due on whatever account to either of them, including subscriptions to shares and other choses in action belonging to Universal-Delaware or Universal-Florida, shall be taken and deemed to be transferred to and vested in Universal-Delaware without further act or deed. Universal-Delaware shall thenceforth be responsible for all of the obligations and liabilities of Universal-Delaware and Universal-Florida, but the obligations and liabilities of Universal-Delaware and Universal-Florida, and the obligations and liabilities of their Shareholders, directors or officers, shall not be affected. Neither the rights of the creditors of, nor the rights of any persons dealing with, Universal-Delaware or Universal-Florida, nor any liens upon the property of such corporations, shall be impaired by the Merger. Any claim existing or action or proceeding pending by or against Universal-Delaware or Universal-Florida may be prosecuted to judgment as if the Merger had not taken place, and Universal-Delaware, as the surviving corporation, may be proceeded against or substituted in the place

of Universal-Florida. Any taxes, penalties and public accounts claimed against either of the merging companies but not settled, assessed or determined prior to the Effective Date of the Merger, shall be settled, assessed or determined against Universal-Delaware and, together with interest thereon, shall be a lien against the franchises and property, both real and personal, of Universal-Delaware.

#### ARTICLE VII

Articles of Merger incorporating this Agreement and Plan of Merger, as required by the Florida General Corporation Act and the Certificate of Ownership and Merger as required by the Delaware General Corporation Law, shall be executed by the President and Secretary of Universal-Delaware and of Universal-Florida under their respective corporate seals and the said Articles of Merger incorporating this Agreement and Plan of Merger shall be filed in the Office of the Department of State of the State of Florida and the Certificate of Ownership and Merger shall be filed in the Office of the Department of State of the State of Delaware and both documents shall be recorded as and where required by law.

#### ARTICLE VIII

Neither Universal-Delaware nor Universal-Florida has made or given any representation or warranty concerning the Merger

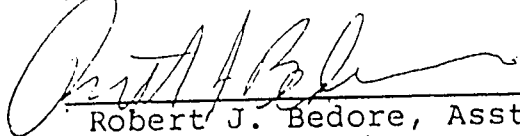
other than those expressly set forth in this Agreement and Plan of Merger. Neither Universal-Delaware nor Universal-Florida in executing and in carrying out the provisions of this Agreement and Plan of Merger, is relying on or shall rely on any representation or warranty made by the other, or any other person or entity, which is not expressly set forth herein.

ARTICLE IX

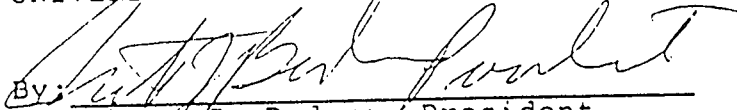
The Effective Date of the Merger shall be the  
25th day of October, 1987.

IN WITNESS WHEREOF, Universal-Delaware and Universal-Florida have caused this Agreement and Plan of Merger to be executed in their corporate names by their Presidents, attested by their Secretaries and their respective corporate seals to be hereunto affixed, all as of the day and year first above written.

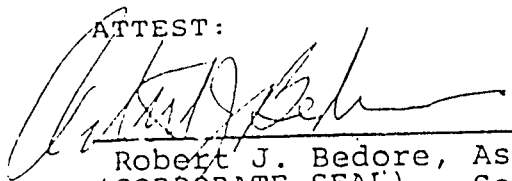
ATTEST:

  
Robert J. Bedore, Asst.  
(CORPORATE SEAL) Secretary

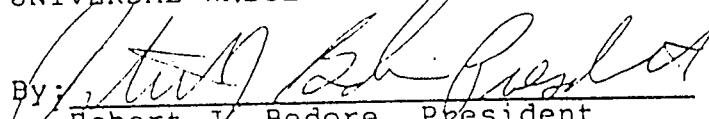
UNIVERSAL WASTE & TRANSIT, INC.

By:   
Robert J. Bedore, President

ATTEST:

  
Robert J. Bedore, Asst.  
(CORPORATE SEAL) Secretary

UNIVERSAL WASTE AND TRANSIT, INC.

By:   
Robert J. Bedore, President

AGREEMENT AND OFFER TO PURCHASE SHARES  
OF DISSENTING STOCKHOLDERS OF  
CORPORATION IN MERGER  
PURSUANT TO SECTION 607.234  
OF FLORIDA STATUTES

The undersigned corporation, UNIVERSAL WASTE & TRANSIT, INC., a Delaware corporation, pursuant to Section 607.234 of the Florida Statutes, hereby agrees and offers to purchase the shares of all dissenting stockholders of UNIVERSAL WASTE & TRANSIT, INC., a Florida corporation, and to pay promptly to such dissenting stockholders the amount, if any, to which they shall be entitled under the provisions of Section 607 of the Florida General Corporation Act relating to the rights of dissenting stockholders.

DATED: October 13, 1987

UNIVERSAL WASTE & TRANSIT, INC.

BY: [Signature]  
ROBERT J. BEDORE, President

Attest: [Signature]  
WILLIAM SMITH, Secretary

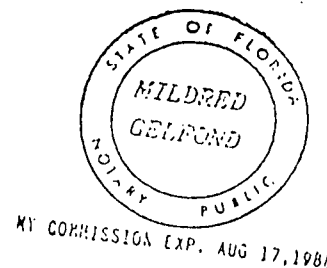
STATE OF FLORIDA  
COUNTY OF PINELLAS

Before me, the undersigned authority, personally appeared ROBERT J. BEDORE, as the President and also as the Secretary, respectively of UNIVERSAL WASTE & TRANSIT, INC., a Delaware corporation, and they acknowledged to and before me that they executed the foregoing instrument.

WITNESS my hand and seal this 13th day of October, 1987.

[Signature]  
Notary Public, State of Florida

My Commission Expires:



CERTIFICATE OF MERGER

The undersigned Corporations, pursuant to Section 607.234 of the Florida General Corporation Act hererby execute the following Certificate of Merger.

FIRST: The names of the corporations proposing to merge and the names of the states under the laws of which such corporations are organized are as follows:

NAME OF CORPORATION

STATE OF INCORPORATION

Universal Waste and Transit, Inc.

Florida

Universal Waste & Transit, Inc.

Delaware

SECOND: The laws of the state under which such foreign corporation is organized permit such merger.

THIRD: The name of the surviving corporation is Universal Waste & Transit, Inc. And it shall be governed by the laws of the State of Delaware.

FOURTH: The plan of merger is as follows:

See Exhibit A attached

FIFTH: The Agreement and Plan of Merger was adopted by the Board of Directors and the Shareholders of Universal Waste and Transit, Inc. the undersigned Florida Corporation, on the 12th day of October, 1987, and was adopted by the Board of Directors of Universal Waste & Transit, Inc., the undersigned foreign corporation, on the 12th day of October, 1987.

SIXTH: All provisions of the law of the State of Florida and the State of Delaware applicable to the merger have been complied with.

SEVENTH: The Effective Date of the Certificate of Ownership and Merger shall be the 25th day of October, 1987.

EIGHTH: It is agreed that the surviving corporation will promptly pay to the dissenting shareholders of any such domestic corporation the amount, if any, to which they shall be entitled under the provisions of the Florida General Corporation Act with respect to the rights of dissenting shareholders.

Signed this 13th day of October, 1987.

(Surviving Corporation)

UNIVERSAL WASTE & TRANSIT, Inc.

By:

Robert J. Bedore, President

Attest:

Robert J. Bedore, Asst. Secretary  
(CORPORATE SEAL)

(Merged Corporation)

UNIVERSAL WASTE AND TRANSIT, INC.

By:

Robert J. Bedore, President

Attest:

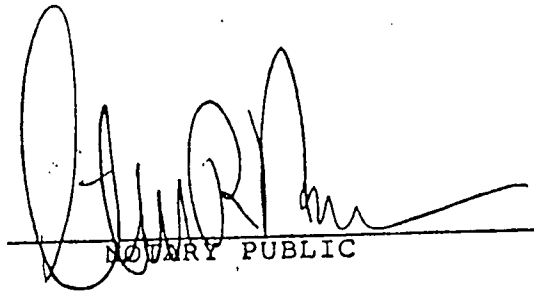
Robert J. Bedore, Asst. Secretary  
(CORPORATE SEAL)

State of Florida  
County of Pinellas

The foregoing instrument was acknowledged before me this  
13th day of October, 1987, by Robert J. Bedore, President of  
Universal Waste and Transit, Inc., on behalf of the corporation.

My commission expires

NOTARY PUBLIC STATE OF FLORIDA  
MY COMMISSION EXP. MAY 21, 1991  
BONDED THRU GENERAL INS. UND.

  
\_\_\_\_\_  
NOTARY PUBLIC

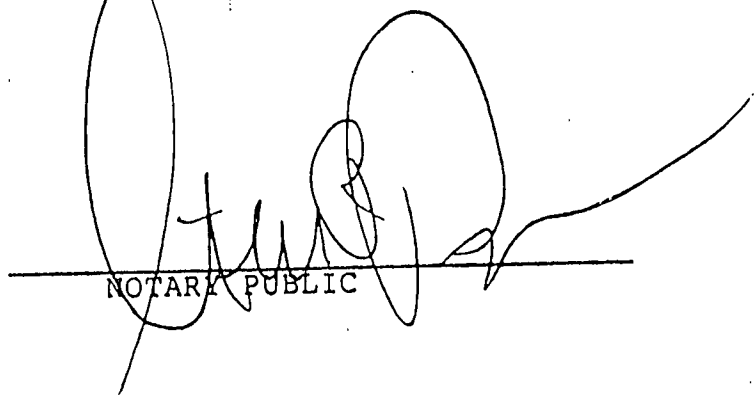
(SEAL)

State of Florida  
County of Pinellas

The foregoing instrument was acknowledged before me this 13th  
day of October, 1987, by Robert J. Bedore, President of  
Universal Waste & Transit, Inc. on behalf of the corporation.

My commission expires

NOTARY PUBLIC STATE OF FLORIDA  
MY COMMISSION EXP. MAY 21, 1991  
BONDED THRU GENERAL INS. UND.

  
\_\_\_\_\_  
NOTARY PUBLIC

(SEAL)



EXHIBIT A

AGREEMENT AND PLAN OF MERGER

AGREEMENT AND PLAN OF MERGER made this 13th day of October, 1987, by and between UNIVERSAL WASTE AND TRANSIT, INC., a Florida corporation ("Universal-Florida") and UNIVERSAL WASTE & TRANSIT, INC., a Delaware corporation ("Universal-Delaware").

WITNESSETH:

Universal-Delaware is a wholly-owned subsidiary of Universal-Florida organized by Universal-Florida to effectuate the present merger.

The authorized capital stock of Universal-Delaware consists of 5,000,000 shares of Common Stock, \$.001 par value per share ("Universal-Delaware's Stock"), of which 1,000,000 shares are issued and outstanding and owned by Universal-Florida, and 1,000,000 shares of preferred stock none of which are issued and outstanding.

The Board of Directors and the Shareholders of Universal-Florida and the Board of Directors of Universal-Delaware have deemed it advisable and in the best interests of Universal-Delaware and Universal-Florida that Universal-Florida

be merged with and into Universal-Delaware pursuant to the statutory merger provisions of the Florida General Corporation Act and the Delaware General Corporation Law and in the manner and upon the terms and conditions set forth herein (the "Merger").

NOW, THEREFORE, Universal-Florida and Universal-Delaware do hereby agree that Universal-Florida shall merge into and with Universal-Delaware and do hereby adopt this Agreement and Plan of Merger, and agree upon and prescribe the terms and conditions of the Merger, the mode of carrying the same into effect, the disposition of the shares of capital stock of Universal-Florida and such other details and provisions as follows:

#### ARTICLE I

Universal-Florida shall be merged into and with Universal-Delaware and the separate existence of Universal-Florida shall cease on the Effective Date of the Merger (hereinafter defined), and, thereupon, Universal-Florida and Universal-Delaware shall become a single corporation, which shall be Universal-Delaware, which shall survive the Merger and shall continue to exist under and be governed by the laws of the State of Delaware.

#### ARTICLE II

The Certificate of Incorporation of Universal-Delaware in effect immediately prior to the Effective Date of the Merger shall be and continue to be the Certificate of Incorporation of

Universal-Delaware as the surviving corporation until the same shall be further amended or changed as provided by law.

#### ARTICLE III

The By-Laws of Universal-Delaware in effect immediately prior to the Effective Date of the Merger shall be and continue to be the By-Laws of Universal-Delaware as the surviving corporation until the same shall be altered, amended or repealed.

#### ARTICLE IV

All of the shares of capital stock of Universal-Florida shall be surrendered and cancelled on the Effective Date of the Merger and the holders thereof shall receive, pro-rata, and Universal-Delaware shall issue pro-rata, one share of Universal-Delaware's Stock in exchange for each share of Universal-Florida stock surrendered and cancelled.

#### ARTICLE V

The Board of Directors and the Officers of Universal-Delaware, upon the Effective Date of the Merger, shall be and continue to be the Board of Directors and Officers of Universal-Delaware as the surviving corporation until all or any of them shall be removed or their respective terms of office shall expire.

ARTICLE VI

On the Effective Date of the Merger, Universal-Delaware shall thereupon and thereafter possess all the rights, privileges, immunities, powers, franchises and purposes, both public and private, of Universal-Delaware and Universal-Florida, and all of the property, real, personal and mixed, and franchises of Universal-Delaware and Universal-Florida, and all debts due on whatever account to either of them, including subscriptions to shares and other choses in action belonging to Universal-Delaware or Universal-Florida, shall be taken and deemed to be transferred to and vested in Universal-Delaware without further act or deed. Universal-Delaware shall thenceforth be responsible for all of the obligations and liabilities of Universal-Delaware and Universal-Florida, but the obligations and liabilities of Universal-Delaware and Universal-Florida, and the obligations and liabilities of their Shareholders, directors or officers, shall not be affected. Neither the rights of the creditors of, nor the rights of any persons dealing with, Universal-Delaware or Universal-Florida, nor any liens upon the property of such corporations, shall be impaired by the Merger. Any claim existing or action or proceeding pending by or against Universal-Delaware or Universal-Florida may be prosecuted to judgment as if the Merger had not taken place, and Universal-Delaware, as the surviving corporation, may be proceeded against or substituted in the place

of Universal-Florida. Any taxes, penalties and public accounts claimed against either of the merging companies but not settled, assessed or determined prior to the Effective Date of the Merger, shall be settled, assessed or determined against Universal-Delaware and, together with interest thereon, shall be a lien against the franchises and property, both real and personal, of Universal-Delaware.

#### ARTICLE VII

Articles of Merger incorporating this Agreement and Plan of Merger, as required by the Florida General Corporation Act and the Certificate of Ownership and Merger as required by the Delaware General Corporation Law, shall be executed by the President and Secretary of Universal-Delaware and of Universal-Florida under their respective corporate seals and the said Articles of Merger incorporating this Agreement and Plan of Merger shall be filed in the Office of the Department of State of the State of Florida and the Certificate of Ownership and Merger shall be filed in the Office of the Department of State of the State of Delaware and both documents shall be recorded as and where required by law.

#### ARTICLE VIII

Neither Universal-Delaware nor Universal-Florida has made or given any representation or warranty concerning the Merger

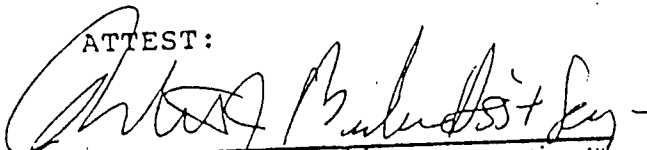
other than those expressly set forth in this Agreement and Plan of Merger. Neither Universal-Delaware nor Universal-Florida in executing and in carrying out the provisions of this Agreement and Plan of Merger, is relying on or shall rely on any representation or warranty made by the other, or any other person or entity, which is not expressly set forth herein.

#### ARTICLE IX

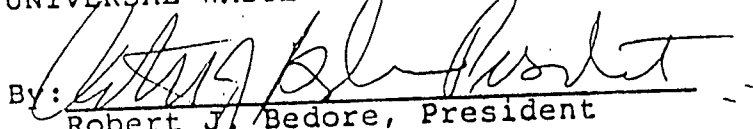
The Effective Date of the Merger shall be the 25th day of October, 1987.

IN WITNESS WHEREOF, Universal-Delaware and Universal-Florida have caused this Agreement and Plan of Merger to be executed in their corporate names by their Presidents, attested by their Secretaries and their respective corporate seals to be hereunto affixed, all as of the day and year first above written.

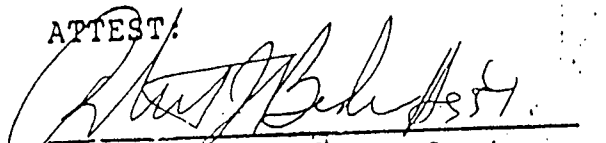
ATTEST:

  
Robert J. Bedore, Asst.  
(CORPORATE SEAL) Secretary


UNIVERSAL WASTE & TRANSIT, INC.

By:   
Robert J. Bedore, President

ATTEST:

  
Robert J. Bedore, Asst.  
(CORPORATE SEAL) Secretary

UNIVERSAL WASTE AND TRANSIT, INC.

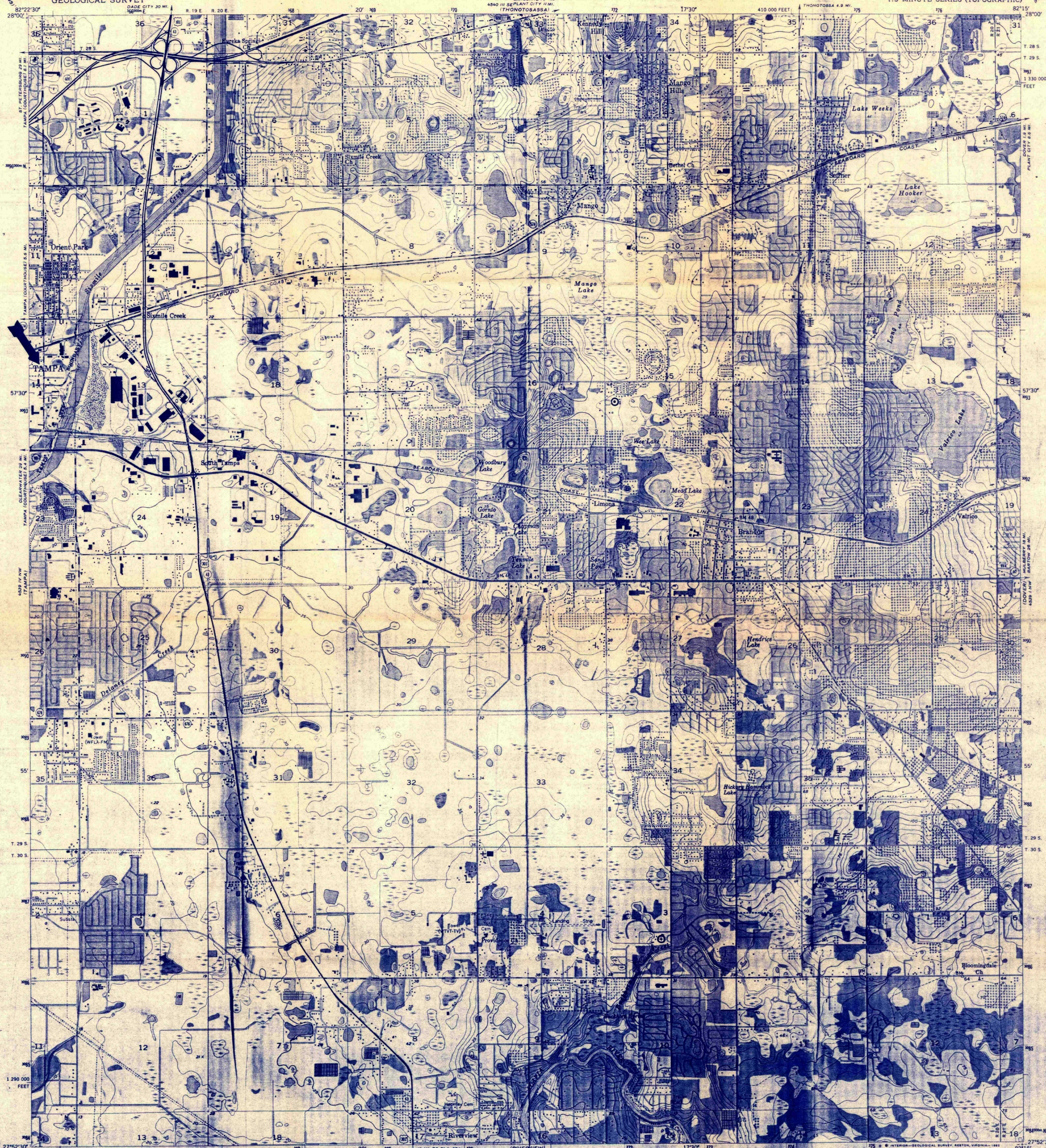
By:   
Robert J. Bedore, President

Karl L. Ericson - W.D. Jones



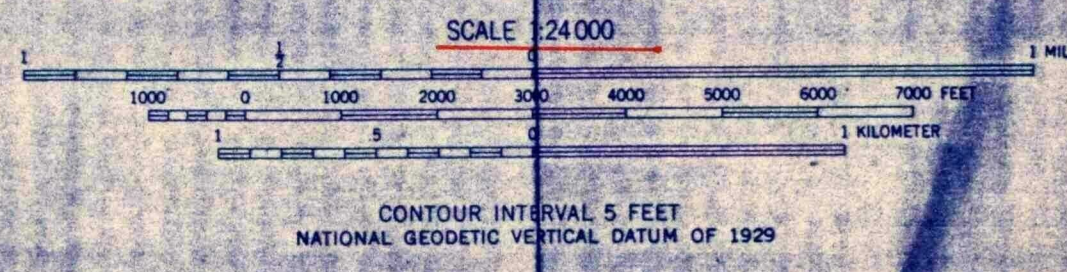
UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

1551987 (1)  
BRANDON QUADRANGLE  
FLORIDA-HILLSBOROUGH CO.  
7.5 MINUTE SERIES (TOPOGRAPHIC)



Mapped, edited, and published by the Geological Survey  
Control by USGS, NOS/NOAA, and Florida Geodetic Survey  
Culture and drainage in part compiled from aerial photographs  
taken 1955. Topography by planetable surveys 1955-1956.  
Polyconic projection, 10,000-foot grid ticks based on Florida  
coordinate system, west zone. 1000-meter Universal Transverse  
Mercator grid ticks, zone 17, shown in blue. 1927 North  
American Datum. To place on the predicted North American  
Datum 1983 move the projection lines 25 meters south and  
17 meters west as shown by dashed corner ticks.  
Revisions shown in purple compiled from aerial photographs  
taken 1979 and other sources. This information  
not field checked. Map edited 1981.  
Purple tint indicates extension of urban areas.

UTM GRID AND 1981 MAGNETIC NORTH  
DECLINATION AT CENTER OF SHEET



ROAD CLASSIFICATION  
Heavy-duty ——— Light-duty ———  
Medium-duty ——— Unimproved dirt ———  
U.S. Route ——— State Route ———  
Interstate Route ———

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS  
FOR SALE BY U.S. GEOLOGICAL SURVEY, RESTON, VIRGINIA 22092  
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

Distributed by  
MAP PUBLISHING DIV.  
LMA ENTERPRISES, INC.  
P.O. BOX 10058 • ST. PETERSBURG, FLORIDA 33733

BRANDON, FLA.  
N2752.5-W8215.7.5  
1956  
PHOTOREVISED 1981  
DMA 4539 IV NE-SERIES 7547



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

TAMPA QUADRANGLE  
FLORIDA—HILLSBOROUGH CO.  
7.5 MINUTE SERIES (TOPOGRAPHIC)



Mapped, edited, and published by the Geological Survey  
Control by USGS, NOS/NOAA, and USCE  
Culture and drainage in part compiled from aerial photographs  
taken 1954. Topography by planetable surveys 1956  
Selected hydrographic data compiled from NOS chart 587 (1952)  
This information is not intended for navigational purposes  
Polyconic projection. 10,000-foot grid ticks based on Florida  
coordinate system, west zone. 1000-meter Universal Transverse  
Mercator grid ticks, zone 17, shown in blue. 1927 North  
American Datum. To place on the predicted North American  
Datum 1983 move the projection lines 29 meters south and  
17 meters west as shown by dashed corner ticks  
Red tint indicates areas in which only landmarks/buildings are shown  
Revisions shown in purple compiled from aerial photographs  
taken 1979 and other sources. This information not  
field checked. Map edited 1981

UTM GRID AND 1981 MAGNETIC NORTH  
DECLINATION AT CENTER OF SHEET  
Purple tint indicates extension of urban areas

SCALE 1:24,000  
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CONTOUR INTERVAL 5 FEET  
NATIONAL GEODETIC VERTICAL DATUM OF 1929  
DEPTH CURVES AND SOUNDINGS IN FEET—GULF COAST LOW WATER DATUM  
THE RELATIONSHIP BETWEEN THE TWO DATUMS IS VARIABLE  
SHORELINE SHOWN REPRESENTS THE APPROXIMATE LINE OF MEAN HIGH WATER  
THE MEAN RANGE OF TIDE IS APPROXIMATELY 2 FEET  
THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS  
FOR SALE BY U.S. GEOLOGICAL SURVEY, RESTON, VIRGINIA 22092  
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

ROAD CLASSIFICATION  
Heavy-duty ——— Light-duty ———  
Medium-duty ——— Unimproved dirt ———  
○ Interstate Route ○ U.S. Route ○ State Route

TAMPA, FLA.  
N2752.5—W8222.5/7.5  
1956  
PHOTOREVISED 1981  
DMA 4539 IV NW—SERIES 1847



PAGE 1

## PERMIT SUMMARY FROM: 00/00/00 To 99/99/99

BY: COUNTY: BASIN: S:14 - 14 T:29 R:19 DEPTH: 0 TO 9999 DIAMETER: 0 TO 99 METHOD: USE: CASE DEPTH:

PERMIT	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ	BL	BM	BN	BO	BP	BQ	BR	BS	BT	BU	BV	BW	BX	BY	BZ	CA	CB	CC	CD	CE	CF	CG	CH	CI	CJ	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CY	CZ	DA	DB	DC	DD	DE	DF	DG	DH	DI	DJ	DK	DL	DM	DN	DO	DP	DP	DR	DS	DT	DU	DV	DW	DX	DY	DZ	EA	EB	EC	ED	EE	EF	EG	EH	EI	EJ	EK	EL	EM	EN	EO	EP	EQ	ER	ES	ET	EU	EV	EW	EX	EY	EZ	FA	FB	FC	FD	FE	FF	FG	FH	FI	FJ	FK	FL	FM	FN	FO	FP	FQ	FR	FS	FT	FU	FV	FW	FX	FY	FZ	GA	GB	GC	GD	GE	GF	GG	GH	GI	GJ	GK	GL	GM	GN	GO	GP	GQ	GR	GS	GT	GU	GV	GW	GX	GY	GZ	HA	HB	HC	HD	HE	HF	HG	HH	HI	HJ	HK	HL	HM	HN	HO	HP	HQ	HR	HS	HT	HU	HV	HW	HX	HY	HZ	IA	IB	IC	ID	IE	IF	IG	IH	II	IJ	IK	IL	IM	IN	IO	IP	IQ	IR	IS	IT	IU	IV	IW	IX	IY	IZ	JA	JB	JC	JD	JE	JF	JG	JH	JI	IJ	JK	KL	KM	KN	KO	KP	KQ	KR	KS	KT	KU	KV	KW	KX	KY	KZ	LA	LB	LC	LD	LE	LF	LG	LH	LI	LJ	LK	LL	LM	LN	LO	LP	LQ	LR	LS	LT	LU	LV	LW	LX	LY	LZ	MA	MB	MC	MD	ME	MF	MG	MH	MI	MJ	MK	ML	MM	MN	MO	MP	MQ	MR	MS	MT	MU	MV	MW	MX	MY	MZ	NA	NB	NC	ND	NE	NF	NG	NH	NI	NJ	NK	NL	NM	NN	NO	NP	NQ	NR	NS	NT	NU	NV	NW	NX	NY	NZ	OA	OB	OC	OD	OE	OF	OG	OH	OI	OJ	OK	OL	OM	ON	OO	OP	OQ	OR	OS	OT	OU	OV	OW	OX	OY	OZ	PA	PB	PC	PD	PE	PF	PG	PH	PI	PJ	PK	PL	PM	PN	PO	PP	PQ	PR	PS	PT	PU	PV	PW	PX	PY	PZ	QA	QB	QC	QD	QE	QF	QG	QH	QI	QJ	QK	QL	QM	QN	QO	QP	QQ	QR	QS	QT	QU	QV	QW	QX	QY	QZ	RA	RB	RC	RD	RE	RF	RG	RH	RI	RJ	RK	RL	RM	RN	RO	RP	RQ	RR	RS	RT	RU	RV	RW	RX	RY	RZ	SA	SB	SC	SD	SE	SF	SG	SH	SI	SJ	SK	SL	SM	SN	SO	SP	SQ	SR	SS	ST	SU	SV	SW	SX	SY	SZ	TA	TB	TC	TD	TE	TF	TG	TH	TI	TJ	TK	TL	TM	TN	TO	TP	TQ	TR	TS	TT	TU	TV	TW	TX	TY	TZ	UA	UB	UC	UD	UE	UF	UG	UH	UI	UJ	UK	UL	UM	UN	UO	UP	UQ	UR	US	UT	UU	UV	UW	UX	UY	UZ	VA	VB	VC	VD	VE	VF	VG	VH	VI	VJ	VK	VL	VM	VN	VO	VP	VQ	VR	VS	VT	VU	VV	VW	VX	VY	VZ	WA	WB	WC	WD	WE	WF	WG	WH	WI	WJ	WK	WL	WM	WN	WO	WP	WQ	WR	WS	WT	WU	WV	WW	WX	WY	WZ	XA	
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DATE 8/03/88 5:14:07

## SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

PAGE 2

## WELL CONSTRUCTION PERMITTING

PERMIT SUMMARY FROM: 00/00/00 TO 99/99/99

RDB0055

BY: COUNTY: BASIN: S:14 - 14 T:29 R:19 DEPTH: 0 TO 9999 DIAMETER: 0 TO 99 METHOD: USE: CASE DEPTH:

PERMIT	S	NUMBR	E	N	Y	LOCATION	Q	T	R	A	DEPTH	WELL	U	B	G	O	IRL	A	O	F	USER-ID	LOT	H	OWNER NAME	
	T																								
	DRILL																								
	U																								
	LICN																								
	S																								
381712	C	2251	0	13	057	0	0	142919	1	9	13	N	0	R	0	0	0	0	0	0	0	0	0	0	GULF COAST LEAD CO
381713	C	2251	0	13	057	0	0	142919	1	9	13	N	0	R	0	0	0	0	0	0	0	0	0	0	GULF COAST LEAD CO
381714	C	2251	0	13	057	0	0	142919	1	9	13	N	0	R	0	0	0	0	0	0	0	0	0	0	GULF COAST LEAD CO
381715	C	2251	0	13	057	0	0	142919	1	9	13	N	0	R	0	0	0	0	0	0	0	0	0	0	GULF COAST LEAD CO
381716	C	2251	0	13	057	0	0	142919	1	9	13	N	0	R	0	0	0	0	0	0	0	0	0	0	GULF COAST LEAD CO
381717	C	2251	0	13	057	0	0	142919	1	9	13	N	0	R	0	0	0	0	0	0	0	0	0	0	GULF COAST LEAD CO
381718	C	2251	0	13	057	0	0	142919	1	9	13	N	0	R	0	0	0	0	0	0	0	0	0	0	GULF COAST LEAD CO
381719	C	2251	0	13	057	0	0	142919	1	9	13	N	0	R	0	0	0	0	0	0	0	0	0	0	GULF COAST LEAD CO
381720	C	2251	0	13	057	0	0	142919	1	9	13	N	0	R	0	0	0	0	0	0	0	0	0	0	GULF COAST LEAD CO
381721	C	2251	0	13	057	0	0	142919	1	9	13	N	0	R	0	0	0	0	0	0	0	0	0	0	GULF COAST LEAD CO
381722	C	2251	0	13	057	0	0	142919	1	9	13	N	0	R	0	0	0	0	0	0	0	0	0	0	GULF COAST LEAD CO
381723	C	2251	0	13	057	0	0	142919	1	9	13	N	0	R	0	0	0	0	0	0	0	0	0	0	GULF COAST LEAD CO
381724	C	2251	0	13	057	0	0	142919	1	9	13	N	0	R	0	0	0	0	0	0	0	0	0	0	GULF COAST LEAD CO
381725	C	2251	0	13	057	0	0	142919	1	9	13	N	0	R	0	0	0	0	0	0	0	0	0	0	GULF COAST LEAD CO
381726	C	2251	0	13	057	0	0	142919	1	9	13	N	0	R	0	0	0	0	0	0	0	0	0	0	GULF COAST LEAD CO
381727	C	2251	0	13	057	0	0	142919	1	9	13	N	0	R	0	0	0	0	0	0	0	0	0	0	GULF COAST LEAD CO
381728	C	2251	0	13	057	0	0	142919	1	9	13	N	0	R	0	0	0	0	0	0	0	0	0	0	GULF COAST LEAD CO
381729	C	2251	0	13	057	0	0	142919	1	9	13	N	0	R	0	0	0	0	0	0	0	0	0	0	GULF COAST LEAD CO
381730	C	2251	0	13	057	0	0	142919	1	9	13	N	0	R	0	0	0	0	0	0	0	0	0	0	GULF COAST LEAD CO
381731	C	2251	0	13	057	0	0	142919	1	9	13	N	0	R	0	0	0	0	0	0	0	0	0	0	GULF COAST LEAD CO
402622	C	1715	0	13	057	0	0	142919	2	20	23	Y	3	A	0	0	0	0	0	0	0	0	0	0	HELENA CHEMICAL CO
402623	C	1715	0	13	057	0	0	142919	2	5	22	Y	3	A	0	0	0	0	0	0	0	0	0	0	HELENA CHEMICAL CO
402624	C	1715	0	13	057	0	0	142919	2	5	25	Y	3	A	0	0	0	0	0	0	0	0	0	0	HELENA CHEMICAL CO
402625	C	1715	0	13	057	0	0	142919	2	20	25	Y	3	A	0	0	0	0	0	0	0	0	0	0	HELENA CHEMICAL CO
402626	C	1715	0	13	057	0	0	142919	2	5	25	Y	3	A	0	0	0	0	0	0	0	0	0	0	HELENA CHEMICAL CO
422277	I	2730	0	13	057	0	0	142919	2	1	9	Y	2	A	3	0	0	0	0	0	0	0	0	0	RADIANT OIL CO
422278	I	2730	0	13	057	0	0	142919	2	1	9	Y	2	A	3	0	0	0	0	0	0	0	0	0	RADIANT OIL CO
422279	I	2730	0	13	057	0	0	142919	2	1	9	Y	2	A	3	0	0	0	0	0	0	0	0	0	RADIANT OIL CO
422280	I	2730	0	13	057	0	0	142919	2	1	9	Y	2	A	3	0	0	0	0	0	0	0	0	0	RADIANT OIL CO
422281	I	2730	0	13	057	0	0	142919	2	1	9	Y	2	A	3	0	0	0	0	0	0	0	0	0	RADIANT OIL CO
422282	I	2730	0	13	057	0	0	142919	2	1	9	Y	2	A	3	0	0	0	0	0	0	0	0	0	RADIANT OIL CO
424539	N	2730	0	13	057	0	0	142919	2	***	CANCELLED	***													RADIANT OIL CO
424540	N	2730	0	13	057	0	0	142919	2	***	CANCELLED	***													RADIANT OIL CO
424541	N	2730	0	13	057	0	0	142919	2	***	CANCELLED	***													RADIANT OIL CO
424542	N	2730	0	13	057	0	0	142919	2	***	CANCELLED	***													RADIANT OIL CO
424543	N	2730	0	13	057	0	0	142919	2	***	CANCELLED	***													RADIANT OIL CO
424544	N	2730	0	13	057	0	0	142919	2	***	CANCELLED	***													RADIANT OIL CO
425994	I	1232	0	13	057	0	0	142919	2	*	12	Y	1	A	0	0	0	0	0	0	0	0	0	0	PETROLEUM PRODUCTS SERV
425995	I	1232	0	13	057	0	0	142919	2	*	12	Y	1	A	0	0	0	0	0	0	0	0	0	0	PETROLEUM PRODUCTS SERV

DATE 8/03/88 5:14:07

## SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

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## WELL CONSTRUCTION PERMITTING

PERMIT SUMMARY FROM: 00/00/00 TO 99/99/99

R080055

BY: COUNTY: BASIN: S:14 - 14 T:29 R:19 DEPTH: 0 TO 9999 DIAMETER: 0 TO 99 METHOD: USE: CASE DEPTH:

PERMIT	S	T	U	L	C	N	Y	Q	S	T	R	A	D	E	P	T	R	S	D	C	P	R	N	F	USER-ID	LOT	H	OWNER NAME	
425996	I	1232	0	13	057	0	0	142919	2	4	12	Y	1	A	0										MW-3	0000	NO	PETROLEUM PRODUCTS SERV	
425997	I	1232	0	13	057	0	0	142919	2	4	12	Y	1	A	0										MW-4	0000	NO	PETROLEUM PRODUCTS SERV	
430658	I	2368	0	13	057	3	4	142919	2	2	14	Y	1	R	4										MW-1	0000	NO	FLA STEEL CORPORATION	
430659	I	2368	0	13	057	3	4	142919	2	2	14	Y	1	R	4										MW-2	0000	NO	FLA STEEL CORPORATION	
430660	I	2368	0	13	057	3	4	142919	2	2	14	Y	1	R	4										MW-3	0000	NO	FLA STEEL CORPORATION	
430661	I	2368	0	13	057	3	4	142919	2	2	14	Y	1	R	3										MW-4	0000	NO	FLA STEEL CORPORATION	
430662	I	2368	0	13	057	3	4	142919	2	2	14	Y	1	R	3										MW-5	0000	NO	FLA STEEL CORPORATION	
430663	I	2368	0	13	057	3	4	142919	2	2	14	Y	1	R	3										MW-6	0000	NO	FLA STEEL CORPORATION	
430665	I	2368	0	13	057	3	4	142919	2	38	50	Y	4	R	3										MW-1	0000	NO	FLA STEEL CORPORATION	
430666	I	2368	0	13	057	3	4	142919	2	19	30	Y	4	R	5										MW-2	0000	NO	FLA STEEL CORPORATION	
430667	I	2368	0	13	057	3	4	142919	2	38	50	Y	6	R	3										MW-3	0000	NO	FLA STEEL CORPORATION	
431755	I	2368	0	13	057	3	4	142919	2	4	14	Y	1	R	4														FLA STEEL CORPORATION
431756	I	2368	0	13	057	3	4	142919	2	4	14	Y	1	R	4										MW-2	0000	NO	CIOE, LOUIE & DEBBIE	
438928	I	2858	0	13	057	0	0	142919	2	5	15	Y	1	R	2														ROUNTREE TRANSPORT
438929	I	2858	0	13	057	0	0	142919	2	2	13	Y	1	T	2														ROUNTREE TRANSPORT
438930	I	2858	0	13	057	0	0	142919	2	1	11	Y	1	T	2														ROUNTREE TRANSPORT
438931	I	2858	0	13	057	0	0	142919	2	1	11	Y	1	T	2														ROUNTREE TRANSPORT
438932	I	2858	0	13	057	0	0	142919	2	1	11	Y	1	T	2														ROUNTREE TRANSPORT
439025	I	2987	0	13	057	0	0	142919	2	15	15		0	A	4														CHAPMAN CONTRACTING CO
439026	I	2987	0	13	057	0	0	142919	2	15	15		0	A	4														CHAPMAN CONTRACTING CO
439027	I	2987	0	13	057	0	0	142919	2	15	15		0	A	4														CHAPMAN CONTRACTING CO
439028	I	2987	0	13	057	0	0	142919	2	15	15		0	A	4														CHAPMAN CONTRACTING CO
440941	I	2368	0	13	057	3	4	142919	2	8	16	Y	2	R	7														FLORIDA STEEL CORPORATION
440942	I	2368	0	13	057	3	4	142919	2	12	24	Y	4	R	7														FLORIDA STEEL CORPORATION
440943	I	2368	0	13	057	3	4	142919	2	5	19	Y	2	R	7														FLORIDA STEEL CORPORATION
440944	I	2368	0	13	057	3	4	142919	2	8	17	Y	2	R	9														FLORIDA STEEL CORPORATION
440945	I	2368	0	13	057	3	4	142919	2	7	18	Y	2	R	6														FLORIDA STEEL CORPORATION
441838	I	2368	0	13	057	3	4	142919	2	6	14	Y	2	R	6														FLORIDA STEEL CORPORATION
441839	I	2368	0	13	057	3	4	142919	2	10	20	Y	4	R	12														FLORIDA STEEL CORPORATION
441840	I	2368	0	13	057	3	4	142919	2	5	14	Y	2	R	7														FLORIDA STEEL CORPORATION
441841	N	2368	0	13	057	3	4	142919	2	***	CANCELLED ***																		FLORIDA STEEL CORPORATION
441842	N	2368	0	13	057	3	4	142919	2	***	CANCELLED ***																		FLORIDA STEEL CORPORATION
441843	N	2368	0	13	057	3	4	142919	2	***	CANCELLED ***																		FLORIDA STEEL CORPORATION
442173	I	2987	0	13	057	0	0	142919	2	16	16		0	T	0														BISHOPS WELDING SUPPLY
442174	I	2987	0	13	057	0	0	142919	2	16	16		0	T	0														BISHOPS WELDING SUPPLY
442176	I	2987	0	13	057	0	0	142919	2	16	16		0	T	0														BISHOPS WELDING SUPPLY
442178	I	2987	0	13	057	0	0	142919	2	16	16		0	T	0														BISHOPS WELDING SUPPLY
442926	I	2338	0	13	057	0	0	142919	2	18	18	Y	2	A	4														DEPT OF ENVIRONMENTAL REGULATION
442927	I	2338	0	13	057	0	0	142919	2	16	16	Y	3	A	3														DEPT OF ENVIRONMENTAL REGULATION

DATE 8/03/88 5:14:07

## SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

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## WELL CONSTRUCTION PERMITTING

RDB0055

PERMIT SUMMARY FROM: 00/00/00 TO 99/99/99

BY: COUNTY: BASIN: S:14 - 14 T:29 R:19 DEPTH: 0 TO 9999 DIAMETER: 0 TO 99 METHOD: USE: CASE DEPTH:

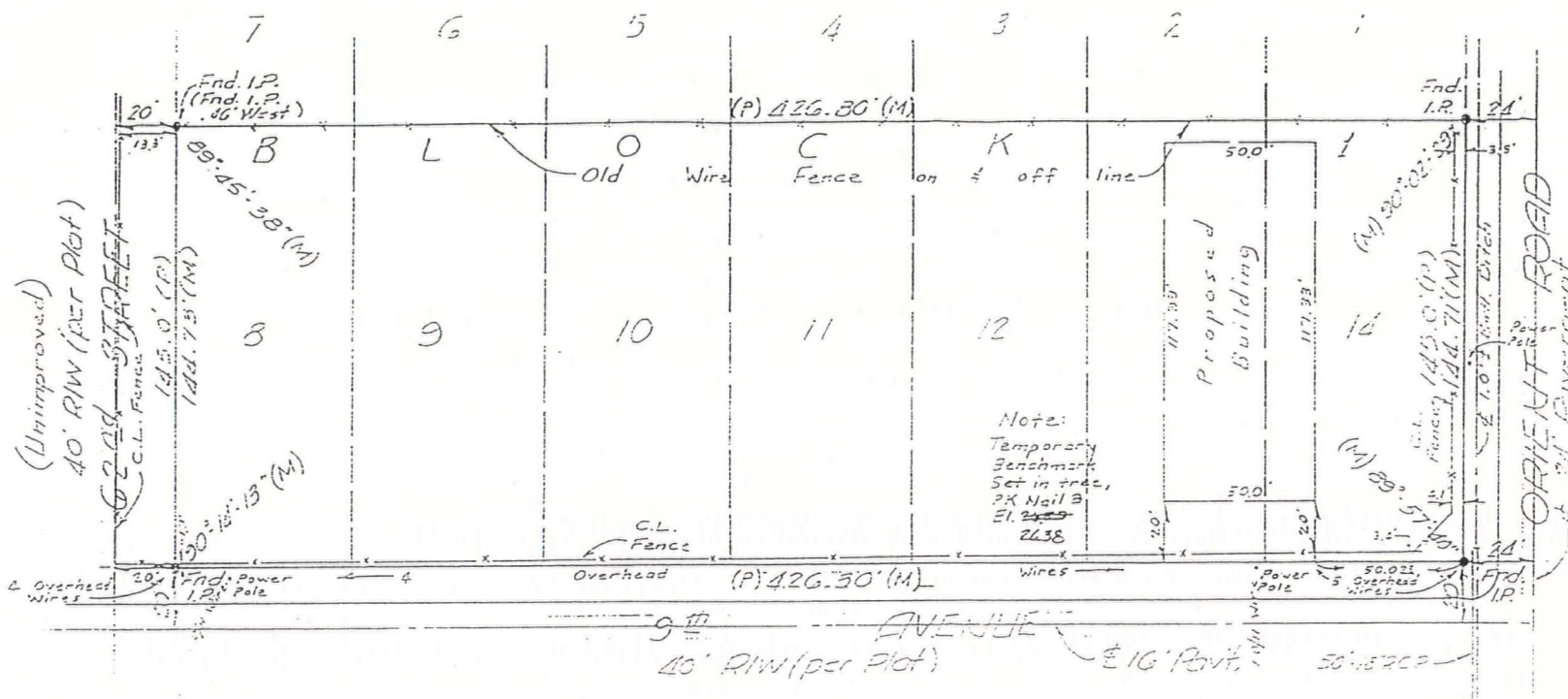
PERMIT	S	T	A	U	L	I	C	N	Y	LOCATION	Q	S	T	R	A	DEPTH	WELL	U	B	G	O	IRL	A	O	O	L	USER-ID	LOT	H	OWNER NAME
442928	I	2338	0	13	057	0	0	142919	2	18	18	Y	2	A	3												0000	NO	DEPT OF ENVIRONMENTAL REGULATION	
442929	I	2338	0	13	057	0	0	142919	2	18	18	Y	2	A	3													0000	NO	DEPT OF ENVIRONMENTAL REGULATION
442930	I	2338	0	13	057	0	0	142919	2	1	12	Y	1	J	2													0000	NO	DEPT OF ENVIRONMENTAL REGULATION
442931	I	2338	0	13	057	0	0	142919	2	4	10	Y	1	J	2													0000	NO	DEPT OF ENVIRONMENTAL REGULATION
442932	I	2338	0	13	057	0	0	142919	2	6	12	Y	2	J	2													0000	NO	DEPT OF ENVIRONMENTAL REGULATION
442933	I	2338	0	13	057	0	0	142919	2	9	18	Y	2	A	1													0000	NO	DEPT OF ENVIRONMENTAL REGULATION
442934	I	2338	0	13	057	0	0	142919	2	8	18	Y	2	A	1													0000	NO	DEPT OF ENVIRONMENTAL REGULATION
442935	I	2338	0	13	057	0	0	142919	2	6	12	Y	2	J	1													0000	NO	DEPT OF ENVIRONMENTAL REGULATION
442936	I	2338	0	13	057	0	0	142919	2	5	10	Y	2	J	1													0000	NO	DEPT OF ENVIRONMENTAL REGULATION
442937	I	2338	0	13	057	0	0	142919	2	9	18	Y	2	A	1													0000	NO	DEPT OF ENVIRONMENTAL REGULATION
442938	I	2338	0	13	057	0	0	142919	2	5	10	Y	2	J	0													0000	NO	DEPT OF ENVIRONMENTAL REGULATION
442939	I	2338	0	13	057	0	0	142919	2	6	11	Y	2	J	1													0000	NO	DEPT OF ENVIRONMENTAL REGULATION
442940	I	2338	0	13	057	0	0	142919	2	7	12	Y	2	J	0													0000	NO	DEPT OF ENVIRONMENTAL REGULATION
444091	I	2338	0	13	057	0	0	142919	2	8	18	Y	3	A	2													0000	NO	DEPT OF ENVIRONMENTAL REGULATION
444635	I	2338	0	13	057	0	0	142919	2	19	19	Y	1	A	2													0000	NO	DEPT OF ENVIRONMENTAL REGULATION
361279	C	1094	0	13	057	0	0	142919	4	39	60				0												J00000	NO	GULF COAST LEAD CO	
361280	C	1094	0	13	057	0	0	142919	4	39	70				0												J00000	NO	GULF COAST LEAD CO	
361281	C	1094	0	13	057	0	0	142919	4	34	60				0												000000	NO	GULF COAST LEAD CO	
375658	C	2250	0	13	057	0	0	142919	4	10	13	N	0	R	0												000000	NO	GULF COAST LEAD CO	
381732	C	2251	0	13	057	0	0	142919	4	8	14	N	0	R	0												J00000	NO	GULF COAST LEAD CO	
381733	C	2251	0	13	057	0	0	142919	4	8	14	N	0	R	0												000000	NO	GULF COAST LEAD CO	
381734	C	2251	0	13	057	0	0	142919	4	8	14	N	0	R	0												000000	NO	GULF COAST LEAD CO	
381735	C	2251	0	13	057	0	0	142919	4	8	14	N	0	R	0												000000	NO	GULF COAST LEAD CO	
381736	C	2251	0	13	057	0	0	142919	4	8	14	N	0	R	0												000000	NO	GULF COAST LEAD CO	
381737	C	2251	0	13	057	0	0	142919	4	8	14	N	0	R	0												000000	NO	GULF COAST LEAD CO	
412672	C	2372	0	13	057	1	2	142919	4	2	10	Y	1	T	6												WELL-1	NO	HILLSBOROUGH COUNTY	
412673	C	2372	0	13	057	1	2	142919	4	2	10	Y	1	T	6												WELL-2	NO	HILLSBOROUGH COUNTY	
412674	C	2372	0	13	057	1	2	142919	4	3	12	Y	1	T	8												WELL-3	NO	HILLSBOROUGH COUNTY	
412675	C	2372	0	13	057	1	2	142919	4	2	6	Y	1	T	3												WELL-4	NO	HILLSBOROUGH COUNTY	
418150	N	2254	0	13	057	0	0	142919	4	***	CANCELLED	***																	ECOL INC	
418151	N	2254	0	13	057	0	0	142919	4	***	CANCELLED	***																	ECOL INC	
418152	N	2254	0	13	057	0	0	142919	4	***	CANCELLED	***																	ECOL INC	
418153	N	2254	0	13	057	0	0	142919	4	***	CANCELLED	***																	ECOL INC	
304283	H	0000	Y	13	057	0	0	142919	10																					
393936	C	2250	Y	13	057	0	0	142919	2	0	0	N	0	0	0												000000	NO	DAVID JOSEPH COMPANY	
385101	C	1958	Y	13	057	2	1	142919	4	0	276	Y	49	C	0												000000	NO	STAUFFER CHEMICAL COMPANY	
362971	C	1817	Y	13	057	0	0	142919	6	50	197			0	C	0											000000	NO	COOK LUMBER	
385102	C	1958	Y	13	057	2	1	142919	6	0	98	Y	58	C	0												000000	NO	STAUFFER CHEMICAL COMPANY	
385103	C	1958	Y	13	057	2	1	142919	6	0	300	Y	48	C	0												000000	NO	STAUFFER CHEMICAL COMPANY	

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT  
WELL CONSTRUCTION PERMITTING

PERMIT SUMMARY FROM: 00/00/00 TO 99/99/99

BY: COUNTY: BASIN: S:14 - 14 T:29 R:19 DEPTH: 0 TO 9999 DIAMETER: 0 TO 99 METHOD: USE: CASE DEPTH:

[illegible]



N  
SCALE: 1" = 40'

Note: Elevations based on City of Tampa Circuit No. 22 A626, Elev. 29.941.

A Survey of Lot 8-14, Block 1, Orient Park as Recorded in Plat Book 11, Page 7, of the Public Records of Hillsborough County, Florida

IN ACCORDANCE WITH THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP, COMMUNITY - PANEL # 120112-0376 C IT APPEARS THAT THE SUBJECT PROPERTY FALLS IN ZONE C

Boundary Survey & Building Layout 3-1-89

THIS CERTIFIES THAT A SURVEY HAS BEEN MADE UNDER OUR DIRECTION AND THAT THE SKETCH HEREON IS A TRUE AND ACCURATE REPRESENTATION OF THE SAME, AND THAT THIS SURVEY COMPLIES WITH THE REQUIREMENTS OF THE MINIMUM TECHNICAL STANDARDS SET FORTH BY THE BOARD OF LAND SURVEYORS PURSUANT TO CHAPTER 472.027, FLORIDA STATUTES.

BAY AREA ENGINEERING CO., INC. CIVIL ENGINEERS LAND SURVEYORS & CONSULTANTS

NOT VALID UNLESS IMPRINTED WITH AN EMBOSSED SEAL

BOOK NO. 198 PAGE NO. 51/52

JOB NO. 89-123

Bay Area Engineering Co., Inc. CIVIL ENGINEERS LAND SURVEYORS - CONSULTANTS 5711 NORTH 50TH STREET TAMPA, FLA. 33610

ENGINEERING FOR: Universal Waste, Inc.

DATE	C. of P.	DWG.	CHKD.
3-1-89	DW	P.	D

Site Survey

LEGEND:

(P) = Plat Data  
(M) = Measurement from field

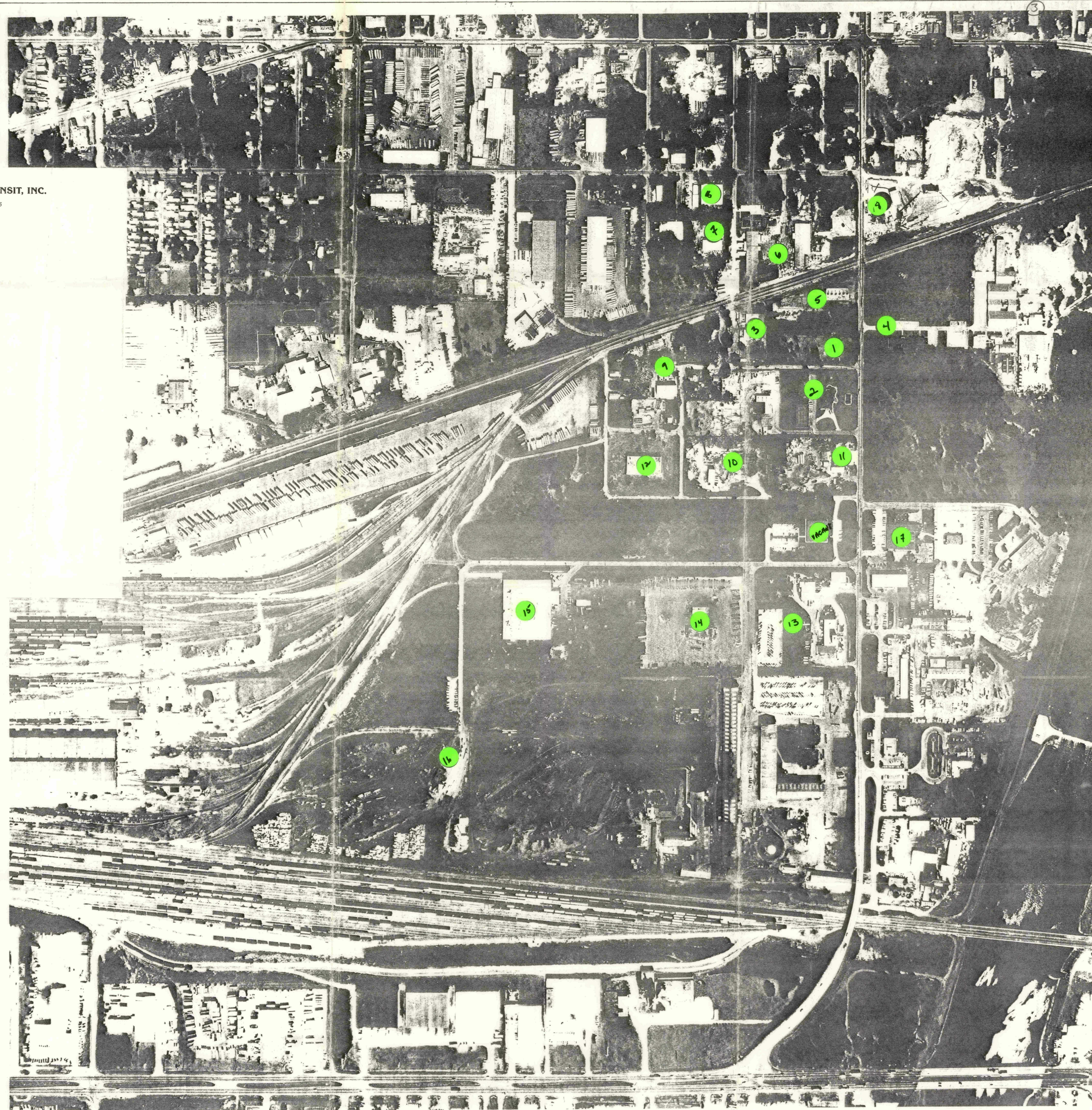
NOTES:  
1.) ALL CORNERS SET ARE IRON PIPES WITH CAPS READING "18 IN" UNLESS OTHERWISE NOTED.  
2.) NO UNDERGROUND IMPROVEMENTS ARE SHOWN HEREON. NO SUBSURFACE INVESTIGATIONS MADE.  
3.) LANDS SHOWN HEREON WERE NOT ABSTRACTED FOR EASEMENTS, RIGHT-OF-WAY OR OTHER RESTRICTIONS OF RECORD WHICH A SEARCH OF THE PUBLIC RECORDS MAY REVEAL. THEREFORE THE UNDERSIGNED MAKES NO WARRANTY OR REPRESENTATIONS RELATIVE TO THE SAME.



**UNIVERSAL WASTE & TRANSIT, INC.**

7217 Gulf Blvd., Suite 7  
St. Petersburg Beach, FL 33706  
(813) 576-1534

1. UNIVERSAL WASTE & TRANSIT
2. CHAPMAN CONTRACTING
3. NATIONAL FISHERIES
4. STAUFFER CHEMICAL
5. WHEELBLAST
6. HELANA CHEMICAL
7. ALARIC, INC.
8. SINGLETON BATTERY
9. GULF COAST METALS
10. MORROW CRANE
11. R & L METALS
12. SKYWAY ROOFING
13. A-L WELDING PRODUCTS
14. FLORIDA STEEL
15. TAMPA BAY STEEL
16. DAVID JOSEPH SHREDDER
17. HILLSBOROUGH COUNTY ANIMAL CONTROL
18. SAND & GRAVEL STORAGE

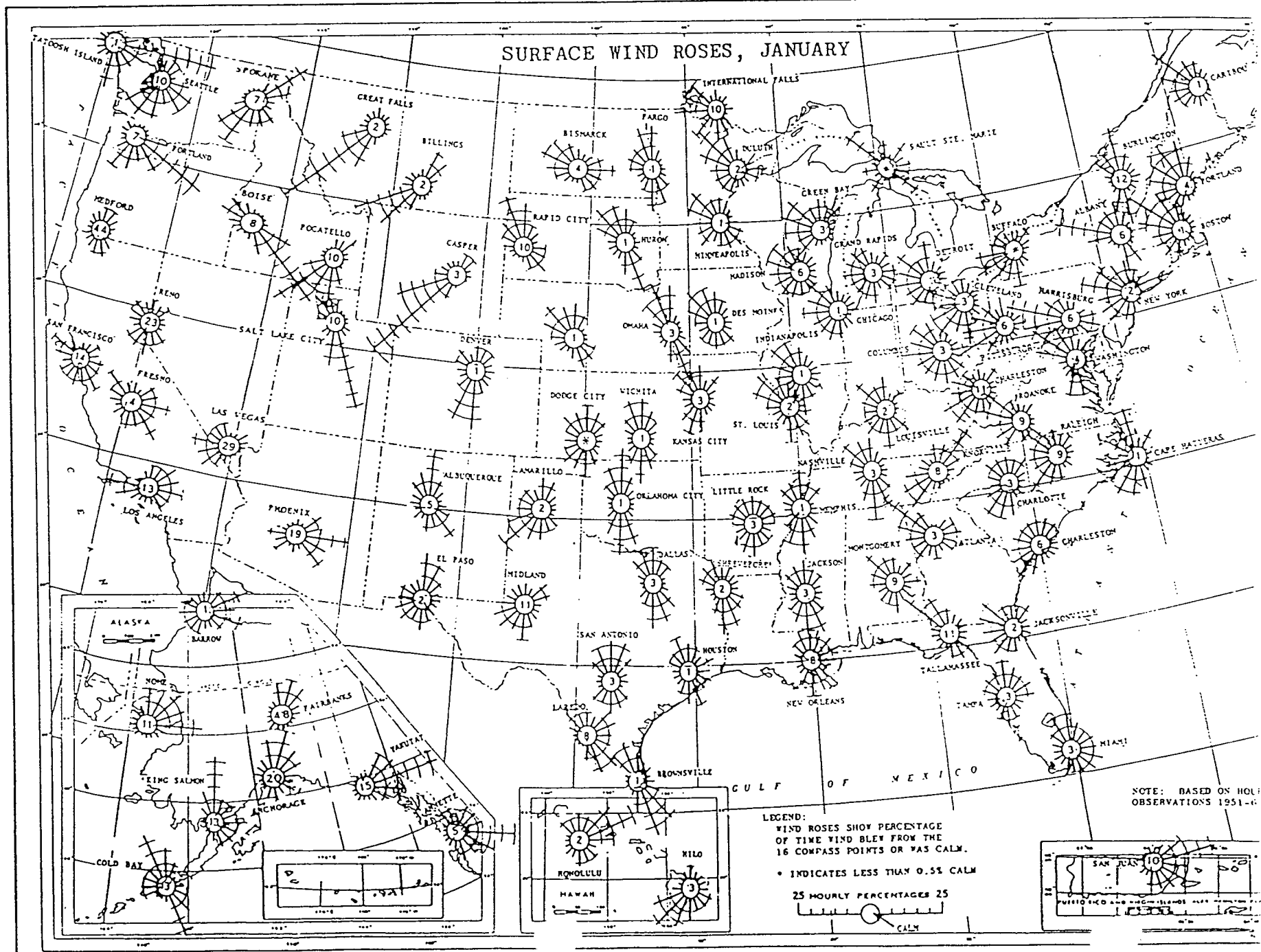




U. S. DEPARTMENT OF COMMERCE  
ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION  
ENVIRONMENTAL DATA SERVICE

SURFACE WIND ROSES, MONTH

ATTACHMENT 8



**SURFACE WIND ROSES, FEBRUARY**

NOTE: BASED ON HOUR OF TIME WIND BLEW FROM THE 16 COMPASS POINTS OR AS CALM.

LEGEND:  
WIND ROSES SHOW PERCENTAGE OF TIME WIND BLEW FROM THE 16 COMPASS POINTS OR AS CALM.  
\* INDICATES LESS THAN 0.5% CALM.

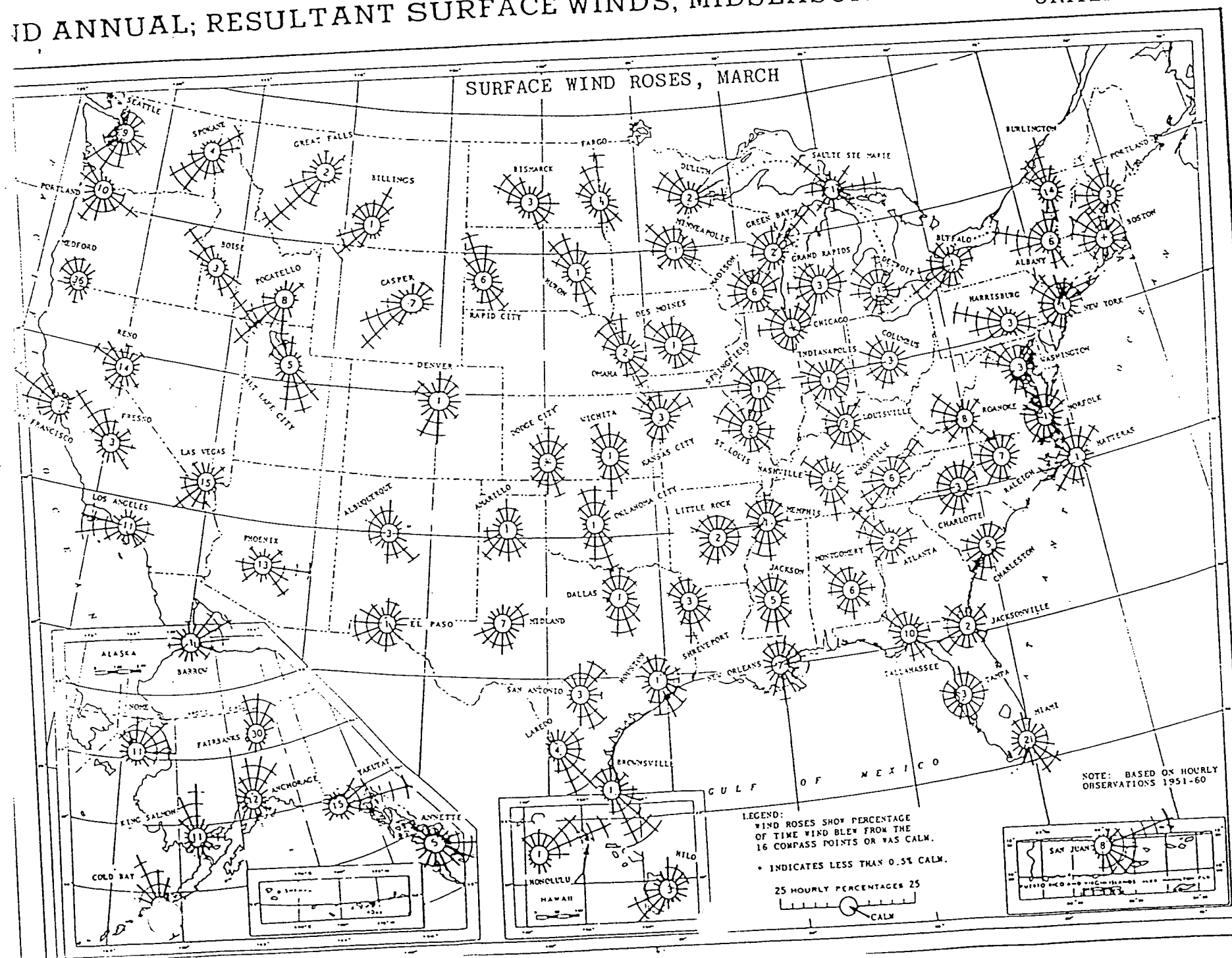
25 HOURLY PERCENTAGES 25

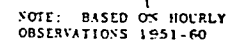
CALM

For Sale by Superintendent of Documents,  
Price 25 cc

CLIMATIC MAPS  
OF THE  
UNITED STATES

## DAILY ANNUAL; RESULTANT SURFACE WINDS, MIDSEASONAL.





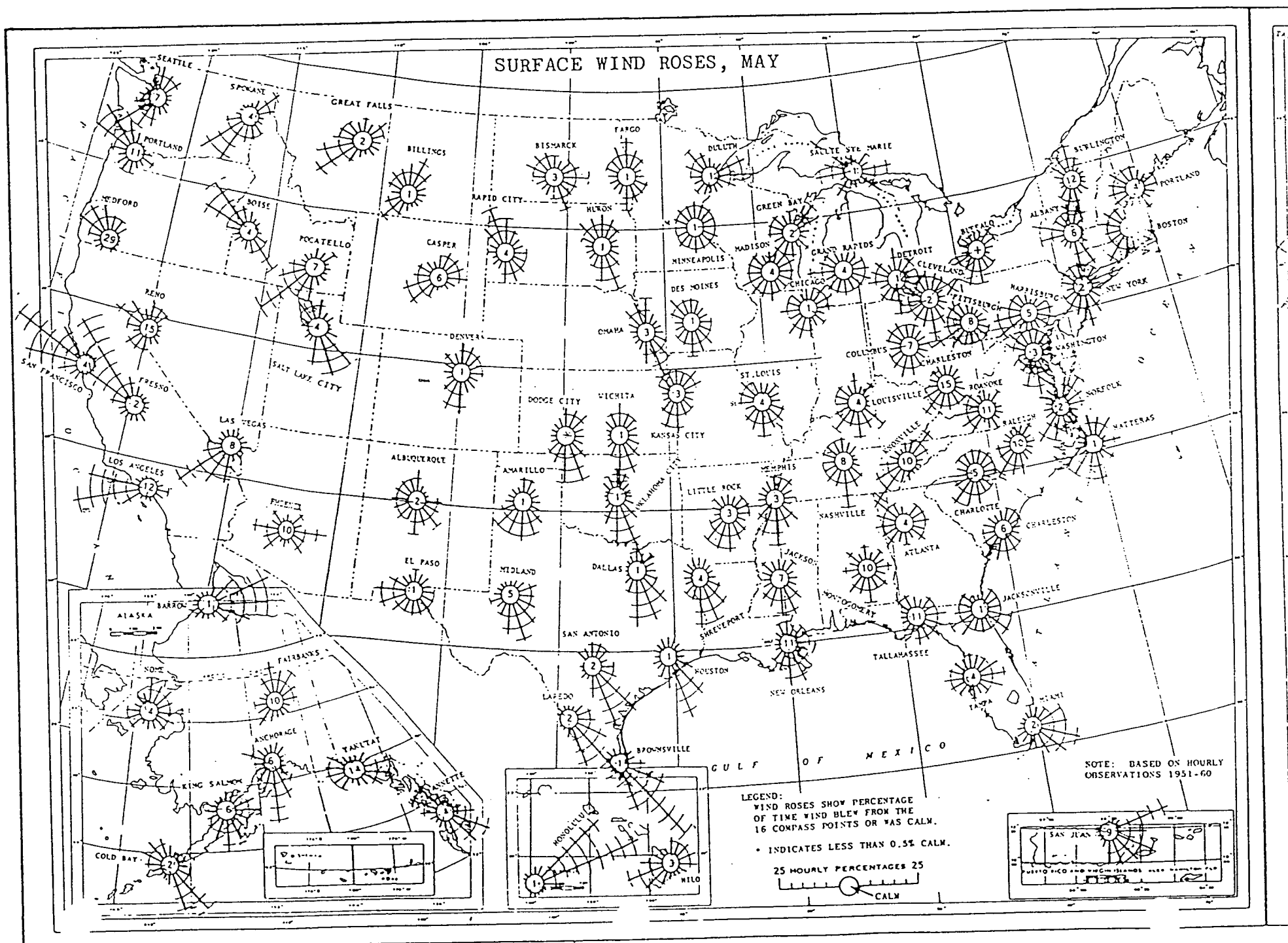
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WIND ROSES SHOW PERCENTAGE  
OF TIME WIND BLEW FROM THE  
16 COMPASS POINTS OR WAS CALM.

\* INDICATES LESS THAN 0.5% CALM.

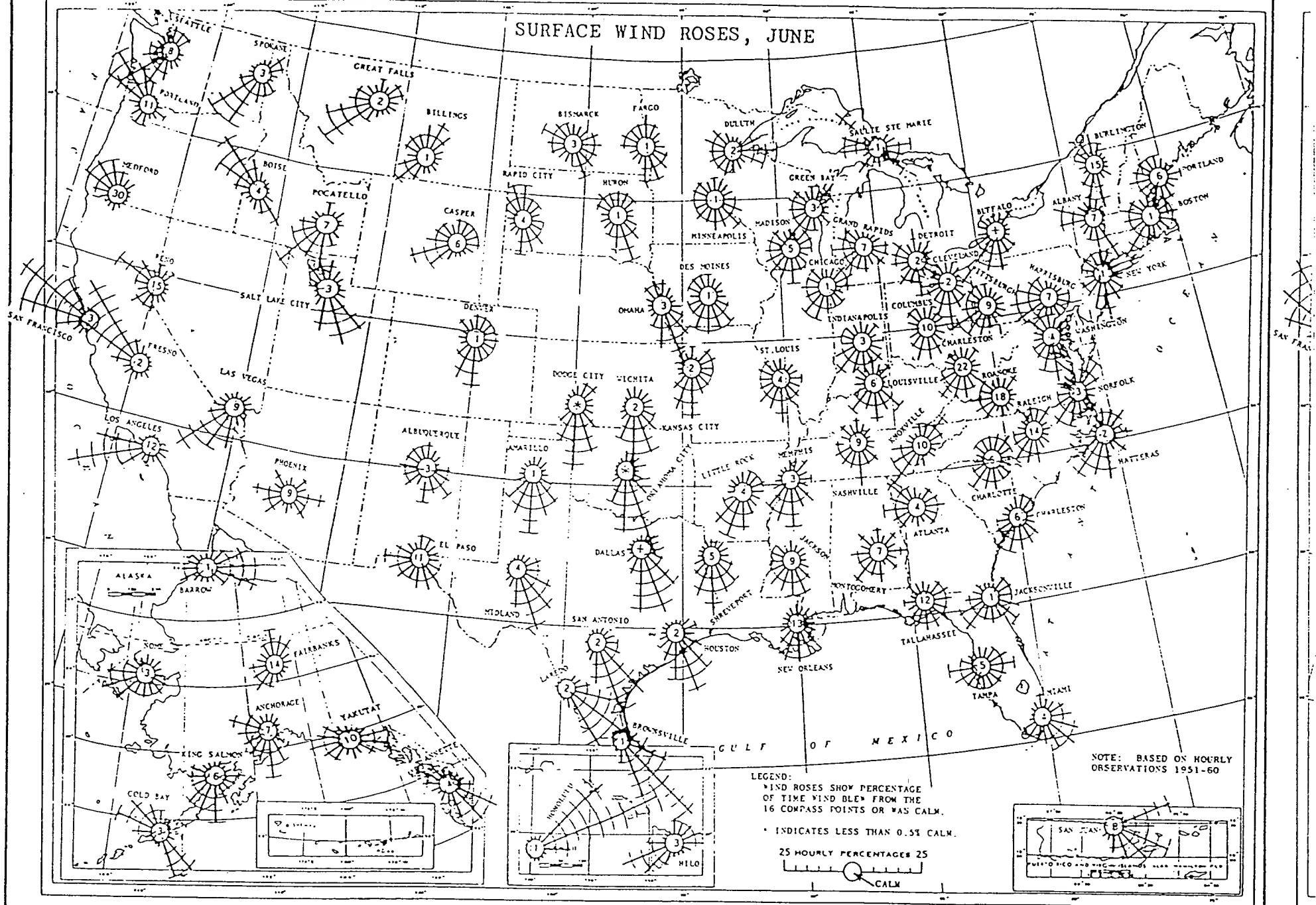
25 HOURLY PERCENTAGES 25

CALX

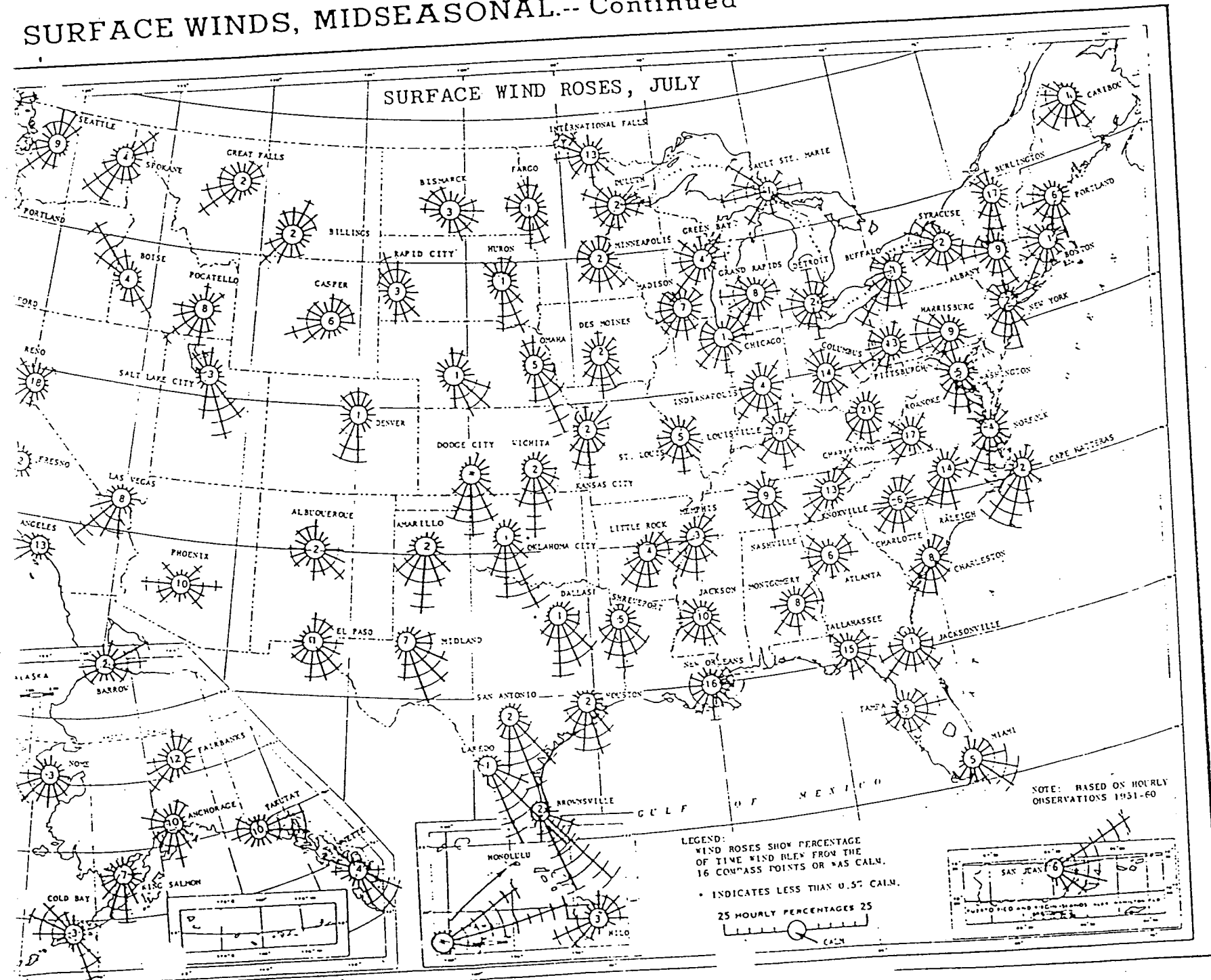
# SURFACE WIND ROSES, MONTHLY AND ANNUAL; RESUL



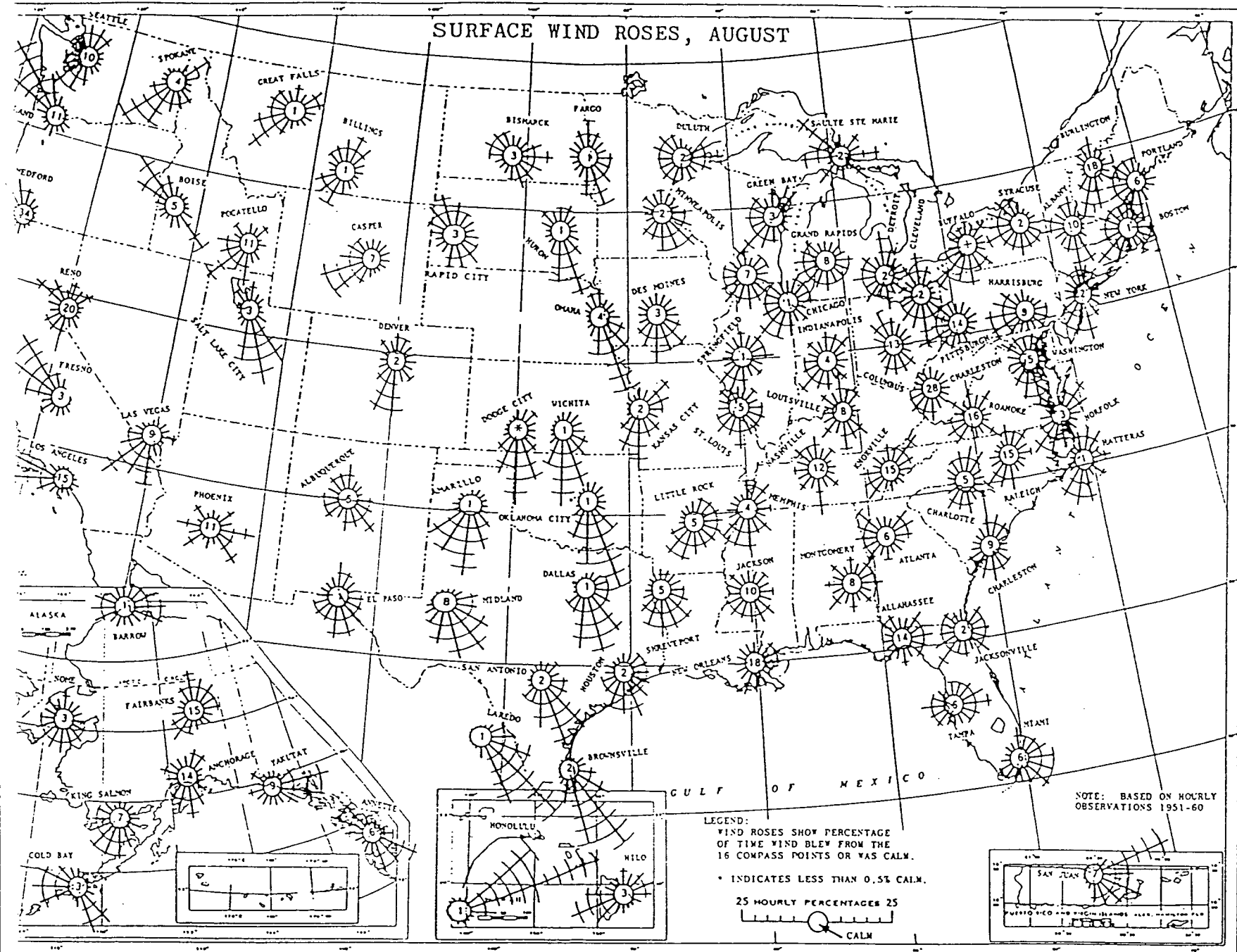
# SURFACE WIND ROSES, JUNE



# SURFACE WINDS, MIDSEASONAL-- Continued

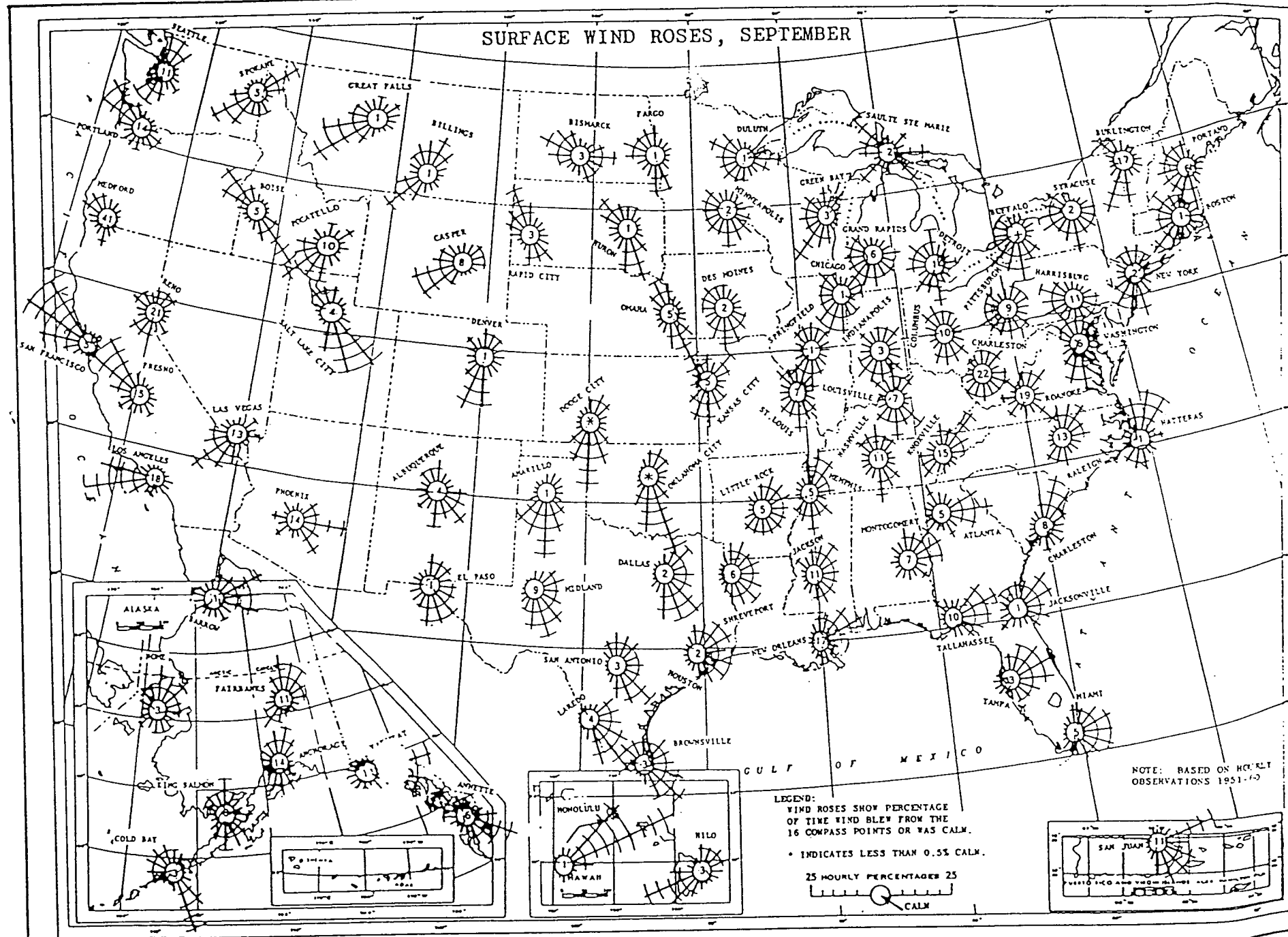


# SURFACE WIND ROSES, AUGUST





# SURFACE WIND ROSES, MONTHLY AND ANNUAL; RES

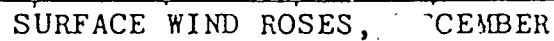
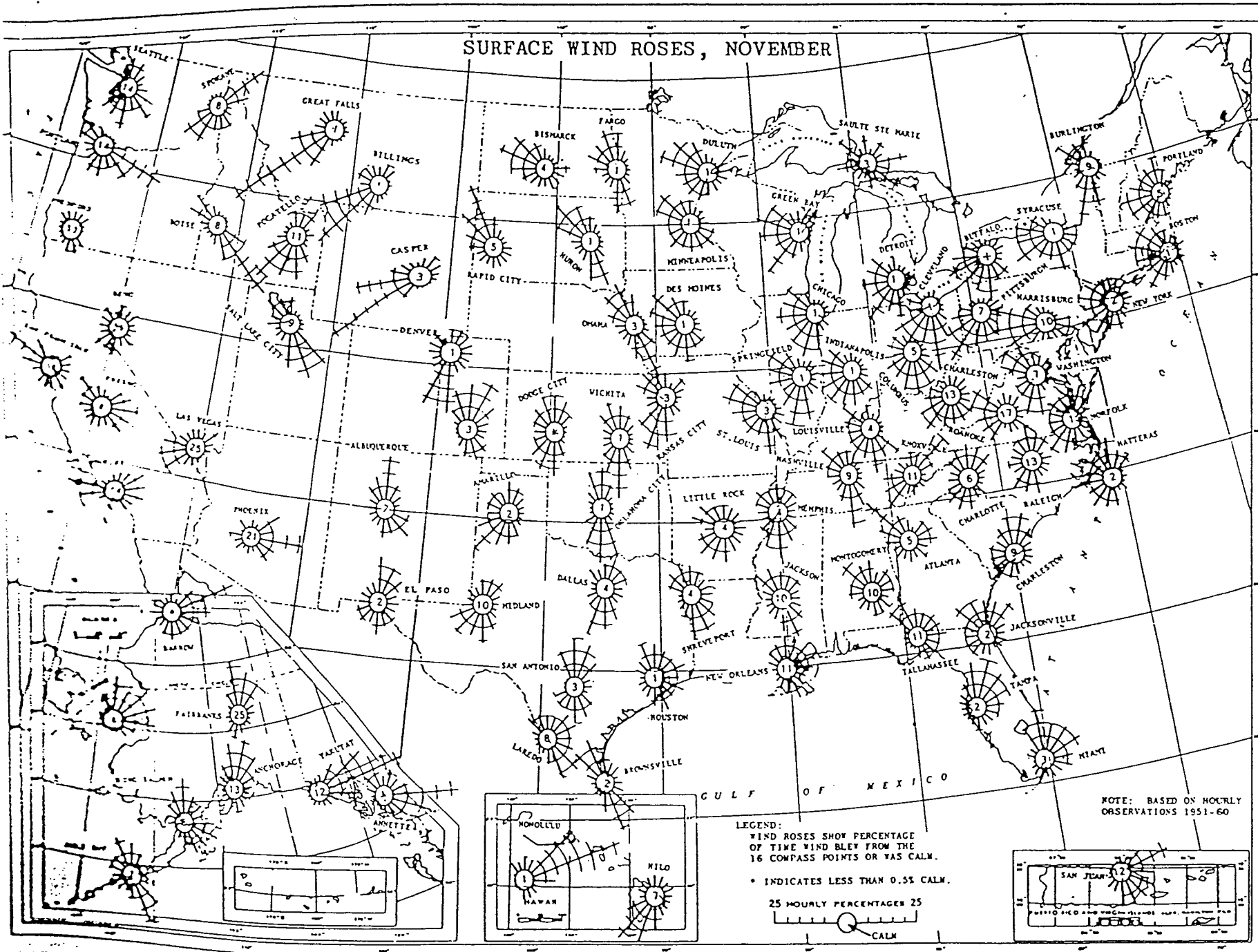


## SURFACE WIND ROSES, OCTOBER

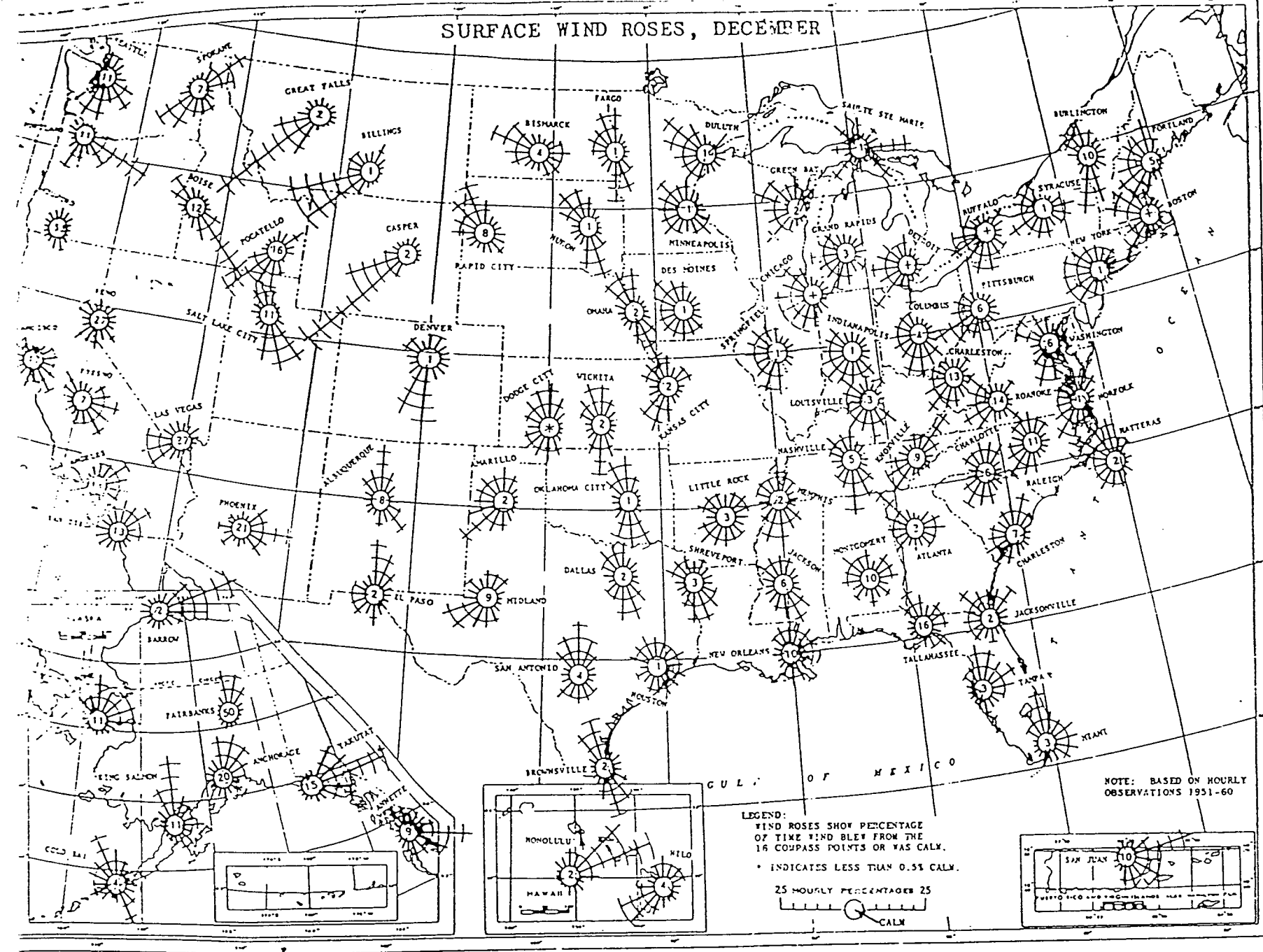
SURFACE WIND ROSES, OCTOBER

NOTE: BASED ON HOURLY  
OBSERVATIONS 1951-60

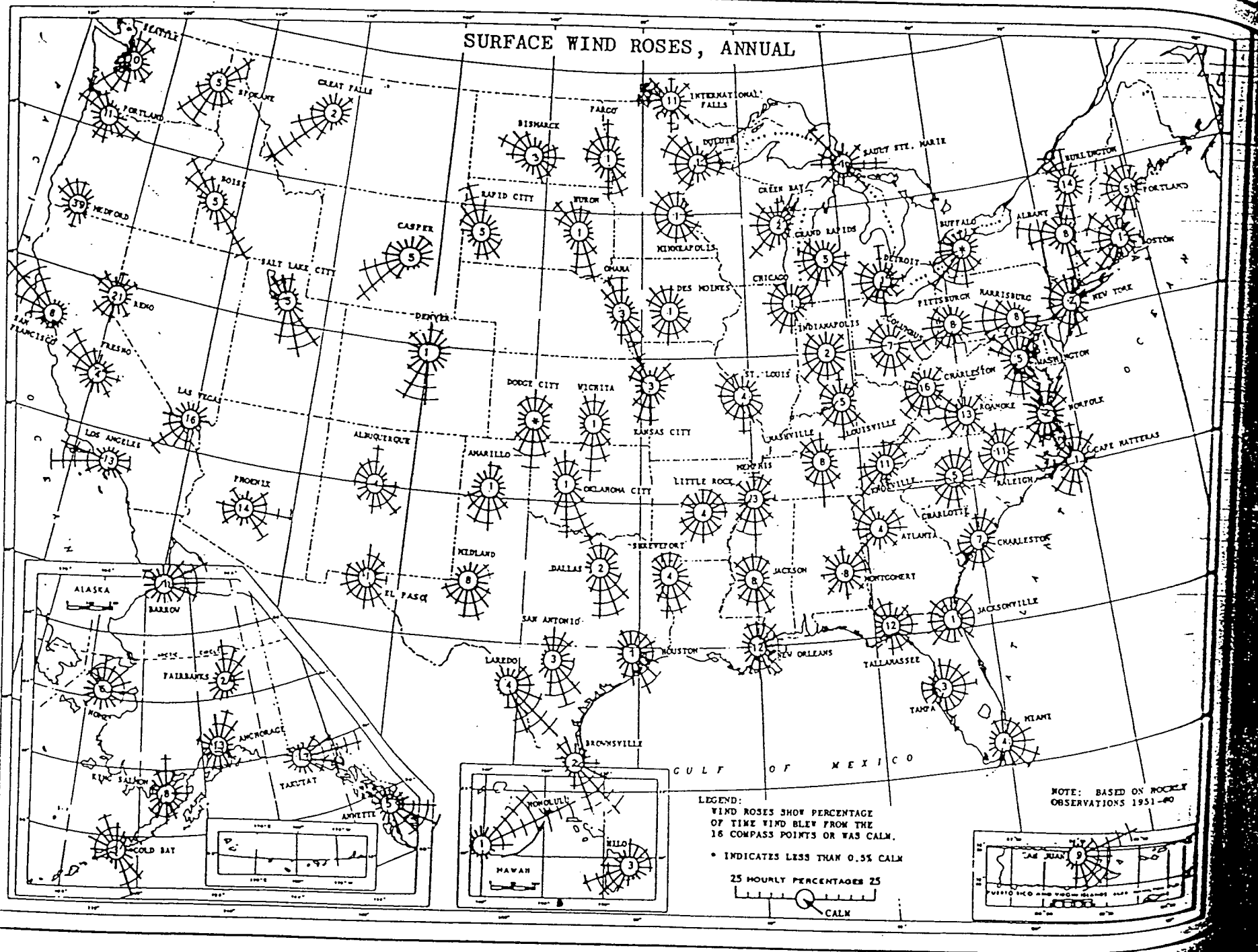
LEGEND:  
WIND ROSES SHOW PERCENTAGE  
OF TIME WIND BLEW FROM THE  
16 COMPASS POINTS OR WAS CALM.  
• INDICATES LESS THAN 0.5% CALM.  
25 HOURLY PERCENTAGES 25  
CALM



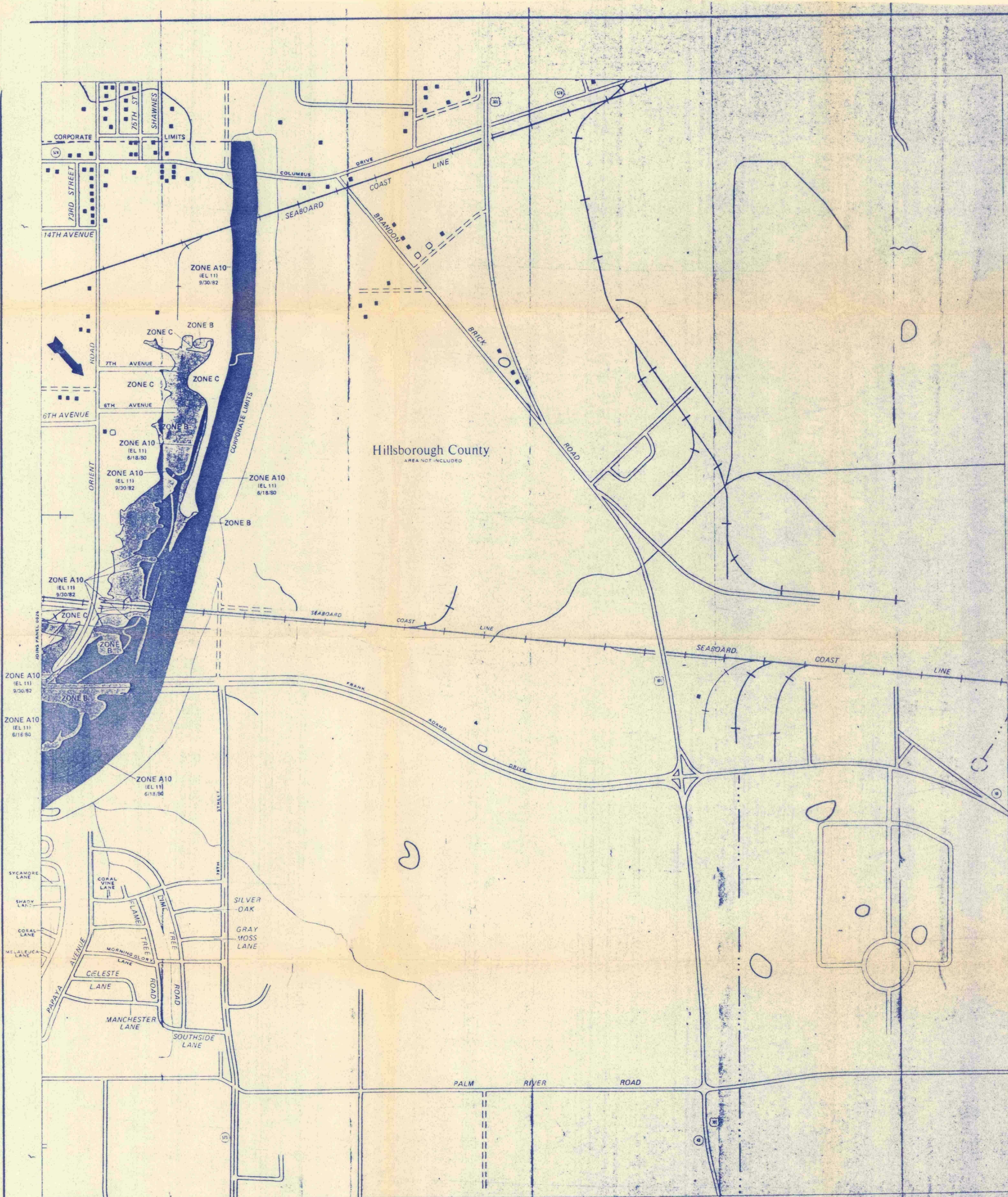
# SURFACE WIND ROSES, DECEMBER



BEST AVAILABLE COPY  
SURFACE WIND ROSES, MONTHLY AND ANNUAL; RE







4

KEY TO MAP	
500-Year Flood Boundary	Zone D Boundary
100-Year Flood Boundary	Zone E Boundary
Zone Designations with Date of Identification e.g., 12/2/74	Zone F Boundary
100-Year Flood Boundary	Zone G Boundary
Base Flood Elevation Line With Elevation in Feet	Zone H Boundary
Base Flood Elevation in Feet When Uniform Within Zone	Zone I Boundary
Elevation Reference Mark	Zone J Boundary
River Mile	Zone K Boundary
	Zone L Boundary

EXPLANATION OF ZONE DESIGNATIONS	
ZONE	EXPLANATION
A	Areas of 100-year flood base flood elevations are flood hazard factors not determined.
A0	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average heights of foundation 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.
A98	Areas of 100-year flood to be protected by flood protection systems 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 flood 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 indicate any areas subject to flooding in the community or its planning features outside special flood hazard areas.

For adjoining map panels, see separately printed Index to Map Panels.

**INITIAL IDENTIFICATION**  
NOVEMBER 27, 1970

**FLOOD HAZARD BOUNDARY MAP REVISIONS**

**FLOOD INSURANCE RATE MAP EFFECTIVE**  
JUNE 18, 1985

**FLOOD INSURANCE RATE MAP REVISIONS**  
Map revised September 30, 1982 to change flood boundaries and corporate limits.

To determine if flood insurance is available in this community, contact your insurance agent, or call the National Flood Insurance Program, at (800) 638-6420.



**NATIONAL FLOOD INSURANCE PROGRAM**

**FIRM**  
FLOOD INSURANCE RATE MAP

**CITY OF TAMPA, FLORIDA**  
**HILLSBOROUGH COUNTY**

**PANEL 27 OF 45**  
(SEE MAP INDEX FOR PANELS NOT PRINTED)

**COMMUNITY PANEL NUMBER**  
120114 0027 C

**MAP REVISED**  
SEPTEMBER 30, 1982

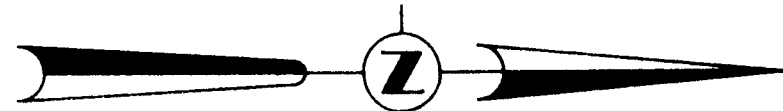
Federal Emergency Management Agency



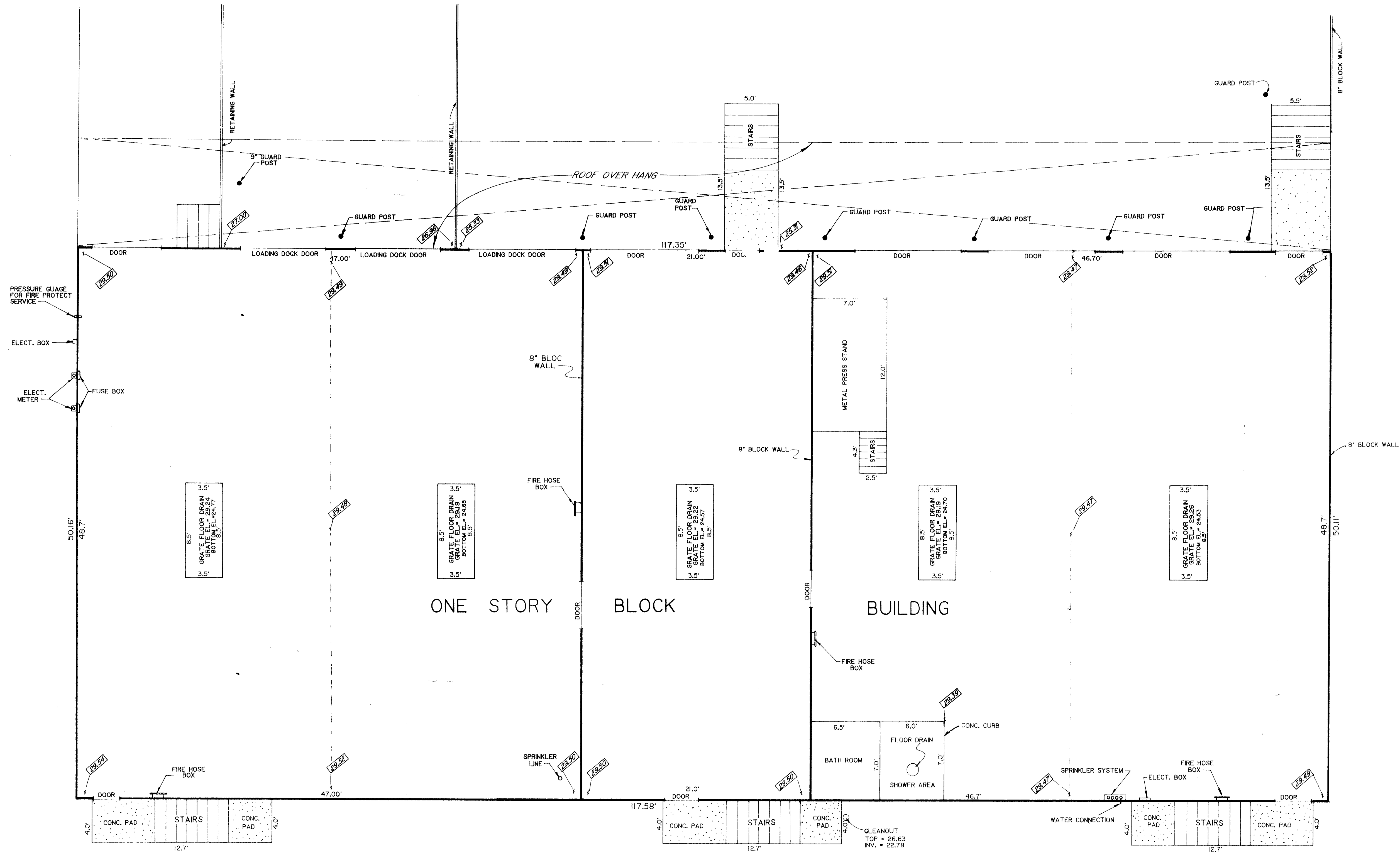
5

DEC - 8 1989

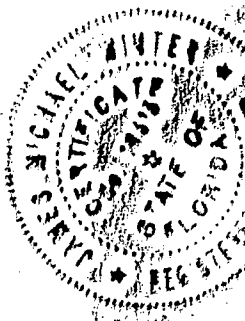
D.E.R.



0 5 10  
GRAPHIC SCALE: 1"=5'



James M. Winter  
JAMES M. WINTER - FLORIDA ENGINEERS REGISTRATION #19313.  
12/10/89



RECORD DRAWING

PREPARED FOR UNIVERSAL WASTE & TRASIT, INC.		PURPOSE BASIS OF BEARINGS NONE	
SCALE 1"=5'	JOB NUMBER #8143	DATE: SURVEY 9-7-1989	CHECKED BY EWR
SEMINOLE ENGINEERING, INC. TELEPHONE (813) 539-0051 14483 62nd ST. NORTH CLEARWATER, FL. 34620		SURVEYORS CERTIFICATE IN MY PROFESSIONAL JUDGEMENT, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, I CAN STATE THAT A SURVEY OF THE PROPERTY DESCRIBED HEREON WAS PERFORMED UNDER MY DIRECTION AND THAT IT MEETS MINIMUM TECHNICAL STANDARDS FOR SURVEYS SET FORTH BY THE FLORIDA BOARD OF LAND SURVEYORS, PURSUANT TO CHAPTER 61 - HHS, FLORIDA ADMINISTRATIVE CODE.	
EARL W. RAMER - FLORIDA LAND SURVEYORS REGISTRATION #3612.			

ATTACHMENT 10

ANTICIPATED ANNUAL HAZARDOUS WASTE VOLUME FOR STORAGE & TREATMENT

<u>Process Code</u>	<u>EPA Hazardous Waste Number</u>	<u>Waste Type</u>	<u>Estimated Annual Quantity</u>
S01;OTHER	D001	Ignitable	100,000 gallons
S01;OTHER	D002	Corrosive	25,000 gallons
S01;OTHER	D003	Reactive	5,000 gallons
S01;OTHER	D004 thru D043	Toxic Characteristic	60,000 gallons
S01;OTHER	F001 & F002	Halogenated Solvents	100,000 gallons
S01;OTHER	F003 & F005	Non-Halogenated Solvents	Incl. in D001
S01;OTHER	F004	Non-Halogenated Solvents	10,000 gallons
S01;OTHER	F006	Electroplating Sludges	Included in D003 thru D017
S01;OTHER	F007 thru F012	Electroplating Wastes	Included in D003
S01;OTHER	F020 thru <del>F024</del> F028	HEB Manufacturing <u>Pesticide Manufacturing</u> <u>&amp; Other Dioxin-Related</u> <u>Waste</u>	1,000 gallons
S01;OTHER	K001	Wood Preservative	1,000 gallons
S01;OTHER	K002 thru K008	Inorganic Pigments	3,000 gallons
S01;OTHER	K009 thru K011 K013 thru K030 K093 thru K096 K083 & K085 K103 thru K105	Organic Chemicals	3,500 gallons
S01;OTHER	K071;K073;K106	Inorganic Chemicals	600 gallons
S01;OTHER	K031 thru K043 K097 thru K099	Pesticides	1,500 gallons
S01:OTHER	K048 thru K052	Petroleum Refining	8,000 gallons

UNIVERSAL WASTE & TRANSIT, INC.

PERMIT NUMBER: H029-171163

REVISION #2: 10/01/90



ATTACHMENT 10, cont.

<u>Process Code</u>	<u>EPA Hazardous Waste Number</u>	<u>Waste Type</u>	<u>Estimated Annual Quantity</u>
S01;OTHER	K061 & K062	Iron & Steel	10,000 gallons
S01;OTHER	K069 & K100	Secondary Lead	1,500 gallons
S01;OTHER	K084;K101;K102	Veterinary Pharmaceuticals	1,500 gallons
S01;OTHER	K086	Ink Formulation	20,000 gallons
S01;OTHER	K060 & K087	Coking	1,500 gallons
S01;OTHER	"P"Listed Waste	Acute Hazardous Wastes	4,000 gallons
S01;OTHER	"U"Listed Waste	Toxic Wastes	20,000 gallons

TOTAL: 377,100/gallons/year or 6,856 fifty-five gallon drums  
at 260 working days/year. This equals 26 drums/day  
entering the facility.

<u>EPA Hazardous Waste Number</u>	<u>Waste Type</u>	<u>Estimated Annual Quantity (Gal.)</u>
D018	Benzene	5000
D019	Carbon Tetrachloride	2000
D020	Chlordane	1000
D021	Chlorobenzene	1000
D022	Chloroform	2000
D023	o-Cresol	500
D024	m-Cresol	500
D025	p-Cresol	500
D026	Total Cresol	1500
D027	1,4-Dichlorobenzene	1000
D028	1,2-Dichloroethane	2000
D029	1,1-Dichloroethylene	1000
D030	2,4-Dinitrotoluene	500
D031	Heptachlor (& Hydroxides)	500
D032	Hexachlorobenzene	500
D033	Hexachlorobutadiene	500
D034	Hexachloroethane	500
D035	Methylethylketone	5000
D036	Nitrobenzene	500
D037	Pentachlorophenol	1000
D038	Pyridine	1500
D039	Tetrachlorethylene	2500
D040	Trichloroethylene	4000
D041	2,4,5-Trichlorophenol	1000
D042	2,4,6-Trichlorophenol	1000
D043	Vinyl Chloride	500

Unviersal Waste & Transit, Inc.  
 Permit Number: H029-171163  
 Revision #1: 09/20/90

# Attachment 10

## ANTICIPATED ANNUAL HAZARDOUS WASTE VOLUME FOR STORAGE & TREATMENT

<u>Process Code</u>	<u>EPA Hazardous Waste Number</u>	<u>Waste Type</u>	<u>Estimated Annual Quantity</u>
S01;OTHER	D001	Ignitable	100,00 gallons
S01;OTHER	D002	Corrosive	25,000 gallons
S01;OTHER	D003	Reactive	5,000 gallons
S01;OTHER	D004 thru D017	E.P. Toxic	60,000 gallons
S01;OTHER	F001 & F002	Halogenated Solvents	100,000 gallons
S01;OTHER	F003 & F005	Non-Halogenated Solvents	Included in D001
S01;OTHER	F004	Non-Halogenated Solvents	10,000 gallons
S01;OTHER	F006	Electroplating Sludges	Included in D003 thru D017
S01;OTHER	F007 thru F012	Electroplating Wastes	Included in D003
S01;OTHER	F020 thru F024	HCL Manufacturing	1,000 gallons
S01;OTHER	K001	Wood Preservative	1,000 gallons
S01;OTHER	K002 thru K008	Inorganic Pigments	3,000 gallons
S01;OTHER	K009 thru K011 K013 thru K030 K093 thru K096 K083 & K085 K103 thru K105	Organic Chemicals	3,500 gallons
S01;OTHER	K071;K073;K106	Inorganic Chemicals	600 gallons
S01;OTHER	K031 thru K043 K097 thru K099	Pesticides	1,500 gallons
S01;OTHER	K048 thru K052	Petroleum Refining	8,000 gallons

S01;OTHER	K061 & K062	Iron & Steel	10,000 gallons
S01;OTHER	K069 & K100	Secondary Lead	1,500 gallons
S01;OTHER	K084;K101;K102	Veterinary Pharmaceuticals	1,500 gallons
S01;OTHER	K086	Ink Formulation	20,000 gallons
S01;OTHER	K060 & K087	Coking	1,500 gallons
S01;OTHER	"P" listed waste	Acute Hazardous Wastes	4,000 gallons
S01;OTHER	"U" listed waste	Toxic Wastes	20,000 gallons

TOTAL: 377,100 gallons/year or  
6856 fifty five gallon drums at 260 working days/year.  
This equals 26 drums/day entering the facility.

# ACORD. CERTIFICATE OF INSURANCE

ISSUE DATE (MM/DD/YY)

8/29/89

## PRODUCER

Corroon & Black of Michigan,  
Inc.  
P.O. Box 2727  
Livonia, MI 48151-2727

## CODE

## SUB-CODE

## INSURED

Universal Waste & Transit,  
Inc.  
2501 N. Orient Rd.  
Ste. A  
Tampa, FL 33619

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS  
NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND,  
EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW

## COMPANIES AFFORDING COVERAGE

COMPANY LETTER A	Planet Insurance Company
COMPANY LETTER B	National Union Fire
COMPANY LETTER C	INA
COMPANY LETTER D	
COMPANY LETTER E	

## COVERAGES

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED, NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

CO. LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	ALL LIMITS IN THOUSANDS
A	GENERAL LIABILITY				GENERAL AGGREGATE \$ 5,000
	COMMERCIAL GENERAL LIABILITY				PRODUCTS-COMP/OPS AGGREGATE \$ 5,000
	<input checked="" type="checkbox"/> CLAIMS MADE OCCUR	NG1259250	4/1/89	4/1/90	PERSONAL & ADVERTISING INJURY \$ 5,000
	OWNER'S & CONTRACTOR'S PROT.				EACH OCCURRENCE \$ 5,000
					FIRE DAMAGE (Any one fire) \$ 50
					MEDICAL EXPENSE (Any one person) \$ 5
J	AUTOMOBILE LIABILITY				COMBINED SINGLE LIMIT \$ 5,000
	ANY AUTO				BODILY INJURY (Per person) \$
	ALL OWNED AUTOS	NK1258703	4/1/89	4/1/90	BODILY INJURY (Per accident) \$
	<input checked="" type="checkbox"/> SCHEDULED AUTOS				PROPERTY DAMAGE \$
	<input checked="" type="checkbox"/> HIRED AUTOS				
	<input checked="" type="checkbox"/> NON-OWNED AUTOS				
	GARAGE LIABILITY				
	<input checked="" type="checkbox"/> Michigan No-Fault				
	EXCESS LIABILITY				EACH OCCURRENCE \$ AGGREGATE \$
	OTHER THAN UMBRELLA FORM				
C	WORKER'S COMPENSATION				STATUTORY \$ 100 (EACH ACCIDENT)
	AND				\$ 500 (DISEASE-POLICY LIMIT)
	EMPLOYERS' LIABILITY	WOCC31271435	2/4/89	2/4/90	\$ 100 (DISEASE-EACH EMPLOYEE)
	OTHER				
B	Pollution Legal Liability	PLL7166343	8/29/89	8/29/90	\$1,000,000. Each Loss
					\$2,000,000. Total For All Losses

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/RESTRICTIONS/SPECIAL ITEMS

## CERTIFICATE HOLDER

Florida Department of Environ-  
mental Regulations  
Twin Towers Office Building  
00 Blairestone  
Tallahassee, FL 32399-240

## CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING COMPANY WILL ENDEAVOR TO MAIL \_\_\_\_\_ DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO MAIL SUCH NOTICE SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE COMPANY, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE

MEDIA	PLASTICS					METALS				ELASTOMERS	
	RYTON	KYNAR	TEFLON	PVC	PP	HAST. C	TITANIUM	316 SS	CARB. STEEL	VITON	BUNA N
ACETALDEHYDE	A		A	NR	Q	A	A	A	NR	NR	NR
	CON		CON	CON	CON	98	CON	CON	CON	CON	CON
	200		200	70	70	135	70	200	70	70	70
ACETIC ACID, GLACIAL	A	A/O	A	A	M	A		A	Q	NR	NR
	CON	CON	CON	CON	CON	97		CON	CON	CON	CON
	200	200	200	80	80	70		180	70	75	70
ACETIC ACID	A	A	A	M	M	A	A	A	NR	A	M
	CON	CON	CON	80	80	60	ALL	60	CON	50	30
	200	200	200	80	80	356	BP	180	70	68	70
ACETIC ANHYDRIDE	A	NR	A	NR	NR	A	A	A	Q	NR	NR
	CON	CON	CON		ALL	ALL	100	90	CON	CON	CON
	200	200	200	70	70	BP	BP	89	70	70	70
ACETONE	A	NR	A	NR	A	A		A	A	NR	NR
	CON	CON	CON	ALL	CON	ALL		ALL	ALL	ALL	ALL
	200	200	200	70	200	BP		BP	70	70	70
ACETOPHENONE	A	Q	A		M			A		NR	NR
	CON	CON	CON		CON			CON		CON	CON
	200	200	200		70			70		70	70
ACETYLENE	A		A					A	A	A	M
	CON	CON	CON					CON	CON	CON	CON
	200	200	200					70	70	70	70
ACETYL CHLORIDE (DRY)	A	A/-	A					M	A	A	
	CON	CON	CON					CON	CON	CON	
	200	200	200					BP	70	70	
RIFLAUINE	A		A		A						
	2		2		2						
	70		70		70						
ACID MINE WATER	A/-	A	A	A				Q	NR		
	CON		CON	CON				CON	CON		
	200		200	70				70	70		
ALCOHOL, AMYL	A	A	A	A	A	A		A	A	M	M
	CON	CON	CON	CON	CON	100		CON	CON	CON	CON
	200	200	200	70	200	70		70	70	70	70
ALCOHOL, BUTYL	A	A	A	M	A			A	A	A	A
	CON	CON	CON	CON	CON			CON	CON	CON	CON
	200	200	200	80	200			70	70	250	70
ALCOHOL, ETHYL	A	A	A	A	A	A	A	A		A	A
	96	96	96	CON	CON	ALL	95	ALL		CON	CON
	70	150	70	80	200	BP	BP	BP		70	70
ALUMINUM CHLORIDE	A	A	A	A	A	NR	A	M	A	A	A
	CON	CON	CON	CON	CON	80	25	CON	CON	CON	CON
	200	200	200	70	200	BP	70	70	70	70	70
ALUMINUM FLUORIDE			A	A	A	M	A	M/Q		A	A
				CON	CON	10	SAT			CON	CON
			70	70	200	75	70	70		70	70
ALUMINUM SULFATE	A	A	A	A	A	A	A	A	NR	A	A
	CON	CON	CON	CON	CON	55	SAT	100	CON	CON	CON
	200	200	200	70	200	100	70	BP	70	70	70
AMMONIA, AQUEOUS	A/-	A	A		A	A/M	A	A	A	A	A
	CON	CON	CON		30	ALL	30	CON	CON	CON	CON
	200	200	200		80	BP	70	70	70	70	70
AMMONIUM CHLORIDE	A	A	A	A	A	M	A	A		A	A
	CON	CON	CON	CON	CON	ALL	ALL	50		CON	CON
	200	200	200	70	200	BP	200	BP		70	70
AMMONIUM FLUORIDE			A		M	A	M				
			20		25	45	20				
			70		80	260	70				

MEDIA	PLASTICS					METALS				ELASTOMERS	
	RYTON	KYNAR	TEFLON	PVC	PP	HAST. C	TITA- NIUM	316 SS	CARB. STEEL	VITON	BUNA N
AMMONIUM HYDROXIDE	A	A	A	A	A		A	Q	Q	A	NR
	CON	CON	CON	CON	CON		28	CON	CON	CON	CON
	200	200	200	70	200		70	70	70	70	70
AMMONIUM NITRATE	A	A	A	A	A	A	A	A	NR	M	A
	CON	CON	CON	CON	CON	10	28	CON	CON	CON	CON
	200	200	200	70	200	212	BP	BP	70	70	70
AMMONIUM SULFATE	A	A	A	A	A	M	A	A	Q	NR	A
	CON	CON	CON	CON	CON	ALL	SAT	100	CON	CON	CON
	200	200	200	70	200	BP	70	BP	70	70	70
AMYL ACETATE	A	Q	A		NR	M		Q	Q	NR	NR
	CON	CON	CON		ALL	-		CON	CON	CON	CON
	200	200	200		70	275		70	70	70	70
AMYL CHLORIDE					NR	A				NR	A
					ALL	100				CON	CON
					70	86				70	70
ANILINE	A	Q	A	NR	M	M	A	A	A	NR	NR
	CON	CON	CON	CON	CON	100	100	100	CON	CON	CON
	200	200	200	70	70	75	70	70	70	70	70
ASPHALT EMULSIONS	A		A	A	A			A	A	A	M
	CON		CON	CON	CON			CON	CON	CON	CON
	200		200	70	70			70	70	70	70
AQUA REGIA	NR	M	A	A	Q	NR	M			M	
	-	-	-	-	CON	-	-			-	
	70	70	70	70	70	BP	140			70	
AVIATION FUEL	A	A	A	M	M	A		A	A	A	A
	100	100	100	100	CON	100		100	100	100	100
	200	200	200	80	70	325		70	70	70	70
AVIATION JET FUEL	A	A	A	A	M			A	A	A	A
	100	100	100	100	CON			100	100	100	100
	200	200	200	80	70			70	70	70	70
BARIUM CHLORIDE	A	A	A	A	A	A	A	Q	Q	A	A
	CON	CON	CON	CON	CON	100	20	CON	CON	CON	CON
	200	200	200	70	200	70	200	70	70	70	70
BARIUM HYDROXIDE	A	A	A	A	A	M				A	A
	CON	CON	CON	CON	CON	ALL				CON	CON
	200	200	200	70	200	BP				70	70
BARIUM SULFATE	A	A	A	A	A					A	A
	CON	CON	CON	CON	CON					CON	CON
	200	200	200	70	200					70	70
BEER				A	A			A		A	A
				CON	CON			CON		CON	CON
				70	200			70		70	70
BENZENE	A	A/Q	A	NR	NR	A	A	A	A	A	NR
	CON	CON	CON	CON	ALL	90	CON	CON	CON	CON	CON
	200	200	200	70	70	80	170	70	70	70	70
BENZALDEHYDE	A	A/Q	A	NR	Q			A	NR	NR	NR
	CON	CON	CON	CON	CON			CON	CON	CON	CON
	200	200	200	70	70			70	70	70	70
BENZENE SULFONIC ACID	A	A/Q	A	A		M		A	NR	A	
	CON	CON	CON	10		86		CON	CON	CON	
	200	200	200	70		140		70	70	70	
BENZYL CHLORIDE	A	A	A							A	NR
	CON	CON	CON							CON	CON
	200	200	200							70	70
BORAX	A	A	A	A	A			A	A	A	M
	CON	CON	CON	CON	CON			CON	CON	CON	CON
	200	200	200	70	200			70	70	70	70

MEDIA	PLASTICS					METALS				ELASTOMERS	
	RYTON	KYNAR	TEFLON	PVC	PP	HAST. C	TITA- NIUM	316 SS	CARB. STEEL	VITON	BUNA N
BORIC ACID		A	A	A	A	A	A	A		A	A
		-	-	CON	CON	ALL	CON	100		CON	CON
		250	70	70	200	BP	70	BP		70	70
BRINE	A	A	A	A	A	A	A				A
	100	-	100	CON	CON	100	100				CON
	70	250	70	70	200	140	70				70
BROMINE WATER	Q	A	A	A	Q		A	NR	NR	A	
	CON	CON	CON	CON	CON		-	CON	CON	CON	
	200	200	200	70	70		70	70	70	70	
BUTADIENE	A	A	A	A						M	NR
	CON	CON	CON	CON						CON	CON
	200	200	200	70						70	70
BUTANE	A	A	A	A	M	A				A	A
	CON	CON	CON	CON	CON	-				CON	CON
	200	200	200	70	80	250				70	70
BUTYLENE	A	A/NR	A	M						A	M
	CON	CON	CON	CON						CON	CON
	200	200	200	70						70	70
BUTYL ACETATE	A	NR	A	NR	M	A				NR	
	CON	CON	CON	CON	CON	100				CON	
	200	200	200	70	80	170				70	
BUTYL AMINE	A/Q	NR	A							NR	NR
	CON	CON	CON							CON	CON
	200	200	200							70	70
BUTYL ETHER	A	A	A								
	CON	CON	CON								
	200	200	200								
CALCIUM CHLORIDE	A	A	A	A	A	M	A	M	Q	A	A
	CON	CON	CON	CON	CON	58	55	100	CON	CON	CON
	200	200	200	70	200	395	220	70	70	70	70
CALCIUM HYDROXIDE		A	A	A	A	A	A	M		A	A
		CON	CON	CON	CON	50	-	50		CON	CON
		250	70	70	200	BP	70	BP		70	70
CALCIUM NITRATE	A	A	A	A	A					A	A
	CON	CON	CON	CON	CON					CON	CON
	200	200	200	70	70					70	70
CALCIUM SULFATE	A	A	A	A	A	A		A		A	M
	CON	CON	CON	CON	CON	10		-		CON	CON
	200	200	200	70	200	BP		70		70	70
CARBON DIOXIDE	A	A	A	A	A	A	A	A	A	A	A
	CON	CON	CON	CON	CON	-	100	CON	CON	CON	CON
	200	200	200	70	200	70	70	70	70	70	70
CARBON DISULFIDE	A	A/-	A	NR	M			A	A	A	NR
	CON	CON	CON	CON	CON			CON	CON	CON	CON
	200	200	200	70	200			70	70	70	70
CARBON TETRACHLORIDE	A	A	A	NR	NR	A	A	A	NR	A	NR
	CON	CON	CON	CON	ALL	100	100	100	CON	CON	CON
	200	200	200	70	70	73	BP	BP	70	70	70
CARBONIC ACID			A	A	A	A		A		A	A
			CON	CON	CON	100		ALL		CON	CON
			70	70	200	75		HOT		70	70
CASTOR OIL				A	A					A	A
				CON	100					CON	CON
				70	200					70	70
CELLOSOLVE	A	A	A	M	M			A	A	M	
	CON	CON	CON	CON	CON			CON	CON	CON	
	200	200	200	70	80			70	70	70	



MEDIA	PLASTICS					METALS				ELASTOMERS	
	RYTON	KYNAR	TEFLON	PVC	PP	HAST. C	TITANIUM	316 SS	CARE. STEEL	VITON	BUNA N
CHLOROBENZENE (DRY)	A	A	A	NR	NR			A	A	A	NR
	CON	CON	CON	CON	ALL			CON	CON	CON	CON
	200	200	200	70	70			BP	70	70	70
2-CHLOROETHANOL	A										
	CON										
	200										
CHLOROFORM	A	A	A	NR	M	M	A	A	A	A	NR
	CON	CON	CON	CON	100	100	100	CON	CON	CON	CON
	200	200	200	70	80	BP	BP	70	70	70	70
CHLOROSULFONIC ACID	NR	NR	A	NR	NR	A		NR	NR	NR	NR
	CON	CON	CON	CON	100	45		CON	CON	CON	CON
	200	200	200	70	70	80		70	70	70	70
CHLORINE (DRY)	A	A	A	M	M	A	A/O	A	O	A	
	CON	CON	CON	CON	CON	97	CON	CON	CON	CON	
	200	200	200	70	80	180	70	70	70	70	
CHLORINE (WET)				M	M	A	A	O		A	
				CON	CON	100	CON	CON		CON	
				70	80	75	200	70		70	
CHROMIC ACID (DILUTE)	A	A	A	A	A	A	A	NR	NR	A	
	DIL	DIL	DIL	DIL	10	20	10	DIL	DIL	DIL	
	200	200	200	70	200	70	BP	70	70	70	
CHROMIC ACID (CONC.)	A/O	A	A	M	A	NR	A	NR	NR	A	NR
	CON	CON	CON	CON	80	30	37	CON	CON	CON	CON
	200	200	200	70	30	BP	195	70	70	70	70
CITRIC ACID	A	A	A	A	A	A	A	A		A	A
	10	CON	10	CON	10	ALL	CON	50		CON	CON
	70	230	70	70	200	BP	70	BP		70	70
COTTONSEED OIL	A	A	A	A	A					A	A
	CON	CON	CON	CON	CON					CON	CON
	200	200	200	70	200					70	70
M-CRESOL (CRUDE)	A	A	A	NR	NR			A	A	A	NR
	CON	CON	CON	CON	ALL			CON	CON	CON	CON
	200	200	200	70	70			70	70	70	70
CRESYLDIPHENYL PHOSPHATE	A										
	CON										
	200										
CRUDE OIL	A	A	A	A	M			A		A	A
	CON	CON	CON	CON	CON			CON		CON	CON
	200	200	200	70	80			HOT		70	70
COPPER CYNIDE		A	A	A	A	A	A	A		A	A
		CON	CON	CON	CON	CON	CON	CON		CON	CON
		150	70	70	200	70	70	70		70	70
COPPER SULFATE	A	A	A	A	A	A	A	A		A	A
	CON	CON	CON	CON	CON	ALL	ALL	CON		CON	CON
	200	200	200	70	200	BP	70	BP		70	70
CYCLOHEXANE	A	A	A				A	A	A	A	A
	CON	CON	CON				-	CON	CON	CON	CON
	200	200	200				300	70	70	70	70
CYCLOHEXANOL				NR	M			A	A	A	M
				CON	CON			CON	CON	CON	CON
				70	80			70	70	70	70
CYCLOHEXANONE				NR	NR			A	A	NR	NR
				CON	ALL			CON	CON	CON	CON
				70	70			70	70	70	70
DETERGENTS	A		A	A	A					A	A
	CON		CON	CON	CON					CON	CON
	200		200	70	200					70	70

MEDIA	PLASTICS					METALS				ELASTOMERS	
	RYTON	KYNAR	TEFLON	PVC	PP	HAST. C	TITA- NIUM	316 SS	CARB. STEEL	VITON	BUNA N
DIESEL FUEL	A	A	A							A	A
	CON	CON	CON							CON	CON
	200	200	200							70	70
DIISOBUTYLENE	A	A	A					A	A		
	CON	CON	CON					CON	CON		
	200	200	200					70	70		
DIMETHYL ANILINE	A	NR								NR	
	CON	CON								CON	.
	200	200								70	
DIMETHYL FORMAMIDE	A	NR	A							NR	M
	CON	CON	CON							CON	CON
	200	200	200							70	70
DIMETHYL PHTHALATE	A	NR	A	NR						M	NR
	CON	CON	CON	CON						CON	CON
	200	200	200	70						70	70
DIMETHYL SULFOXIDE	A										
	CON										
	200										
DIPHENOL ETHER	A		A					A	A		
	CON		CON					CON	CON		
	200		200					70	70		
DIOCTYL PHTHALATE	A		A		NR			A	A		
	CON		CON		ALL			CON	CON		
	200		200		70			70	70		
P-DIOXANE	A	NR	A					Q	Q		
	CON	CON	CON					CON	CON		
	200	200	200					70	70		
DOWTHERM	A		A					A	Q	A	
	CON		CON					CON	CON	CON	
	200		200					70	70	70	
EPICHLOROHYDRIN (DRY)	A	NR	A					A	A	NR	
	CON	CON	CON					CON	CON	CON	
	200	200	200					70	70	70	
ETHANOLAMINE	A	NR	A					A	A	NR	M
	CON	CON	CON					CON	CON	CON	CON
	200	200	200					70	70	70	70
ETHERS	A	NR	A	NR	NR	M		A	A	NR	NR
	CON	-	CON	CON	ALL	100		CON	CON	CON	CON
	200	150	200	70	70	75		70	70	70	70
ETHYL ACETATE	A	NR	A	NR	A	M		A	Q	NR	NR
	CON	CON	CON	CON	CON	100		CON	CON	CON	CON
	200	120	200	70	200	BP		70	70	70	70
ETHYL CHLORIDE (WET)	A	A	A	NR	NR	M		NR	NR	A	A
	CON	CON	CON	CON	ALL	100		CON	CON	CON	CON
	200	200	200	70	70	75		70	70	70	70
ETHYLENE DIAMINE	A	NR	A			M		A	Q	NR	A
	CON	CON	CON			-		CON	CON	CON	CON
	200	70	200			70		70	70	70	70
ETHYLENE DICHLORIDE	A		A	NR	NR	M	A	Q	Q	A	NR
	CON		CON	CON	ALL	-	100	CON	CON	CON	CON
	200		200	70	70	200	BP	70	70	70	70
ETHYLENE GLYCOL	A	A	A	A	A			A	Q	A	A
	CON	CON	CON	CON	CON			CON	CON	CON	CON
	200	200	200	70	200			70	70	70	70
ETHYLENE OXIDE			A	NR	M					NR	NR
			CON	CON	CON					CON	CON
			70	70	80					70	70

MEDIA	PLASTICS					METALS				ELASTOMERS	
	RYTON	KYNAR	TEFLON	PVC	PP	HAST. C	TITANIUM	316 SS	CARB. STEEL	VITON	BUNA N
FATTY ACIDS			A	A	M	A				A	M
			CON	CON	CON	90				CON	CON
			70	70	70	240				70	70
FERRIC CHLORIDE	A	A	A	A	A	M	A	NR	NR	A	A
	CON	CON	CON	CON	CON	45	50	CON	CON	CON	CON
	200	200	200	70	200	75	235	70	70	70	70
FERRIC NITRATE		A	A	A	A	A		A		A	A
		CON	CON	CON	CON	10		5		CON	CON
		200	70	70	200	75		70		70	70
FERRIC SULFATE		A	A	A	A	A	A	A		A	A
		-	CON	CON	CON	30	CON	CON		CON	CON
		230	70	70	200	150	70	70		70	70
FERROUS CHLORIDE	A	A	A	A	A	M		NR	NR		
	CON	CON	CON	CON	CON	100		CON	CON		
	200	200	200	70	200	275		70	70		
FERROUS SULFATE		A	A	A	A	M	A	A		A	
		-	CON	CON	CON	ALL	100	100		100	
		250	70	70	200	BP	70	70		70	
FLUOROBORIC ACID			A	A	A		NR				A
			CON	CON	CON		20				CON
			70	70	200		100				70
FLUOSILICIC ACID			A	A	A	M	NR				A
			-	CON	CON	100	-				CON
			70	70	200	73	70				70
FORMALDEHYDE	A	A	A	M	A	A	A	O	NR	A	M
	37	37	37	CON	CON	40	37	37	37	37	CON
	200	200	200	70	200	120	BP	70	70	70	70
FORMIC ACID	A	A	A	M	A	A	A/Q	M	NR	NR	M
	CON	CON	CON	CON	CON	85	ALL	100	CON	CON	CON
	200	200	200	70	200	150	200	BP	70	70	70
FREON (DRY)	A		A	M	M					M	M
	CON		CON	CON	CON					CON	CON
	200		200	70	80					70	70
FREON TE (SOLVENT)	M		A		M			A		A	A
	CON		CON		CON			CON		CON	CON
	70		70		70			70		70	70
FUEL OIL	A	A	A	A	M			A	A	A	A
	CON	CON	CON	CON	CON			CON	CON	CON	CON
	200	200	200	70	70			70	70	70	70
FURAN	A		A					A	A		NR
	CON		CON					CON	CON		CON
	200		200					70	70		70
FURFURAL	A	NR	A	NR	NR	M		A	A	NR	NR
	CON	CON	CON	CON	ALL	100		CON	CON	CON	CON
	200	70	200	70	70	75		70	70	70	70
GALLIC ACID		M		A	A	A		A		A	M
		CON		CON	CON	100		SAT		CON	CON
		120		70	200	BP		212		70	70
GASOLINE	A	A	A	M	M	A		A	A	A	A
	CON	CON	CON	CON	CON	100		CON	CON	CON	CON
	200	200	200	70	70	325		70	70	70	70
GLUCOSE		A	A	A	A					A	A
		CON	20	CON	CON					CON	CON
		212	70	70	200					70	70
GLYCERIN		A	A	A	A	A	A	A		A	A
		CON	100	CON	CON	100	100	100		CON	CON
		250	70	70	200	75	70	70		70	70

MEDIA	PLASTICS					METALS				ELASTOMERS	
	RYTON	KYNAR	TEFLON	PVC	PP	HAST. C	TITANIUM	316 SS	CARB. STEEL	VITON	BUNA N
GLYCOLIC ACID	A	A	A	A	A			A	A		
	CON	CON	CON	CON	CON			CON	CON		
	200	70	200	70	200			70	70		
HEPTANE	A	A	A	M	NR			A	A		
	CON	CON	CON	CON	CON			CON	CON		
	200	200	200	70	70			70	70		
HEXANE	A	A	A	M	M			A	A		
	CON	CON	CON	CON	CON			100	100		
	200	200	200	70	80			70	70		
HYDROCHLORIC ACID	A	A	A	A	A	A	M	NR	NR	A	NR
	37	37	37	40	40	30	30	37	37	CON	CON
	200	200	200	70	200	70	70	70	70	70	70
HYDROFLUORIC ACID	A	A	A	A	A	M	NR	NR	NR	M	NR
	35	35	35	60	40	ALL	ANY	35	35	CON	CON
	200	200	200	70	200	BP	70	70	70	HOT	HOT
HYDROGEN GAS	A	A	A	A	A	A	A	A	A	A	A
	CON	CON	CON	CON	CON	100	CON	CON	CON	CON	CON
	200	200	200	70	200	700	200	70	70	70	70
HYDROGEN PEROXIDE	A	A	A	A	Q	A	M	Q	NR/Q	M	NR
	30	30	30	90	30	-	30	30	30	90	90
	200	200	200	70	70	120	70	70	70	70	70
HYDROGEN SULFIDE (WET)	A	A	A	A	A	-	A	A	Q	NR	NR
	CON	CON	CON	CON	CON	-	CON	CON	CON	CON	CON
	200	200	200	70	200	170	70	70	70	HOT	HOT
KEROSENE - JP FUELS	A	A	A	A	M	A	A	A	A	A	A
	CON	CON	CON	CON	CON	CON	CON	CON	CON	CON	CON
	200	200	200	70	70	70	70	70	70	70	70
KETONES	A	NR	A		A			A	A		
	CON	CON	CON		CON			CON	CON		
	200	120	200		70			70	70		
LATIC ACID	A	NR	A	A	A	M	A	A	A	A	A
	CON	CON	CON	25	25	60	50	CON	CON	CON	CON
	200	200	200	70	200	130	200	70	70	70	70
LEAD ACETATE		A	A	A	A		A	A			M
		CON	CON	CON	CON		CON	CON			CON
		250	70	70	200		70	70			70
LPG	A	A	A					A	A	A	A
	CON	CON	CON					CON	CON	CON	CON
	200	200	200					70	70	70	70
LUBRICATING OIL	A	A	A	A	M			A	A	A	A
	CON	CON	CON	CON	CON			CON	CON	CON	CON
	200	200	200	70	80			70	70	70	70
MAGNESIUM CHLORIDE	A	A	A	A	A	A	A	M	Q	A	A
	CON	CON	CON	CON	CON	100	55	CON	CON	CON	CON
	200	200	200	70	200	334	200	70	70	70	70
MAGNESIUM HYDROXIDE	A	A	A	A	A		A	A	A	A	M
	CON	CON	CON	CON	CON		CON	CON	CON	CON	CON
	200	200	200	70	200		70	70	70	70	70
MAGNESIUM SULFATE	A	A	A	A	A	M	A	A		A	A
	CON	CON	CON	CON	CON	50	CON	CON		CON	CON
	70	250	70	70	200	BP	70	70		70	70
MERCURY CHLORIDE		A	A	A	A	M	A	NR		A	A
		CON	CON	CON	CON	10	40	40		CON	CON
		150	70	70	200	175	70	70		70	70
MERCURY		A	A	A	A	A	A	A		A	A
		CON	CON	CON	CON	CON	CON	CON		CON	CON
		200	70	70	200	700	70	70		70	70

MEDIA	PLASTICS					METALS				ELASTOMERS	
	RYTON	KYNAR	TEFLON	PVC	PP	HAST. C	TITA- NIUM	316 SS	CARB. STEEL	VITON	BUNA N
MEK	A	NR	A	NR	A	0		A	A	NR	NR
	CON	CON	CON	CON	ALL	CON		CON	CON	CON	CON
	200	200	200	70	70	70		70	70	70	70
METHYL ALCOHOL (METHANOL)	A	A	A	A	A	M		M		NR	A
	CON	CON	CON	CON	100	95		CON		CON	CON
	70	150	70	70	200	203		150		70	70
METHYL ISOBUTYL KETONE	A	NR	A							NR	NR
	CON	CON	CON							CON	CON
	200	200	200							70	70
MINERAL OIL	A	A	A	A	M			A	A	A	A
	CON	CON	CON	CON	100			CON	CON	CON	CON
	200	200	200	70	70			70	70	70	70
MORPHOLINE	A/Q	NR	A					A	A		
	CON	CON	CON					CON	CON		
	200	70	200					70	70		
MOTOR OIL	A		A	A	A			A		A	A
	CON		CON	CON	100			CON		CON	CON
	200		200	200	70			70		70	70
NAPHTHA	A	A	A	A	NR			A	A	A	NR
	CON	CON	CON	CON	100			CON	CON	CON	CON
	200	200	200	70	70			70	70	70	70
NAPHTHALENE	A	A	A	NR	M	A		A	A	A	NR
	CON	CON	CON	CON	100	CON		CON	CON	CON	CON
	200	200	200	70	80	70		70	70	70	70
NICKEL CHLORIDE		A	A	A	A	A	A	M		A	A
		CON	CON	CON	100	50	CON	CON		CON	CON
		250	70	70	200	200	70	70		70	70
NICKEL NITRATE		A	A	A	A	A	A	M			
		CON	CON	CON	CON	CON	CON	CON			
		250	70	70	200	70	70	70			
NICKEL SULFATE		A	A	A	A	A		A		A	A
		CON	CON	CON	CON	CON		CON		CON	CON
		250	70	70	200	70		70		70	70
NITRIC ACID	A/Q	A	A	A	M	A	A	M	NR	A	NR
	35	CON	CON	65	60	70	65	CON	35	CON	CON
	200	120	200	70	70	70	200	BP	70	70	70
NITROBENZENE	A	A	A	NR	A	M		A	A	M	NR
	CON	CON	CON	CON	100	85		CON	CON	CON	CON
	200	70	200	70	200	212		70	70	70	70
NITROMETHANE	A	A								NR	NR
	CON	CON								CON	CON
	200	70								70	70
OLEIC ACID		A	A	A	M		NR	A		M	NR
		CON	-	CON	CON		25	-		CON	CON
		150	70	70	80		140	70		70	70
OXALIC ACID (AQUEOUS)		A	A	A	A	A	M	M		A	M
		CON	50	CON	CON	ALL	50	50		CON	CON
		120	70	70	80	BP	70	70		70	70
PERCHLOROETHYLENE (DRY)	A	A	A		NR			A	0	A	NR
	CON	CON	CON		CON			CON	CON	CON	CON
	200	200	200		70			70	70	70	70
PHENOL	A	A	A	NR	M	A	A	A	NR	A	NR
	CON	CON	CON	CON	100	ALL	CON	CON	CON	CON	CON
	200	200	200	70	80	BP	70	70	70	70	70
PHOSPHORIC ACID	A	A	A	A	A	A	M	M	NR	A	NR
	CON	CON	CON	75	75	98	30	95	CON	45	45
	200	200	200	70	200	185	95	70	70	70	70

MEDIA	PLASTICS					METALS				ELASTOMERS	
	RYTON	KYNAR	TEFLON	PVC	PP	HAST. C	TITA- NIUM	316 SS	CARB. STEEL	VITON	BUNA N
PHOSPHORUS TRICHLORIDE	A	A	A	M	Q			A	A	A	NR
	CON	CON	CON	CON	CON			CON	CON	CON	CON
	200	200	200	70	80			70	70	70	70
PICRIC ACID		A		NR	M			A		A	M
		CON		CON	CON			CON		CON	CON
		70		70	80			70		70	70
PLATING SOLUTIONS	M		A	A	A		A			A	A
	CON		CON	CON	CON		CON			CON	CON
	70		70	70	200		70			70	70
POTASSIUM CHLORIDE	A	A	A	A	A	A	A	A	Q	A	A
	CON	CON	CON	CON	CON	28	SAT	5	CON	CON	CON
	200	200	200	70	200	150	70	BP	70	70	70
POTASSIUM DICHROMATE	A	A	A	A	A	A	A	A		A	A
	40	CON	CON	CON	CON	25	40	ALL		CON	CON
	70	280	70	70	200	100	70	150		70	70
POTASSIUM HYDROXIDE	A	A	A	A	A	A	M	A	A	M	M
	50	50	50	35	50	50	50	50	50	CON	CON
	200	200	200	70	70	200	70	BP	70	70	70
POTASSIUM PERMANGANATE	A	A	A	A	A	M	A	A	Q		
	CON	CON	CON	CON	CON	78	SAT	10	CON		
	200	200	200	70	200	75	70	BP	70		
PROPYLENE CHLOROHYDRIN	A	A/NR	A								
	CON	CON	CON								
	200	200	200								
PYRIDINE	A	NR	A			A		A	A	NR	NR
	CON	CON	CON			50		CON	CON	CON	CON
	200	200	200			100		70	70	70	70
SILICONE OIL	A		A		A			A		A	A
	100		100		100			100		100	100
	70		70		70			70		70	70
SOAP SOLUTION	A		A	A	A			A		A	A
	CON		CON	CON	CON			CON		CON	CON
	70		70	70	200			70		70	70
SODIUM ACETATE	A	A	A	A	A	M	A	A		NR	M
	-	-	-	CON	CON	10	-	-		CON	CON
	70	200	70	70	200	75	70	70		70	70
SODIUM BICARBONATE	A	A	A	A	A	A		A	Q	A	A
	CON	CON	CON	CON	CON	20		ALL	CON	CON	CON
	200	200	200	70	200	BP		HOT	70	70	70
SODIUM CARBONATE	A	A	A	A	A		A	A	A	A	A
	CON	CON	CON	CON	CON		SAT	50	CON	CON	CON
	200	200	200	70	200		70	BP	70	70	70
SODIUM CHLORIDE (BRINE)	A	A	A	A	A	A	A	A	Q	A	A
	CON	CON	CON	CON	CON	-	CON	SAT	CON	CON	CON
	200	200	200	70	200	165	BP	BP	70	70	70
SODIUM CHROMATE	A		A					A	Q		
	CON		CON					CON	CON		
	200		200					70	70		
SODIUM DICHROMATE	A		A	A	A	A					
	SAT		SAT	CON	CON	SAT					
	70		70	70	200	70					
SODIUM HYDROXIDE	A	A	A	A	A	M	A	M	Q	M	M
	50	50	50	70	70	70	50	30	30	CON	CON
	200	200	200	70	200	BP	70	BP	70	70	70
SODIUM HYPOCHLORITE	A	A	A	A	M	A	M	NR	NR	A	M
	CON	CON	CON	CON	20	20	20	20	CON	CON	CON
	200	200	200	70	80	70	70	70	70	70	70

MEDIA	PLASTICS					METALS				ELASTOMERS	
	RYTON	KYNAR	TEFLON	PVC	PP	HAST. C	TITA- NIUM	316 SS	CARB. STEEL	VITON	BUNA N
SODIUM NITRATE	A	A	A	A	A	M		A			M
	-	CON	-	CON	CON	30		-			CON
	70	230	70	70	200	75		70			70
SODIUM SILICATE	A	A	A	A	A			A		A	A
	-	CON	-	CON	CON			-		CON	CON
	70	280	70	70	200			HOT		70	70
SODIUM SULFATE	A	A	A	A	A	A	A	A	0	A	A
	CON	CON	CON	CON	CON	CON	20	CON	CON	CON	CON
	200	200	200	70	200	170	BP	BP	70	70	70
SODIUM SULFIDE	A	A	A	A	A	A	A	A	0	A	A
	CON	CON	CON	CON	CON	25	25	50	CON	25	25
	200	200	200	70	200	70	70	BP	70	70	70
SODIUM THIOSULFATE	A	A	A					A	0	A	M
	CON	CON	CON					CON	CON	CON	CON
	200	200	200					70	70	70	70
STANNOUS CHLORIDE	A	A	A	A	A		A	A		A	A
	CON	CON	CON	CON	CON		CON	CON		CON	CON
	70	150	70	70	200		70	120		70	70
STEAM	A	0	A	NR				A	A	NR	NR
	-	-	-					-	-		
	300	300	300					300	300		
STODDARD SOLVENT	A	A	A	A	A			A	A	A	A
	CON	CON	CON	CON	CON			CON	CON	CON	CON
	200	200	200	200	200			70	70	70	70
SULFINOL	A	A	A					A	A		
	CON	CON	CON					CON	CON		
	200	200	200					70	70		
SULFOLANE	A										
	CON										
	200										
SULPHUR	A	A	A	A	A	A	A	A		A	NR
	-	-	-	-	CON	-	100	-		-	-
	70	250	70	70	200	284	465	266		70	70
SULPHUR DIOXIDE	A	A	A	A	M		A	A	0	A	NR
	CON	CON	CON	CON	CON		CON	CON	CON	CON	CON
	200	200	200	70	80		70	70	70	70	70
SULFURIC ACID 30%	A	A	A	A	A	A	M	NR	NR	A	NR
	30	30	30	30	30	30	30	30	30	40	ALL
	200	200	200	70	200	200	100	ALL	ALL	BP	70
SULFURIC ACID 50-75%	A	A	A	A	A	A	M	NR	NR	A	NR
	50	50	50	50	75	50	50	50	50	50	ALL
	200	200	200	70	200	60	140	ALL	ALL	250	70
SULFURIC ACID 98%	A/0	A	A	A	M	M	0	A	A	A	NR
	98	98	98	98	98	98	98	98	98	90	ALL
	200	200	200	70	80	100	140	70	70	158	70
TANNIC ACID	A	A	A	A	A		A	A		A	A
		CON	10	CON	CON		10	CON		CON	CON
		230	70	70	200		70	150		70	70
TETRAHYDROFURAN	A	NR	A		NR			A	A	NR	
	CON	CON	CON					CON	CON	CON	
	200	70	200		70			70	70	70	
TETRALIN (DUPONT TRADEMA	A		A		NR						
	CON		CON		100						
	70		70		70						
TOLUENE	A	A	A	NR	NR			A	A	A	NR
	CON	CON	CON	CON	100			CON	CON	CON	CON
	200	200	200	70	70			70	70	70	70

MEDIA	PLASTICS					METALS				ELASTOMERS	
	RYTON	KYNAR	TEFLON	PVC	PP	HAST. C	TITA- NIUM	316 SS	CARB. STEEL	VITON	BUNA N
TOMATO JUICE	A		A					A	NR		
	CON		CON					CON	CON		
	200		200					70	70		
TRANSFORMER OIL	A		A		A					A	A
	CON		CON		100					CON	CON
	70		70		70					70	70
TRICHLORACETIC ACID	A	NR	A		A	M	NR	NR	NR	NR	M
	CON	CON			10	ALL	100	CON	CON	CON	CON
	200	80			70	BP	200	70	70	70	70
TRICHLORETHYLENE	A/Q	A	A	NR	NR	A	A	Q	Q	A	NR
	CON	CON	CON	CON	ALL	CON	CON	CON	CON	CON	CON
	200	200	200	70	70	70	BP	70	70	70	70
TRIETHANOLAMINE	A		A	M	M	A				NR	NR
	CON		CON	CON	100	CON				CON	CON
	70		70	70	80	70				70	70
TRIETHYL PHOSPHATE	A		A					A	A		
	CON		CON					CON	CON		
	200		200					70	70		
TRIPHENYL PHOSPHITE	A										
	CON										
	200										
TRISODIUM PHOSPHATE	A	A	A	A	A			A	A		
	CON	CON	CON	CON	CON			CON	CON		
	200	200	200	70	200			70	70		
TURPENTINE (DRY)	A	A	A	A	NR			A	A	A	A
	CON	CON	CON	CON	CON			CON	CON	CON	CON
	200	200	200	70	70			70	70	70	70
VINEGAR	A	Q	A	A	A			A	NR	A	M
	CON	CON	CON	CON	CON			CON	CON	CON	CON
	200	200	200	70	200			70	70	70	70
WATER, DEIONIZED	A	A	A	A	A	A	A	A	NR	A	A
	100	100	100	100	100	100	100	100	100	100	100
	200	200	200	70	200	600	570	70	70	70	70
WATER, SEA	A	A	A	A	A	A	A	A	Q	A	A
	100	100	100	100	100	100	100	100	100	100	100
	200	200	200	70	200	300	70	70	70	70	70
WATER, TAP	A	A	A	A	A	A	A	A	NR	A	A
	100	100	100	100	100	100	100	100	100	100	100
	200	200	200	160	200	200	200	200	70	212	70
WHISKEY			A	A	A			A		A	A
			100	100	CON			10		100	100
			70	70	200			70		70	70
WINE			A		A			A			
			100		CON			100			
			70		200			70			
XYLENE	A		A	NR	NR	A		A	A	A	NR
	CON		CON	CON	ALL	-		CON	CON	CON	CON
	200		200	70	70	300		70	70	70	70
ZINC CHLORIDE	A	A	A	A	A		A	A	Q	A	A
	CON	CON	CON	CON	CON		SAT	70	CON	CON	CON
	200	200	200	70	200		70	BP	70	70	70
ZINC OXIDE	A		A		A						
	-		-		CON						
	70		70		70						
ZINC SULFATE		A	A	A	A	M	A	A		A	A
		CON	CON	CON	CON	40	SAT	SAT		CON	CON
		200	70	70	200	BP	70	70		70	70



INCLUDED WITH "AS BUILT" DRAWINGS

INSPECTION PLAN

for

Universal Waste & Transit  
Orient Road  
Tampa, Florida  
August, 1989

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## INTRODUCTION

Universal Waste & Transit will inspect the storage/treatment area as indicated in the Inspection Log Instructions for any malfunctions or deteriorations, operator errors, or discharges. Universal Waste & Transit will also follow this schedule for inspection of monitoring equipment; safety, emergency, and security devices; as well as operating and structural equipment that are important to preventing, detecting, or responding to environmental or human health hazards. The frequency of those inspections are indicated on the Inspection Log Instructions. Universal Waste & Transit will remedy any observed deterioration or malfunction of equipment or structures to insure that the problem does not lead to an environmental or human health hazard. If such a hazard is eminent or has already occurred, remedial action will be taken immediately. Universal Waste & Transit will record all inspections in our Inspection Log, which is also included with this submittal. This log will be kept for at least three years from the date that the inspection occurred.

If any discharge is noted the "Contingency Plan" will be implemented as required and the Discharge Log completed.

All inspections of the Universal Waste & Transit facility will be performed by the facility manager, or his designated representative, all of whom will be intimately aware of all equipment and devices at the facility in order to accurately assess their proper operation.

As indicated on the Inspection Log Instructions all container and bulk storage areas will be inspected on a daily basis. Any deterioration or malfunction of equipment or structures within the containment area which are revealed by the inspection will be remedied by Universal Waste & Transit within at least 14-days, or Universal Waste & Transit will submit within 7-days a schedule to correct the deficiencies to the Florida Department of Environmental Regulation. If any deterioration or malfunction of equipment or structures within the containment system pose an emminent hazard remedial action will be taken immediately.

Universal Waste & Transit  
Inspection Log Instructions

1. Fill out the inspection log on a daily basis.
2. Check all drums for the following:
  - a. Leakage
  - b. Liquid under or near the drum
  - c. Bulging lids or drums
  - d. Gaseous releases (hissing)
  - e. Signs of corrosion on drums
  - f. Number of containers in each area
3. Check treatment area for the following:
  - a. Leakage at the treatment unit
  - b. Liquid in the containment area
  - c. Any signs of corrosion, erosion or pitting.
  - d. Gaseous releases
  - e. Is an operator nearby if the system is running
  - f. Amount of material on hand.
  - g. Check filter cloth for holes, damage or deterioration.
  - h. Check inlet/discharge hose for signs of leakage
  - i. Check caulking cord & gaskets for deterioration.
  - j. Check hydraulic lines for signs of leakage or deterioration.
4. Check the LEL meter daily
5. Insure all safety equipment and fire extinguishers are operational
6. Check sump level twice daily (morning/evening). Sample or discharge as required
7. Note any unusual or strong odors
8. Check for sufficient aisle space

UNIVERSAL WASTE & TRANSIT

FACILITY INSPECTION LOG

DATE: \_\_\_\_\_

TIME: \_\_\_\_\_

INSPECTOR: \_\_\_\_\_

APPROVED BY: \_\_\_\_\_

NORTH BAY 1

- |    |   |     |    |
|----|---|-----|----|
| 1. | Sumps are free of liquid?   | yes | no |
| 2. | Fire extinguishers are at proper pressure level?                                    | yes | no |
| 3. | Waste drums are secure & not leaking?<br>(If "no" see attached drum Inspection Log) | yes | no |
| 4. | Spill Control Box contains adequate supplies?                                       | yes | no |
| 5. | Emergency eyewash & shower are operational?   | yes | no |
| 6. | Foam tank & pipes in good condition   | yes | no |
| 7. | Check for sufficient aisle space  | yes | no |
| 8. | Check for telephone/intercom  | yes | no |

Record any unusual findings in the lines provided.

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# SUMP STATUS

North Bay-1

Sump #1\_\_\_\_\_

Sump #2\_\_\_\_\_

Center Bay-2

Sump #3\_\_\_\_\_

South Bay-3

Sump #4\_\_\_\_\_

Sump #5\_\_\_\_\_

Truck Well\_\_\_\_\_

Remedial Action Taken (If Required)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Final Disposal of collected liquids:

Facility-\_\_\_\_\_

Amount-\_\_\_\_\_

Manifest-\_\_\_\_\_

Date-\_\_\_\_\_



### CENTER BAY 2

- |    |   |     |    |
|----|---|-----|----|
| 1. | Sump is free of liquid? If no reference   | yes | no |
| 2. | Fire Extinguishers are at the proper pressure level?                                  | yes | no |
| 3. | Waste drums are secure and not leaking?<br>(if "no" see attached Drum inspection log) | yes | no |
| 4. | Spill control box contains adequate supplies  | yes | no |
| 5. | Exhaust fans are operating properly   | yes | no |
| 6. | LEL Meter sensors need replacement (2 each)   | yes | no |
| 7. | Check for sufficient aisle space  | yes | no |

### SOUTH BAY 3

- |    |   |     |    |
|----|---|-----|----|
| 1. | Sumps are free of liquid?   | yes | no |
| 2. | Fire Extinguishers are is at proper pressure level?                                 | yes | no |
| 3. | Waste drums are secure & not leaking?<br>(If "no" see attached Drum Inspection Log) | yes | no |
| 4. | Spill Control Box contains adequate supplies?                                       | yes | no |
| 5. | Emergency eye wash is operational?  | yes | no |
| 6. | Compressor is in good condition?  | yes | no |
| 7. | Check for sufficient aisle space  | yes | no |
| 8. | Is telephone/intercom working?  | yes | no |

Record any unusual findings in the lines provided

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Return the completed form to the facility manager

Date

Inspectors Name

# Universal Waste & Transit Drum Inspection Log

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

Time: \_\_\_\_\_

Approved By: \_\_\_\_\_

Inspector: \_\_\_\_\_

	17-E 55	17-H 55	Poly 55	Over Pack	17-E 30	17-H 30	37-A 5	Total Gallons
Area 1A/B								
Acids								
Area 1B								
Oxidizers								
Emptys								
Area 2A								
Flammable Liquid								
Flammable Solid								
Reactives								
Aerosols								
Area 3A/B								
ORM-A, B, C, D, E								
Non-Regulated								
Area 3C								
Alkalines								
Poisons								

**Grand Total**

Filter      Press Log

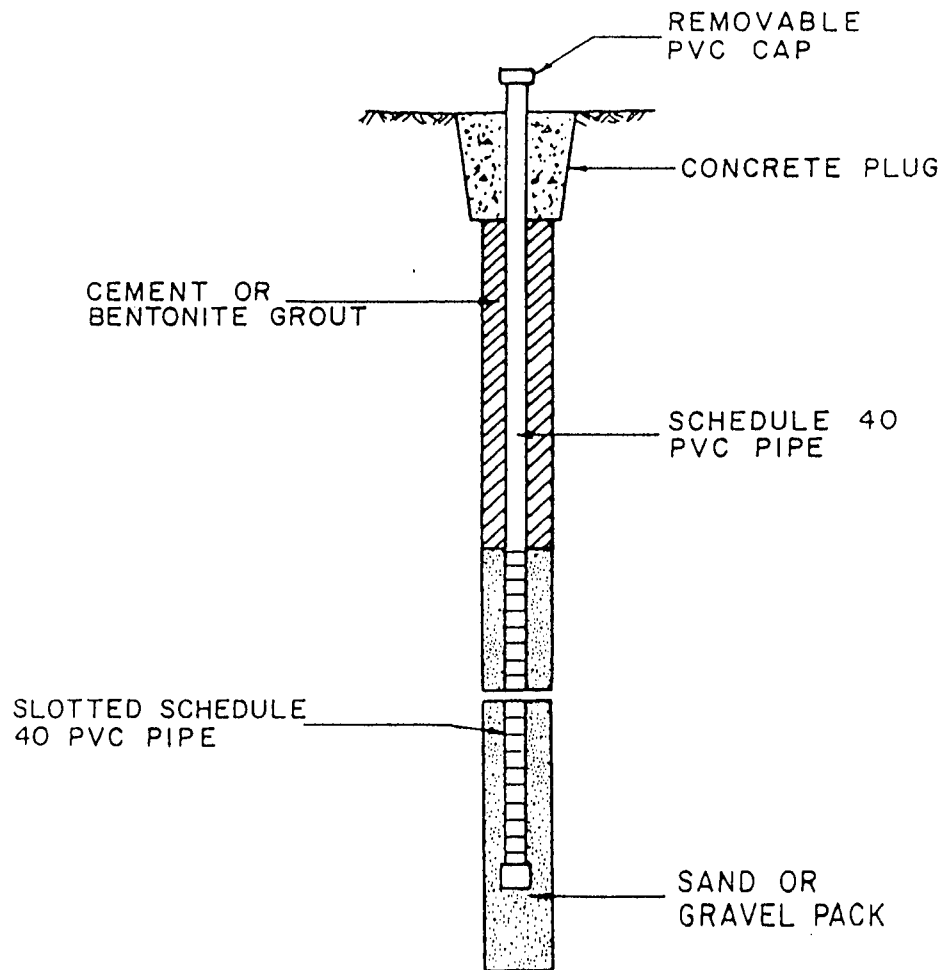
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D. E. K.

DEC - 7 1959

SOUTHWEST DISTRICT TAMPA

ATTACHMENT 15



PIEZOMETER WELL INSTALLATION FOR  
SHALLOW GROUND-WATER MONITORING



**S&ME**

Formerly, Soil & Material Engineers, Inc.

August 25, 1987

Can Am Engineering Inc.  
4275 34th Street South, Suite 334  
St. Petersburg, Florida 33711

Attention: Mr. Robert J. Bedore

Subject: Preliminary Site Evaluation  
and Subsurface Exploration  
Proposed Warehouse Building  
North Orient Road and 9th Avenue  
Tampa, Florida  
S&ME Job No. 181-87-149

Gentlemen:

S&ME, Inc. has completed a preliminary subsurface exploration and site evaluation of the above referenced project site. This exploration was authorized by Mr. Bedore of Can Am Engineering at the proposed site on August 14, 1987. The following report describes our field techniques and procedures, as well as exhibiting the data obtained.

#### Site Description

The project site, which encompasses a rectangular area of approximately 1.5 acres, is located within the northwest quadrant of the intersection of Orient Road and 9th Avenue in Tampa, Florida. The site has approximately 150 feet of frontage along Orient Road and approximately 400 feet along 9th Avenue. The field observations show the site to be gently sloping to the west and southwest with approximately 1 to 1.5 feet of relief across the site. At the time of our exploration, the majority of the site was covered with weeds, grass and scattered trees. Scattered pieces of debris were observed throughout the site surface with a concrete pad located near

the northeast portion of the site. The east central portion of the site has a cover of limerock which indicates this area could have been previously utilized as a pavement. Drainage ditches were observed along the north and east property line. A fence exists along the north property line and a ditch which flows in an easterly direction toward the east drainage parallel to North Orient Road. Surface water then flows in a southerly direction along the Orient Road ditch. A red stain was observed along the ditch and it appeared to initiate from the adjacent Wheel Blasting facility. A slight red stain was also observed near the location of auger boring AB-3. (See attached drawing).

This site is generally surrounded by the abandoned Stauffer Chemical Company to the east, residential homes to the south, heavy tree vegetations and abandoned warehouse to the west, and the Wheel Blasting facility to the north.

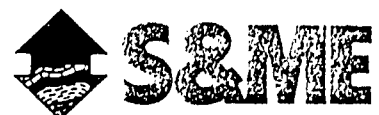
#### Investigative Procedure

As requested, four (4) auger borings were preformed as indicated on the attached drawing to a depth of approximately 4 feet. The borings were visually classified by a geologist and geotechnical engineer and samples of the soils and water obtained for laboratory contaminant analysis.

As requested, a sample of the water and soil was obtained from each of the auger borings at a depth of approximately 1 to 3 feet. To prevent outside contamination, the material and equipment used in obtaining the samples were sterilized using an approved EPA method. Protective gloves and clothing were utilized by personnel while obtaining the samples.

After completing the hand auger excavations and obtaining the soil samples, 2 inch diameter schedule 40 pvc pipes with a .01 inch slot temporary piezometer were installed in order to obtain the water samples. Although not an approved method of obtaining clean water samples, the water was allowed to stabilize in each of the piezometer locations for at least one hour prior to sampling with a teflon bailer. The bailer was also properly cleaned and decontaminated between auger boring locations.

A photo-ionizer "Hnv" meter, which is a device used to detect the level of organic vapor present in the atmosphere, was utilized during the entire field exploration.





The obtained water and soil samples from each of the boring locations were placed in the proper containers submitted to us by Thorton Labs. Typically, one container was utilized for the soil sample and 4 for the water samples at each of the auger boring locations. The samples were returned to Thorton Labs to be subjected to the following chemical analysis.

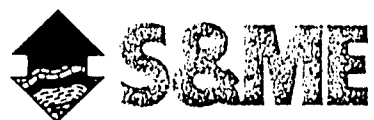
1. Chemical Oxygen Demand (COD)
2. Total Organic Halogens (TOX)
3. Arsenic
4. Barium
5. Cadmium
6. Chromium
7. Lead
8. Mercury
9. Selenium
10. Silver
11. Copper
12. Nickel
13. Zinc
14. PH

The information from Thorton Lab's chemical analysis is attached.

#### Subsurface Conditions

Based on the auger borings drilled to a depth of approximately 4 feet, a 4 to 8 inch layer of fill consisting of fine sand with limerock was encountered in the locations of auger borings AB-1 and AB-2. This is probably due to the previous construction activity performed within the eastern portion of the site. Beneath the fill and/or surface topsoil veneer at the west portion of the site, a dark brown and/or gray silty fine sand was encountered to a depth of approximately 1 to 1.5 feet. This was underlain by a slightly silty to clean fine sand to a depth of 4 feet.

Groundwater level measurements range from approximately 1.3 to 1.8 feet below the existing ground surface after a 24 hour waiting period. We would like to emphasize, however, that groundwater fluctuates during the year and is dependent on weather conditions and construction activity throughout the area. Since the exploration was performed during the wet season, the measured groundwater should be indicative of the normal seasonal high water level.



General Comments

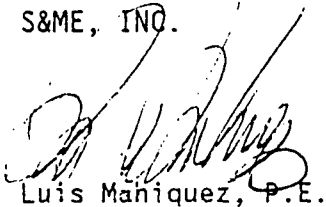
Based on our preliminary shallow subsurface exploration, it is our opinion that the site is suitable for foundation support of a light warehouse structure. No indication of miscellaneous trash fill and/or organic material was encountered within the shallow depths of our auger borings. However, prior to any building construction, additional subsurface exploration consisting of deeper soil test borings should be performed to more accurately determine bearing capacity values for foundation support.

Based on our visual site evaluation and Hnv meter readings, there was no detectable organic vapors noted. The laboratory analysis performed by Thorton Lab Inc. on the obtained water samples indicated level of metal contaminants less than minimum standards set for drinking water. The soil samples generally indicated metal contents less than detectable limits with the exception of zinc at AB-1, chromium and mercury at AB-2. Results of the soil and water sample analyses are attached.

Again we appreciate the opportunity of performing a preliminary subsurface exploration and of obtaining soil and water samples to be analyzed for contaminants at the above referenced project site. If you have any questions concerning the contents of this report and/or the attached information, please feel free to call us.

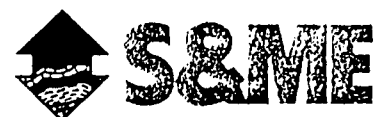
Very truly yours,

S&ME, INC.



Luis Manriquez, P.E.  
Branch Manager  
Registered, Florida 37119

/cdj





# S&ME

Formerly, Soil & Material Engineers, Inc.  
S&ME, Inc.  
5909 Breckenridge Pkwy., Suite B  
Tampa, FL 33610 (813) 623-2438

CLIENT • Can Am Engineering, Inc.  
•  
•  
PROJECT • Porposed Warehouse Building  
• North Orient Road and 9th Avenue

DATE • August 25, 1987  
JOB NO. • 181-87-149

## AUGER BORING RECORDS

Auger No.	Depth (Feet)		<u>Soil Description</u>
	From	To	
AB-1	0.0	0.7	Limerock and light brown slightly silty fine SAND (FILL)
	0.7	1.0	Dark brown silty fine SAND (SM)
	1.0	3.0	Brown slightly silty fine SAND (SP-SM)
	3.0	4.0	Brown - light brown fine SAND (SP)
			Groundwater encountered at 1.3 feet after 24 hours
			Soil sample obtained at a depth of 3 to 4 feet
			Boring terminated at 4.0 feet
AB-2	0.0	0.3	Brown fine SAND (FILL)
	0.3	1.0	Dark brown silty fine SAND with organics and wood fragments (roots) (FILL)
	1.0	1.5	Gray fine SAND (SP)
	1.5	2.0	Light gray fine SAND (SP)
	2.0	4.0	Brown fine SAND (SP)
			Groundwater encountered at 1.8 feet after 24 hours
			Soil sample obtained at a depth of 2 to 3 feet
			Boring terminated at 4.0 feet
AB-3	0.0	1.0	Dark gray fine SAND (SP)
	1.0	1.5	Dark gray fine SAND (SP)
	1.5	2.0	Dark brown silty fine SAND (SM)
	2.0	4.0	Light brown fine SAND (SP)
			Groundwater encountered at 1.5 feet after 24 hours
			Soil sample obtained at a depth of 0.5 to 1.0 feet
			Boring terminated at 4.0 feet
AB-4	0.0	0.3	Dark gray silty fine SAND with roots (SM)
	0.3	1.0	Gray fine SAND (SP)
	1.0	2.5	Light gray fine SAND (SP)
	2.5	4.0	Dark brown silty fine SAND (SM)
			Groundwater encountered at 1.3 feet after 24 hours
			Soil sample obtained at a depth of 1 - 2 feet
			Boring terminated at 4.0 feet

# THORNTON LABORATORIES, INC.

TWX 810 876-9134  
THORNT LAB TPA

1145 EAST CASS STREET  
TAMPA, FLORIDA 33601 - 2880  
MARINE, ANALYTICAL AND ENVIRONMENTAL SERVICES

TELEPHONE (813) 223-9702  
P.O. BOX 2880

September 8, 1987

Laboratory Number 666369-666372  
Sample of Water  
Date Received 8/19/87  
For Soil & Material Engineers  
5909 Breckenridge Pkwy. Suite B  
Tampa, FL 33610

Attn: L. Mahiquez

Marks: Location: Orient & 9th Ave. Sampled by LFM/MKA, 8/19/87

## CERTIFICATE OF ANALYSIS

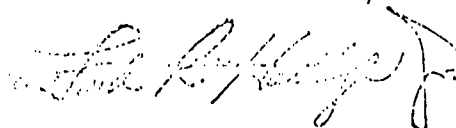
Marks	W-1	W-2	W-3	W-4
	AB-1	AB-2	AB-3	AB-4
Kit #	5584	5581	5582	5583
pH	6.0	4.8	3.6	3.7
Arsenic (As)	<0.005	<0.005	<0.005	<0.005
Barium (Ba)	0.24	0.10	0.16	0.47
Cadmium (Cd)	<0.002	<0.002	<0.002	<0.002
Chromium (Cr)	0.040	0.016	0.029	0.039
Copper (Cu)	0.008	0.006	0.005	0.008
Lead (Pb)	0.01	<0.01	<0.01	0.04
Mercury (Hg)	<0.0002	<0.0002	<0.0002	<0.0002
Nickel (Ni)	0.018	0.025	0.018	0.037
Selenium (Se)	<0.005	<0.005	<0.005	<0.005
Silver (Ag)	<0.005	<0.005	<0.005	<0.005
Zinc (Zn)	0.54	0.091	0.14	0.13
COD (Chemical Oxygen (Demand)	397	189	305	480
Total Organic Halogens (TOX)	1.4	0.058	0.24	0.091

All results expressed in mg/L unless otherwise noted.

Analysis according to "Standard Methods for the Examination of Water & Wastewater"  
APHA, Latest Edition.

FDHRS LABORATORY ID#84147 and T84100

THORNTON LABORATORIES, INC.



THORNTON LABORATORIES, INC.

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THORNT LAB TPA

1145 EAST CASS STREET  
TAMPA, FLORIDA 33601 - 2880  
MARINE, ANALYTICAL AND ENVIRONMENTAL SERVICES

TELEPHONE (813) 223-9702  
P.O. BOX 2880

September 8, 1987

Laboratory Number 666365-666368  
Sample of Soil  
Date Received 8/19/87  
For Soil & Material Engineers  
5909 Breckenridge Pkwy. Suite B  
Tampa, FL 33610  
Attn: L. Mahiquez

Marks: Orient & 9th Ave. Sampled by: LFM/MKA, Date: 8/19/87

CERTIFICATE OF ANALYSIS

Marks Kit #	AB-1 5585	AB-2 5587	AB-3 5586	AB-4 5588
----------------	--------------	--------------	--------------	--------------

ANALYSIS ON DRY BASIS

Total Organic Halogens (TOX)	0.19	0.062	0.10	0.023
COD (Chemical Oxygen Demand)	<del>2,560</del>	<del>8,950</del>	<del>1,120</del>	<del>4,540</del>
Arsenic (As)	<0.3	<0.3	<0.3	<0.3
Barium (Ba)	<7	<7	<7	<7
Cadmium (Cd)	<0.5	<0.5	<0.5	<0.5
Chromium (Cr)	<1	<del>1,660</del>	<1	<1
Lead (Pb)	<2	<2	<2	<2
Mercury (Hg)	<0.01	<del>0,761</del>	<0.01	<0.01
Selenium (Se)	<0.3	<0.3	<0.3	<0.3
Silver (Ag)	<1	<1	<1	<1
Copper (Cu)	<1	<1	<1	<1
Nickel (Ni)	<1	<1	<1	<1
Zinc (Zn)	<del>8,71</del>	<1	<1	1.0
pH (1:1 H <sub>2</sub> O Solution)	<del>5.5</del>	4.3	4.4	3.9

D.E.R.

DEC - 7 1989

All results expressed in mg/kg unless otherwise noted.

THORNTON LABORATORIES, INC. TAMPA

*[Signature]*

Vol 5 tab 15

# THORNTON LABORATORIES, INC.

TWX 810 876-9134  
THORNT LAB TPA

1145 EAST CASS STREET  
TAMPA, FLORIDA 33601 - 2880  
MARINE, ANALYTICAL AND ENVIRONMENTAL SERVICES

TELEPHONE (813) 223-9702  
P.O. BOX 2880

September 8, 1987

Laboratory Number 666365-666368  
Sample of Soil  
Date Received 8/19/87  
For Soil & Material Engineers  
5909 Breckenridge Pkwy. Suite B  
Tampa, FL 33610

Attn: L. Mahiquez

Marks: Orient & 9th Ave. Sampled by: LFM/MKA, Date: 8/19/87

## CERTIFICATE OF ANALYSIS

Marks	AB-1	AB-2	AB-3	AB-4
Kit #	5585	5587	5586	5588

## ANALYSIS ON DRY BASIS

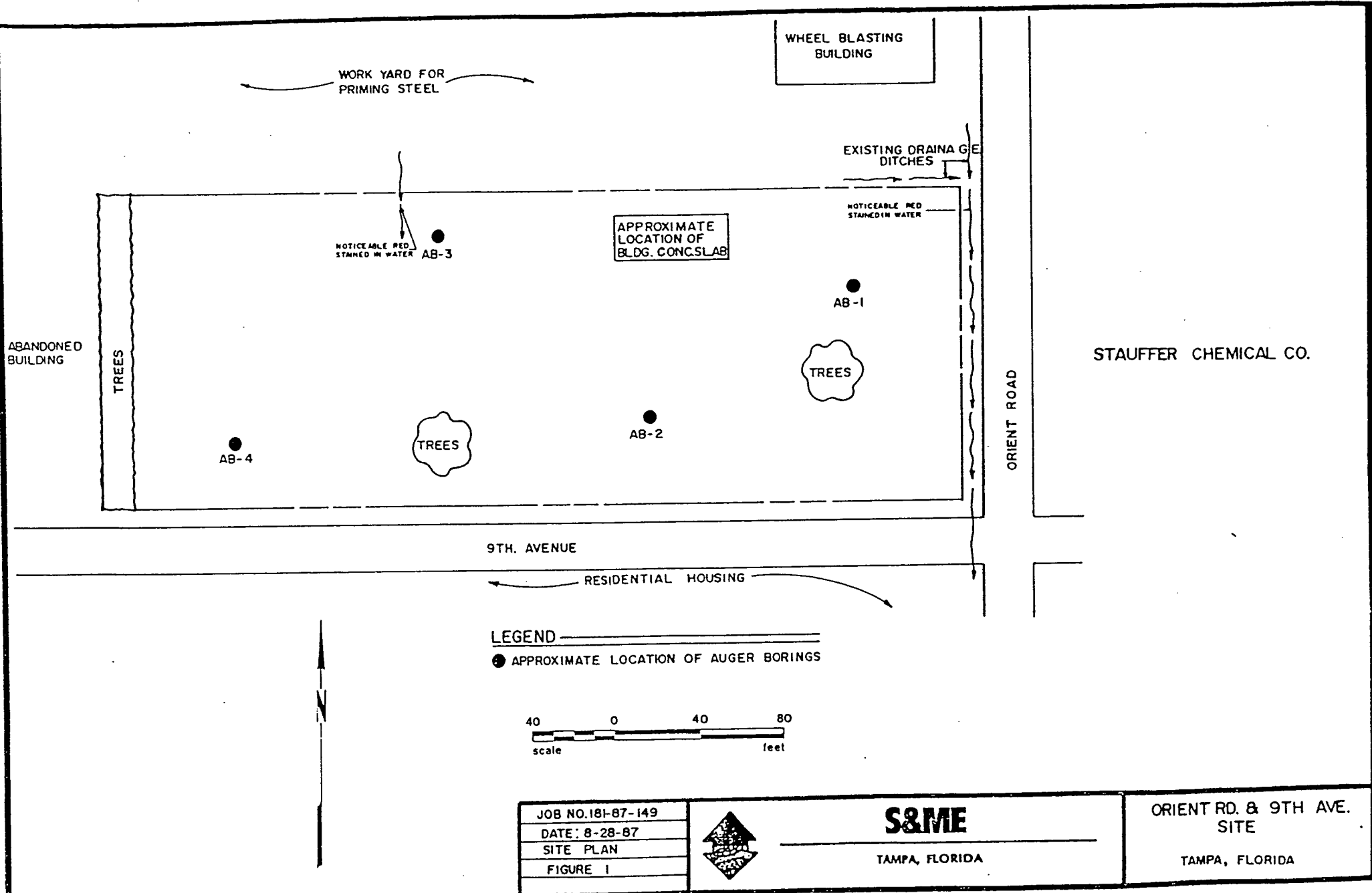
Total Organic Halogens (TOX)	0.19	0.062	0.10	0.023
COD (Chemical Oxygen Demand)	<del>2.1</del>	<del>2.1</del>	<del>2.1</del>	<del>2.1</del>
Arsenic (As)	<0.3	<0.3	<0.3	<0.3
Barium (Ba)	<7	<7	<7	<7
Cadmium (Cd)	<0.5	<0.5	<0.5	<0.5
Chromium (Cr)	<1	<del>1</del>	<1	<1
Lead (Pb)	<2	<2	<2	<2
Mercury (Hg)	<0.01	<del>0.01</del>	<0.01	<0.01
Selenium (Se)	<0.3	<0.3	<0.3	<0.3
Silver (Ag)	<1	<1	<1	<1
Copper (Cu)	<1	<1	<1	<1
Nickel (Ni)	<1	<1	<1	<1
Zinc (Zn)	<del>6.2</del>	<1	<1	1.0
pH (1:1 H <sub>2</sub> O Solution)	<del>4.3</del>	4.3	4.4	3.9

All results expressed in mg/kg unless otherwise noted.

THORNTON LABORATORIES, INC.

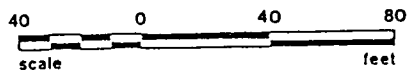
*[Signature]*  
REPLACED LRM





**LEGEND**

● APPROXIMATE LOCATION OF AUGER BORINGS



JOB NO. 181-87-149

DATE: 8-28-87

SITE PLAN

FIGURE 1

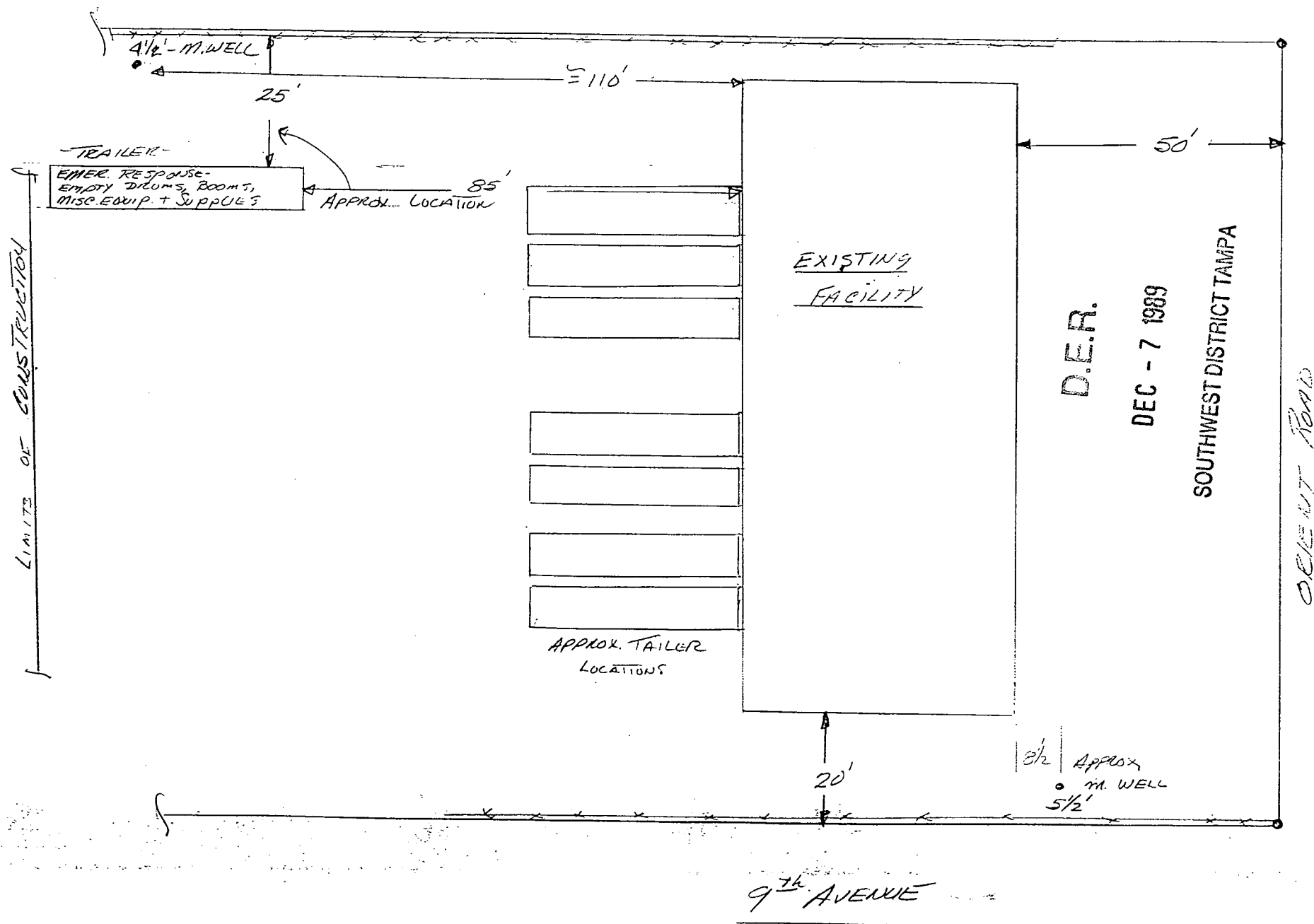


**S&ME**

TAMPA, FLORIDA

ORIENT RD. & 9TH AVE.  
SITE

TAMPA, FLORIDA



Form No. 25-18-5/83

## DRILL METHOD

☐ Rotary ☐ Cable Tool ☐ Jet ☒ Auger Other \_\_\_\_\_

Measured Static Water Level N.D. +        -        Ft.

Measured Pumping Water Level \_\_\_\_\_ + \_\_\_\_\_ - \_\_\_\_\_ Ft.

After \_\_\_\_\_ Hours At \_\_\_\_\_ G.P.M.

Measuring Pt. (Describe): \_\_\_\_\_

Which is \_\_\_\_\_ Ft. [ ] Above [ ] Below Land Surface

[illegible]

**FINISH:** Screen: 8 (Ft.) Open Hole: \_\_\_\_\_ (Ft.)

\_\_\_\_ ¼ \_\_\_\_ ¼ \_\_\_\_ ¼ of Section 20


**Locate in Section**

Optional  
may be  
required

Driller's Name L.C. Pinson

D.E.R.

DEC - 7 1989

SOUTHWEST DISTRICT TAMPA



## PROTECTIVE MAINTENANCE COATINGS DATA

Polyurethane Primer & Adhesion Promoter  
For Industrial Use Only By Professional Applicators  
Not Intended For Use By The General Public

### GLID-THANE™ ONE Clear Concrete Primer & Adhesion Promoter No. 6124

For Interior & Exterior New or Old Concrete  
and Previously Painted Surfaces

**DANGER! FLAMMABLE. VAPOR AND SPRAY MIST HARMFUL. MAY IGNITE EXPLOSIVELY. HARMFUL OR FATAL IF SWALLOWED. OVEREXPOSURE MAY CAUSE PERMANENT LUNG DAMAGE AND ALLERGIC RESPIRATORY REACTION. IRRITATES EYES. SENSITIZES SKIN. CONTAINS METHYL ETHYL KETONE, PROPYLENE GLYCOL ETHER ACETATE, HIGH FLASH AROMATIC NAPHTHA, 1,1,1-TRICHLOROETHANE AND FREE AROMATIC DIISOCYANATE. DO NOT APPLY WITH SPRAY EQUIPMENT CONTAINING ALUMINUM OR GALVANIZED (ZINC) PARTS WHICH CONTACT THE MATERIAL BEING SPRAYED.**

See other cautions on last page.

## PRODUCT DESCRIPTION

GLID-THANE ONE Clear Concrete Primer and Adhesion Promoter is a translucent, dark brown, low-viscosity liquid which penetrates into holes, voids and capillaries in concrete providing both a mechanical and a chemical bond to the surface. When cured, it is topcoated with pigmented GLID-THANE ONE coatings to provide long lasting all-urethane floor systems. May also be used as an adhesion coat over many types of coatings systems, including two package epoxies and urethanes.

## TYPICAL USES

This product is specified for use on concrete floors subjected to high levels of abrasion or splash and spillage of many chemicals and on previously painted surfaces when adhesion of the coating to be applied may not be adequate due to the nature of the previous coating.

## PRODUCT ADVANTAGES

- Single package polyurethane.
- Excellent adhesion to properly prepared concrete.
- May be recoated in 1 hour under normal conditions.
- Excellent adhesion to epoxy and urethane coatings.

## SERVICE CONDITIONS

Do not use for potable water, direct food contact, or immersion service. Do not use unless topcoated with a pigmented coating. Will withstand up to 250°F. continuous dry heat.

## MATERIAL PREPARATION

Loosen closure carefully as contents may be under slight pressure. Withdraw only enough from original container for use in one day. After withdrawal, keep container closed to prevent contact with moisture vapor. Coating withdrawn from original container for use should be stored separately and used promptly.

No solvent reduction is necessary for application over bare concrete. For application over previous coatings, reduce 100% with No. 6121 Standard Solvent.

## SURFACE PREPARATION

The full properties of this coating will be achieved only if the surface is properly prepared as follows:

### Concrete Floors — New

Concrete should be properly cured for four to six weeks before applying GLID-THANE ONE Clear Concrete Primer and Adhesion Promoter.

Determine if a membrane or surface hardening compound was used on the floor. If this information is not available from construction specifications, a few drops of water "beading up" on the surface or the failure of muriatic acid to produce a white haze of bubbles indicates the presence of a membrane

## TECHNICAL DATA

Product No. — Y-6124

General Type — Modified Aromatic Urethane

Color — Translucent Dark Brown

Percent Solids by Weight — 13.2%

Percent Solids by Volume — 11.4%

Theoretical Coverage Per One Mil Dry (8.8 mils wet) — 182 sq. ft./gal.

Recommended Coverage (Calculated) —  
0.5-0.6 mils dry (4.5-5.5 mils wet) —  
292-356 sq. ft./gal.

When computing working coverage, allow for application losses, surface porosity and irregularities, etc.

Percent Vehicle (Solids) by Weight — 13.2%

Percent Pigment by Weight — 0%

Percent Solvent by Weight — 86.8%

Viscosity — 15 CPS

Weight Per Gallon — 8.6 lbs.

Flash Point — 59°F. closed cup

Drying Time (77°F., 50% R.H.)

Recoat — 1 hour

Full Cure — 1 hour

Reduction Solvent — No. 6121 GLID-THANE ONE Standard Solvent

Clean-Up Solvent — No. 6121 GLID-THANE ONE Standard Solvent, xylene, or methyl ethyl ketone

Type of Cure — Air dry

Tinting — Do Not Tint

# GLID-THANE™ ONE Clear Concrete Primer & Adhesion Promoter

(Continued)

## APPLICATION

May be applied by roller (3/8" or 1/2" nap), lamb's wool or mohair applicator, brush or spray. Apply a full wet coat. Do not brush or roll back into partially dried material as cobwebbing may result. Apply reduced to bare, uncoated concrete. Reduce only when used as an adhesion coat over previous paint films (see "Material Preparation"). Do not apply when surface temperature is below 50°F.

## SPRAY APPLICATION

Glidden equipment is specified except where noted.

Gun: \*Binks® 700 Stainless Steel or equal

Fluid Tip: 1/16"

Pump: Glidden "Sprint", Glidden "500", Glidden "750" or "750 GE", Glidden "Formula One"

Fluid Section Packing: Teflon®

Pressure: 1,400-1,500 psi

Hoses: New

All pumps must be placed well away from areas where vapors from this product may collect.

**IMPORTANT NOTE:** This product contains chlorinated solvents. Contact with aluminum or galvanized (zinc) parts in a pressurized spray fluid system may result in a violent reaction. These solvents may also loosen particles of paint in previously used material hoses, causing plugging of spray tips. Any Glidden airless spray system may be used for application provided that the fluid section has Teflon packings, new hoses are installed, and a non-aluminum gun such as a Binks 700 Stainless Steel Airless Spray Gun is used in place of the Glidden Super G gun.

## COVERAGE

Covers approximately 300-350 sq. ft./gal. over bare concrete depending upon the porosity of the surface, application losses, etc.

## DRYING AND CURING

Maintain the equivalent of at least 35 percent relative humidity at 70°F. over the coated surface for 1 hour. In dry climates or in heated indoor spaces during cold weather, humidification may be necessary. Do not permit any alcohol fumes to contact the coating during cure. Avoid airborne dust while the coating is still tacky.

## RECOAT TIME

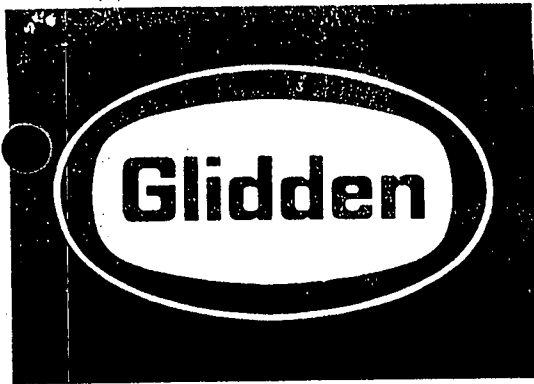
Allow to dry to a tack-free surface (1 hour at 77°F., 50% R.H.) before recoating. Recoat must be accomplished within 48 hours. High humidity or high temperature conditions will shorten maximum recoat time. If maximum recoat time is exceeded, scuff sand coated surface and reapply Clear Concrete Primer reduced 100% with No. 6121 Standard Solvent.

## CLEAN-UP

Clean equipment with No. 6121 Standard Solvent, xylene, or methyl ethyl ketone.

\*Binks is a registered trademark of Binks Manufacturing Company





## PROTECTIVE MAINTENANCE COATINGS DATA

High Performance Moisture Cured Polyurethane  
Floor Coating Systems  
For Industrial Use and Professional Application Only

**GLID-THANE™ ONE**

**Polyurethane Coatings No. 6100 Series**

For Interior/Exterior Concrete Floors

For Nos. 6100, 6102, 6107, 6116, 6151 and 6152

**WARNING! FLAMMABLE. VAPOR AND SPRAY MIST HARMFUL. MAY CAUSE PERMANENT LUNG DAMAGE AND ALLERGIC RESPIRATORY REACTION. IRRITATES EYES. SENSITIZES SKIN. SEE LABEL ANALYSIS FOR LIST OF HAZARDOUS INGREDIENTS.**

For No. 6107

**WARNING! CONTAINS LEAD. DRIED FILMS OF THIS PAINT MAY BE HARMFUL IF EATEN OR CHEWED.**  
See other cautions on last page.

### PRODUCT DESCRIPTION

The extreme resistance of GLID-THANE ONE Moisture Cure coatings to abrasion, impact and chemical attack makes these products ideal for use on concrete floors in commercial and industrial environments.

GLID-THANE ONE is available in both aliphatic (interior/exterior) and aromatic (interior only) grades. The aliphatic grade has better color retention, resistance to ultraviolet light, and chemical resistance. Refer to the GLID-THANE ONE Protective Maintenance Coatings Data sheet for detailed information on this product line.

### PRODUCTS AVAILABLE

#### Floor Preparation Materials

**Cleaner** — a biodegradable, water soluble, heavy-duty cleaner and degreaser for removing greases, oils, fats and other soils from concrete.

**Membrane Remover** — a fast acting, water emulsifiable, solvent cleaner for stripping most flooring membranes from concrete floors.

**Stripper** — used to remove sealers, old coatings, and certain types of floor membranes from concrete floors. Rinses off with water.

**Etchant** — an acid solution for removing laitance and etching concrete floors to a fine to medium grit sandpaper profile.

#### For Damaged or Uneven Concrete

**Patch** — blend of polymer aggregate and Portland Cement for filling cracks, cavities, and holes. Mixed with water and sets in 40 minutes.

**Resurfacer** — a 2-part self-leveling epoxy resurfacer which restores rough concrete to a smooth surface. Available in gray or clear. May be used over GLID-GUARD Epoxy Chemical Resistant Clear No. 5253/5242 or Water Borne Clear Epoxy Primer on extremely rough, porous concrete.

**Crack Filler** — for filling cracks or pits, use the Resurfacer mixed 1 to 1 by volume with salt free sand such as G-10 fine dry sand.

#### For Expansion Joints

**Joint Sealant** — a single component, self-leveling polyurethane sealant for use in sawcut, construction and expansion joints up to 1 inch in width. Sealant depth can be controlled by use of polyethylene foam backing rods, available in 1/2 inch and 5/8 inch diameters.

#### Coatings Systems Components

**Concrete Treatment No. 6119** — a clear, low viscosity, non film forming polymer solution of compatible synthetic resins. Penetrates the capillaries of concrete and chemically bonds to it, creates a strengthened, adherent surface. Normally used only under GLID-THANE ONE Aliphatic Clear No. 6116 when no surface darkening of the concrete is desired.

**Clear Concrete Primer and Adhesion Promoter No. 6124** — a transparent, fast drying, low viscosity film forming liquid which penetrates into holes, voids, and capillaries of concrete providing both a mechanical and chemical bond to the surface. Because of its darkening effect, normally not used under GLID-THANE ONE Aliphatic Clear No. 6116.

**Epoxy Chemical Resistant Clear No. 5253/5242** — a clear, solvent resistant, two component polyamide epoxy sealant for porous concrete. Used under GLID-THANE ONE finishes and resurfacer.

**Water-Borne Clear Epoxy Primer** — a 2 component water reducible clear epoxy concrete primer-sealer. Provides excellent adhesion to properly prepared wet and damp concrete surfaces. Can be top coated with GLID-THANE ONE finishes and resurfacer.

**GLID-THANE ONE Aliphatic Moisture Cure Coating No. 6100 Series** — GLID-THANE ONE Light Gray, No. 6107 Clear.

# GLID-THANE™ ONE Polyurethane Coatings No. 6100 Series (Continued)

## COATINGS SYSTEMS COMPONENTS (Continued)

GLID-THANE ONE Aromatic Moisture Cure Coating No. 6151 Clear, No. 6152 Neutral Gray

**Catalyst No. 6117**—a co-reactive catalyst used to accelerate the curing rate and improve the chemical resistance properties of GLID-THANE ONE Coatings.

## Solvents For GLID-THANE ONE Coatings

**Standard Solvent No. 6121**—for use under normal conditions

**Retarder Solvent No. 6122**—for use in hot or humid conditions

**Wetting Agent No. 9974**—must be added to Aliphatic Clear for No. 6116 and all aromatic GLID-THANE ONE coatings for roller application.

## Anti-Slip Grits

**Coarse**—No. 24 aluminum oxide grit for severe slippage problem areas

**Medium**—No. 46 aluminum oxide grit for intermediate slippage problem areas

**Fine**—No. 80 aluminum oxide grit for minor slippage problems on smooth walls

## SURFACE PREPARATION

To obtain the outstanding properties of polyurethane floor coatings, the surface must be properly prepared. Preparation has a twofold purpose: to remove contaminants and to provide a suitable surface profile which will enhance the adhesion of the selected system. Refer to Surface Preparation Data Sheet No. 3A, "Concrete Floors," for complete instructions and test procedures.

### New Concrete Floors

After proper curing, new floors must be swept clean and all surface contaminants which might interfere with the adhesion of the coating system (laitance, curing membranes, surface hardeners, greases, etc.) removed. An appropriate profile must be created using chemical or mechanical means.

### Aged and Uncoated Concrete Floors

Proceed as for new concrete with particular emphasis on cleaning for grease and chemical contamination and subsequent adequate cleaning.

### Previously Coated Concrete Floors

Remove any old failed coating, then proceed as for new concrete. Previously painted concrete should be thoroughly cleaned and roughened, preferably mechanically.

## SOLVENTS

The preferred solvent/reducer for GLID-THANE ONE Coatings is Standard Solvent No. 6121. The use of a urethane grade of petroleum based xylene is also acceptable. Reduction with non-urethane grade solvents or other commercial paint thinners often results in poor appearance and/or coated floors which never fully cure. Never use alcohol or solvents containing alcohol (such as Epoxy Solvent No. 5568).

Under hot or humid application conditions, Retarder Solvent No. 6122 may be used up to 10% maximum by volume.

## APPLICATION

Moisture cure polyurethane topcoats may be applied by brush, roller, airless or manual applicator, or spray. Except for No. 6116 Clear, the aliphatic grade may be roller applied as received. Roller application of No. 6116 and the aromatic grade is possible with the on-site addition of wetting agent No. 9974 at 3/4 fl. oz. per gallon of aliphatic or aromatic clear and 1 1/2 fl. oz. per gallon of pigmented aromatic.

## CLEAN-UP

Clean up can best be accomplished using Standard Solvent No. 6121. For economy, xylene or a ketone such as methyl ethyl ketone or methyl isobutyl ketone may be used.

## SYSTEMS FOR NEW OR OLD UNCOATED CONCRETE FLOORS

### GLID-THANE ONE Moisture Cure Polyurethane, Aliphatic Clear

Apply one coat of unthinned Concrete Treatment No. 6119 to the properly prepared floor using brush, roller, broom, or airless applicator, mop or spray. Coverage is approximately 275-300 sq. ft./gallon. Feathering of the material should be avoided since this lengthens the drying and recoat times.

Allow the No. 6119 to dry from 1 1/2-2 hours minimum to 48 hours maximum, then topcoat with GLID-THANE ONE Aliphatic Clear No. 6116 reduced 25% by volume with Standard Solvent No. 6121. Apply at a rate of 275-300 sq. ft./gallon.

Allow to dry 4 hours minimum to 24 hours maximum, then apply a second coat of No. 6116. This coat may be reduced up to 10% by volume with Standard Solvent No. 6121. Approximate coverage rate is 275-300 sq. ft./gallon (reduced or unreduced).

For maximum gloss and appearance, a third coat of No. 6116 may be applied after allowing the second coat to dry a minimum of 4 hours and a maximum of 24 hours. The same solvent reduction is permitted as for the second coat.

### GLID-THANE ONE Moisture Cure Polyurethane, Pigmented or Aromatic Clear

Apply one coat of GLID-GUARD Epoxy Chemical Resistant Clear No. 5253-5242 reduced 15% by volume with Epoxy Solvent No. 5568. Apply to properly prepared floor using brush, roller or spray at 175-200 sq. ft./gallon (reduced or unreduced). Allow to dry 4 hours minimum to 5 days maximum prior to topcoating.

# GLID-THANE™ ONE Polyurethane Coatings No. 6100 Series (Continued)

## GLID-THANE ONE Moisture Cure Polyurethane, Pigmented or Aromatic Clear (Continued)

Water-Borne Clear Epoxy Primer may be used in place of No. 5213/5242 and may be applied over concrete which is still wet from chemical preparation procedures or cleaning. This product is milky white during application but dries to a clear coating. Apply unreduced using brush, roller, lamb's wool or mohair applicator, or spray at approximately 175-200 sq. ft./gallon. Allow to dry from 8 hours minimum to 48 hours maximum prior to topcoating.

Clear Concrete Primer and Adhesion Promoter No. 6124 may also be used in place of the No. 5253/5242. Apply to the properly prepared dry floor using brush, lamb's wool or mohair applicator, roller or spray. If the concrete is hard and dense due to troweling, dilution up to 50% by volume with Standard Solvent No. 6121 is permissible to achieve proper penetration. The No. 6124 should be allowed to dry for 1 hour minimum to 48 hours maximum prior to topcoating.

After the prime coat has been allowed to dry properly, apply the first coat of selected aromatic or aliphatic GLID-THANE ONE pigmented coating or Aromatic Clear No. 6151. If an epoxy primer has been used, reduce 10% by volume with Standard Solvent No. 6121. If Clear Concrete Primer and Adhesion Promoter No. 6124 has been used as the primer, reduce 20% with No. 6121. Coverage is approximately 275-300 sq. ft./reduced gallon.

Allow to dry 4 hours minimum to 24 hours maximum, then apply a final coat of selected GLID-THANE ONE coating. This coat may be reduced up to 10% by volume with No. 6121. Coverage is approximately 275-300 sq. ft./gallon (reduced or unreduced). When an epoxy prime coat is selected, this final coat is needed only for maximum appearance and to provide additional protection.

## SYSTEMS FOR PREVIOUSLY COATED CONCRETE FLOORS

Apply one coat of Clear Concrete Primer and Adhesion Promoter reduced 100% (1 to 1) by volume with Standard Solvent No. 6121 to the properly prepared old coating. Refer to the Protective Maintenance Coatings Data Sheet for No. 6124 for complete instructions and test procedures. Coverage is approximately 500 sq. ft./reduced gallon.

Allow the No. 6124 to dry from 1 hour minimum to 48 hours maximum, then apply the desired clear or pigmented GLID-THANE ONE Coating. This material may be reduced up to 10% by volume with Standard Solvent No. 6121.

After allowing the floor to dry from 4 hours minimum to 24 hours maximum, a second coat of selected GLID-THANE ONE Coating may be applied. This coat may also be reduced up to 10% by volume with No. 6121 if desired.

## APPLICATION OVER COMMERCIAL PRIMERS

If a commercial primer is present, a test application must be made to verify adhesion, appearance, and proper cure of the GLID-THANE ONE system.

## USE OF ALUMINUM OXIDE GRIT FOR NON-SKID SURFACES

Coated floors can be slippery when wet with water or oil spillage. To avoid this, a non-skid may be a problem, aluminum oxide grit should be broadcast into the next to last coat of moisture cure polyurethane coating, while the coating is still wet. The final coat will then cover and encapsulate the grit particles.

The recommended grit size and amount depend upon the desired non-skid properties as follows:

Slip Problem	Grit Size	Approximate Coverage
Minor	No. 80 (Fine)	1.0 lbs./100 to 1000 sq. ft.
Medium	No. 46 (Medium)	2.5 lbs./100 to 1000 sq. ft.
Major	No. 24 (Coarse)	4.0 lbs./100 to 1000 sq. ft.

## RECOAT TIMES

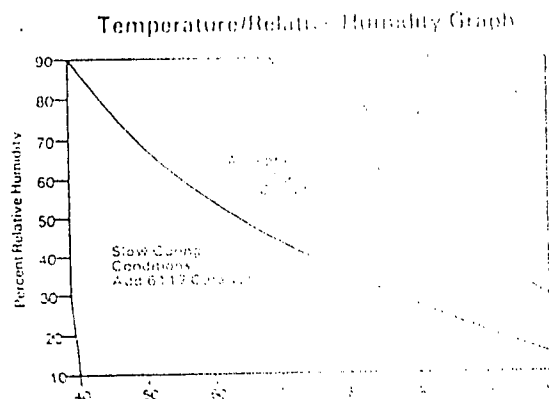
The recoat time of GLID-THANE ONE Moisture Cure Polyurethane Coatings is 4 hours minimum, 24 hours maximum under normal conditions (77°F., 50% Relative Humidity). Higher temperatures and humidities promote faster cure and shorter recoat times while lower temperatures and humidities result in slower cure and longer recoat times.

In high temperature (85°F. and above) or high humidity (80% R.H. and above) conditions, recoat within 8-12 hours to prevent possible intercoat adhesion failure. If the recoat time is exceeded, sand the floor and apply a coat of No. 6124 reduced 100% with No. 6121 to insure good intercoat adhesion prior to application of the next coat of moisture cure polyurethane.

NOTE: Recoat times included in the system descriptions above assume normal curing conditions.

## CURING CONDITIONS AND THE USE OF THE CATALYST

Moisture cure polyurethane coatings are best applied between ambient temperatures of 55°F. and 95°F. Substrate temperature must be at least 5°F. above the dew point. The temperature/relative humidity graph shown below indicates slow, acceptable, and rapid curing conditions for these coatings. GLID-THANE ONE coatings should not be applied when conditions fall outside of the extremes shown on the graph.



# GLID-THANE™ ONE Polyurethane Coatings No. 6100 Series (Continued)

## CURING CONDITIONS AND THE USE OF THE CATALYST (Continued)

In the acceptable cure area, sufficient heat and moisture exists to readily cure the coating. Under these conditions, the aliphatic coatings will develop their full properties in 2-3 weeks and the aromatic coatings in 6-7 days.

If the drying conditions fall in the slow cure area, Catalyst No. 6117 should be added to the first and any intermediate coats of moisture cure polyurethane at a rate of 1% by volume and to the final coat at a rate of 3% by volume. The use of No. 6117 will appreciably shorten recoat time.

The addition of 3% Catalyst to the topcoat will also provide improved chemical resistance. This is beneficial with aircraft floor applications, where superior resistance to hydraulic fluids and aviation fluids is needed.

If the drying conditions fall in the slow cure area, Catalyst No. 6117 should be added to the first and any intermediate coats of moisture cure polyurethane at a rate of 1% by volume and to the final coat at a rate of 3% by volume. The use of No. 6117 will appreciably shorten recoat time.

## OPENING THE FLOOR TO TRAFFIC

Under normal curing conditions and without Catalyst addition, the coated floor can be opened to light traffic after the final coat has dried for 24 hours. It is advisable to restrict heavy use for at least 3 days after completion of the job if the final coat is an aromatic and 7 days if it is an aliphatic. If the floor must be put into service more quickly, 3% by volume Catalyst No. 6117 may be added to the final coat to accelerate the rate of cure.

Extra care should be taken to keep the surface free of abrasive soilage and chemical spillage until the coating is completely cured (see Curing Conditions above).

## TIRE STAINING

Nearly all generic coatings, including polyurethanes, are subject to tire staining. To prevent this from happening on the floors of aircraft hangers or automotive showrooms, it is common practice to park the tires on pads. The addition of 3% by volume Catalyst No. 6117 to the topcoat will improve resistance to tire staining.

## FLOOR MAINTENANCE

Chemical spills and abrasive soilage can damage any floor system. To obtain maximum service life, abrasives and chemicals should be cleaned from the surface as quickly as possible. The floor should be swept continually to prevent dirt accumulation. Daily sweeping is sufficient for most traffic conditions, but under extreme dirt conditions more frequent sweeping is recommended.

The floor should be routinely scrubbed with the Cleaner to remove sticky soilage and grease, oil, or chemical spillage which may cause slip hazards. Scrubbing once or twice a week should be sufficient for most floors. In open areas, a power scrubber will provide the best results. In confined areas, a mop may be used. The floor should be thoroughly rinsed with clean water after scrubbing.

Rubber burns are best removed by applying the Membrane Remover, allowing it to stand on the stain for 5 to 10 minutes, then scrubbing the floor with the Cleaner as described above. Stubborn stains may require the use of a scrub brush on the stained area.

FOR BEST RESULTS AND SAFEST USAGE, USER IS SPECIFICALLY DIRECTED TO CONSULT THE CURRENT MATERIAL SAFETY DATA SHEET FOR THIS PRODUCT. EMERGENCY PHONE (216) 826-5566.

### LIMITATION OF LIABILITY

To the best of our knowledge the technical data contained herein are true and accurate at the date of issuance but are subject to change without prior notice. We guarantee our product to conform to Glidden's specifications. WE MAKE NO OTHER WARRANTY OR GUARANTEE OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE. Liability, if any, is limited to replacement of the product or refund of the purchase price. LABOR OR COST OF LABOR AND OTHER CONSEQUENTIAL DAMAGES ARE HEREBY EXCLUDED.

### WARNING! FLAMMABLE PAINT. VAPOR AND SPRAY MIST HARMFUL. MAY CAUSE PERMANENT LUNG DAMAGE AND ALLERGIC RESPIRATORY REACTION. IRRITATES EYES. SENSITIZES SKIN. SEE LABEL ANALYSIS FOR LIST OF HAZARDOUS INGREDIENTS.

Keep away from heat, sparks and flame. Do not smoke. Vapors may make you dizzy. Extinguish all flames, burners, stoves, heaters and pilot lights and disconnect all electrical motors and appliances before using this paint. Use portable explosion-proof lighting and ventilating equipment connected to exterior self-contained power source. All electrical equipment must be placed well away from areas where vapors may collect. Use non-ferrous tools and wear safety glasses and protective shoes in areas where sparks or hazards exist. Vapors may spread long distances.

Keep closures tight and upright to prevent leakage. Keep containers closed when not in use. Store below 100°F. Do not incinerate closed containers as they may explode when exposed to extreme heat or fire. In case of spillage, absorb and dispose of in accordance with applicable regulations.

DO NOT USE IF YOU HAVE CHRONIC (LONG-TERM) LUNG OR BRONCHIAL PROBLEMS, OR IF YOU HAVE EVER HAD A REACTION TO ISOCYANATES. AVOID CONTACT WITH SKIN AND EYES. Wear impervious clothing, footwear and equipment including gloves and aprons and goggles to prevent skin and eye contact. Do not take internally. Avoid breathing of vapor or spray mist. Wear an appropriate properly fitted respirator approved by NIOSH/MSHA while exposed. An airline respirator (TC 19K, NIOSH/MSHA) is recommended. A vapor hazard respirator (TC 23C NIOSH/MSHA) may be appropriate where airborne concentrations of isocyanate vapor levels below ten times the applicable exposure limits. Follow directions for respirator use. Provide sufficient ventilation to prevent build up of vapors.

FIRST AID: In case of skin contact, IMMEDIATELY wipe areas with water. Wash thoroughly with soap and water for 15 minutes. Wash with water for 15 minutes and GET MEDICAL ATTENTION. If inhaled, GET MEDICAL ATTENTION IMMEDIATELY. If swallowed, proceed to fresh air. If not breathing, give artificial respiration and GET EMERGENCY MEDICAL ASSISTANCE.

USE ONLY WITH ADEQUATE VENTILATION. KEEP OUT OF THE REACH OF CHILDREN.

### WARNING! CONTAINS LEAD

Dried film of this paint may be harmful if eaten or chewed. DO NOT use on toys or other articles which might be chewed by children. DO NOT apply to interior or exterior surfaces of dwelling units such as porches, stairs or railings to which children may be commonly exposed. Wash hands thoroughly after using and before smoking or eating.

Glidden

THE GLIDDEN COMPANY  
CLEVELAND, OHIO 44115

# PIONEER

## Janitorial Service & Supply Co., Inc.

CORPORATE OFFICE: 9231 130th AVENUE N. • LARGO, FLA. 33543 • (813) 586-5656

VIRGINIA BRANCH: HWYS. 40 &amp; 49 • LUNENBURG, VA 23952 • (804) 696-2169

TDS #302

FLOOR SEALS

PRODUCT NAME: ARMOR-THANE

TYPE: Oil-free, moisture-cured polyurethane finish for wood and concrete floors. Amber liquid of moderate viscosity. Mild solvent odor. Blend of oil-free polyurethane polymers in appropriate solvents.

TYPICAL ANALYSIS AND PERFORMANCE CHARACTERISTICS:

- A. Drying Time: (Depends on ambient conditions of temperature and humidity.)  
Tack Free: 4 hours (approx.)  
Hard: 8 hours  
Recoating: 10-12 hours
- B. Adhesion: Excellent on wood and concrete.
- C. Sward Hardness: After 24 hours - 29, After 72 hours - 66
- D. Packaging: To exclude moisture, ARMOR-THANE is packaged in sealed containers under atmosphere of nitrogen. Use promptly after opening.
- E. Stability Class: I - Some deterioration possible after 3 months of storage. Unstable after container has been opened or seal broken.

RECOMMENDED USES AND USERS:

For industrial, commercial and institutional use. Especially suitable for textile mills, factories and warehouses where extremely heavy traffic requires the ultimate in durability.

SPECIAL ADVANTAGES:

- A. EXTREMELY DURABLE - ARMOR-THANE will outlast conventional good quality varnishes two or three times over. It possesses wearability and protective characteristics not found in usual alkyd, phenolic or epoxy seals.
- B. CURES BY MOISTURE: Unlike most other varnishes which cure by reaction with drying oils, and whose cure is retarded by moisture, ARMOR-THANE cures rapidly and completely in a humid atmosphere. Water vapor interacts with the reactive sites in the ARMOR-THANE molecules and produces the hardening or cure desired.
- C. RESISTS CHEMICALS - ARMOR-THANE is so resistant to chemicals that once applied and cured it cannot be stripped away by usual seal, paint and varnish strippers. Removal can only be accomplished by sanding.
- D. LIGHT COLOR - ARMOR-THANE's light color brings out the natural beauty of wood floors. Moreover, it has excellent color stability and does not discolor with time - except when used outdoors.
- E. ATTRACTIVE APPEARANCE - ARMOR-THANE produces a smooth glossy attractive surface which resists soiling, sheds light and simplifies maintenance, yet is safely anti-slip.
- F. NON-TOXIC - Some moisture cured polyurethanes contain free or unreacted toluene di-isocyanate (TDI) which is hazardous. ARMOR-THANE contains less than 1.0% free T.D.I. (toluene di-isocyanate monomer). Accordingly, it is non-toxic in use, provided that normal precautions, which pertain to any seal, are observed.
- G. GOOD SHELF LIFE - Sealed containers have been stored satisfactorily up to six months without any signs of deterioration; however, storage beyond three month is not recommended because of possible breakdown of the seal and leakage of moist air into the container.
- H. GOOD POT LIFE - After seal is broken or contents of container exposed, pot life will depend on the amount of moisture in the air. Under normal circumstances, ARMOR-THANE will be stable for a week or longer before starting to thicken or deteriorate. Under conditions of very high humidity, pot life will be reduced accordingly.



DIRECTIONS FOR USE:

FOR PREVIOUSLY SEALED OR FINISHED WOOD FLOORS:

1. Old, conventional, sealers, finishes or paints should be removed by sanding or stripping with Puritan's FASTRIP and ACTIV. See FASTRIP label for detailed directions.
2. After stripping, floor should be wet scrubbed to remove residue of stripper. When dry, buff with #2 steel wool or synthetic screen pad. Follow steps listed on the label.

FOR NEW or NEWLY SANDED WOOD FLOORS:

3. Vacuum or clean dust from surface using tack rag or cloth dampened with mineral spirits to pick up dust.
4. For best adhesion thin ARMOR-THANE with Puritan's EXANE for the first application.
5. Apply with lamb's wool applicator.
6. Allow to dry thoroughly, then buff with #2 steel wool. Remove dust as recommended in number 3 above.
7. Second and third coats should then be applied following steps 2, 3, and 4 above. Do not buff the last coat with steel wool when gloss finish is desired.

FOR SURFACES PREVIOUSLY TREATED WITH ARMOR-THANE:

Clean surface thoroughly, buff to remove gloss and to roughen surface and recoat as recommended above.

FOR CONCRETE FLOORS:

New or untreated concrete must be acid etched with Puritan's CONCRETE NEUTRALIZER after it has cured for at least 6 months. If sealed before, test finish on small area; scratch coin when thoroughly hard and dry - preferably after 7-10 days. If poor adhesion, strip floor completely. Acid etch and rinse several times. Allow to dry overnight. For first application on concrete, ARMOR-THANE must be thinned with EXANE in ratio of 1 part of EXANE to 4 parts of ARMOR-THANE.

NOTE: Allow adequate fresh air to circulate during application and while drying and avoid low temperature. Thin only if necessary. For thinning and cleaning use Puritan's special thinner, EXANE, designed as a companion product for ARMOR-THANE.

8. For best adhesion, recoat no later than 24 hours after first coat; and burnish between coats with Fabricut or Screen-Bac Discs.

CAUTIONS:

- A. ARMOR-THANE, like other paints or seals, should not be used when very cold -- it will be too viscous and not cure satisfactorily. Warm container to room temperature (75°-80°F.) before opening for use.
- B. ARMOR-THANE cures rapidly in humid atmosphere and slowly when humidity is low. In winter months, when humidity is low, it may be necessary to raise humidity in the air to get rapid and complete cure. Spray or fog moisture into the air by means of an Electric F-982, or pressure sprayer; or, when seal has hardened, mop lightly with clear water. These or similar techniques will provide additional moisture and help speed cure.
- C. Do not apply ARMOR-THANE over other coatings or varnishes. It may soften, wrinkle, or lift these coatings and produce poor bonding.

# ARMOR-THANE

## A MOISTURE-CURED POLYURETHANE FINISH

OIL FREE. FOR WOOD OR CONCRETE FLOORS.

**DANGER:** Keep out of reach of children.

**HARMFUL OR FATAL IF SWALLOWED. VAPOR HARMFUL. FLAMMABLE.** Contains xylol, ketones and esters. If swallowed do NOT induce vomiting. In case of contact with eyes, flood repeatedly with water. (In either case, call a physician.) Use with adequate ventilation. Keep away from heat and open flames. Avoid prolonged contact with skin and breathing of vapor or spray mist. Do not take internally. Close container after each use.

**CAUTION:** Do not apply ARMOR-THANE over any other seal without first testing to see if the two products are compatible. Clean the test area thoroughly, rinse and let dry. Apply ARMOR-THANE, let it dry and stand for 24 hours. If there is any lifting or blistering, do NOT use ARMOR-THANE over the old seal. Puritan/Churchill is not responsible for the use of this product over others with which it may not be compatible.

**Formulated for Industrial, Commercial  
and Institutional Use ONLY.**

### DIRECTIONS FOR PREVIOUSLY SEALED OR FINISHED WOOD FLOORS:

1. Old, conventional sealers, finishes or paints should be removed by sanding or stripping with Puritan's FASTRIP plus ACTIV. Add 1 part ACTIV to 10 parts FASTRIP.
2. After stripping, floor should be wet scrubbed to remove residue of stripper and sanded lightly to remove any residual old seal remaining on the surface. Buff with #2 steel wool or synthetic screen pad to smooth surface.

3. Follow steps listed below:

#### FOR NEW OR NEWLY SANDED FLOORS:

4. Vacuum or clean dust from surface using tack rag or cloths dampened with mineral spirits to pick up dust.
5. For best adhesion, thin ARMOR-THANE with Puritan's EXANE for the first application. Slowly add 1 quart EXANE to 1 gal. ARMOR-THANE. Stir well and use immediately after mixing. Thinned mixture cannot be stored. It will thicken and jelly on exposure to moisture.
6. Apply with lamb's wool applicator.
7. Allow to dry thoroughly, then buff with #2 steel wool. Remove dust as recommended in No. 4 above.
8. Second and third coats should then be applied following steps 2, 4, and 6. For best adhesion, ARMOR-THANE should be recoated within 12 hours. Do not delay longer. Do not buff the last coat with steel wool when gloss finish is desired. Final coat should

dry at least 12 hours before exposure to traffic. ARMOR-THANE may take 5 to 7 days to cure completely and to achieve maximum hardness, toughness and chemical resistance.

**FOR SURFACES PREVIOUSLY TREATED WITH ARMOR-THANE:** Clean surface thoroughly, buff to remove gloss and recoat as recommended above.

**FOR CONCRETE FLOORS:** New or untreated concrete should cure for 6 months. Then acid etch with Puritan's CONCRETE NEUTRALIZER. If sealed before, test finish on small area; scratch with coin when thoroughly hard and dry. If poor adhesion, strip floor to remove treatment. Acid etch for best results. Rinse and dry. For all applications on concrete, ARMOR-THANE must be thinned with Puritan's EXANE in the ratio of 1 part of EXANE to 4 parts of ARMOR-THANE.

**NOTE:** Allow adequate fresh air to circulate during application and while drying and avoid low temperatures. For thinning and cleaning use Puritan's special thinner, EXANE, designed as a companion product for ARMOR-THANE. See EXANE label for directions.

**PRECAUTIONS:** Do not return used material to original container. Close container tightly and repackage into full containers to eliminate air moisture. **NOTE:** Keep from freezing. In order to insure rapid cure, warm to room temperature before applying to floor. ARMOR-THANE dries and cures rapidly in a humid atmosphere. During the winter months when humidity is low, it may be desirable to fog moisture into the air to promote rapid cure.

Flash Point 81° F. D.O.T. Description: Paint or Varnish

ITEM NO. 302







# BORRELL FIRE SYSTEMS



☐ TAMPA BRANCH  
N. NEWPORT AVENUE  
TAMPA, FLORIDA 33606  
(813) 254-3306

☐ ORLANDO BRANCH  
624 DOUGLAS AVENUE  
SUITE 1404  
ALTAMONTE SPRINGS, FLORIDA 32714  
(407) 788-3335

☐ POMPANO BEACH BRANCH  
1864 N.W. 21st STREET  
POMPANO BEACH, FLORIDA 33069  
(305) 974-9100

☐ JACKSONVILLE BRANCH  
4110 SOUTHPOINT BOULEVARD  
JACKSONVILLE, FLORIDA 32216  
(904) 733-9477

## Service Contract For Fire Protection Systems

- I. This contract between Borrell Fire Systems, a Division of Borrell Electric Co., Inc., hereinafter designated as the CONTRACTOR, and Universal Waste and Transit hereinafter designated as the OWNER, covers the servicing and maintenance by the CONTRACTOR of the Fire Protection System(s) No.(s) installed in the:

Area or Department North and South Non-flammable Storage F/A,  
Flammable Storage Foam System

of

Name of Company Universal Waste and Transit

Located at 7208 9th Avenue Tampa, Florida  
in compliance with National Fire Protection Association standards, and recommendations of equipment manufacturers.

- II. It is agreed that the CONTRACTOR shall provide the following services during the period of this Service Contract:  
PLEASE READ AND KEEP ATTACHED EXHIBIT A
- III. The CONTRACTOR shall inspect the equipment and installation Two (2)  
time(s) during each contract year at approximate intervals of Six (6)  
month(s), with the initial inspection to be performed within Six (6)  
month(s) from the receipt of the executed contract. A report (in duplicate) of each inspection shall be forwarded to the officer specified by the OWNER. Reports to be sent to:

Robert Bedore  
(Name and Title)

- IV. The term of this Contract shall be for a period of not less than One (1) Year nor more than Five (5) Years, beginning July 1, 1989 and ending June 30, 1990 unless sooner terminated by either party as provided herein.
- V. Payment to be paid by the OWNER Net 30 days upon completion of services described in this agreement. A service charge of 1½% per month (18%) per year will be added to delinquent accounts. OWNER agrees to pay CONTRACTOR \$ 600.00 per semi-annual inspection for services performed under the terms of this agreement. (\$1,200.00 Annually).

CONTRACTOR:

ATTEST:

BY: \_\_\_\_\_

\_\_\_\_\_

TITLE: \_\_\_\_\_

\_\_\_\_\_

DATE OF EXECUTION: \_\_\_\_\_

OWNER:

ATTEST:

BY: \_\_\_\_\_

\_\_\_\_\_

TITLE: \_\_\_\_\_

\_\_\_\_\_

DATE OF EXECUTION: \_\_\_\_\_

SEE TERMS AND CONDITIONS ON REVERSE

- It is hereby mutually agreed that work will be done during the seller's normal working time. If work is to be performed during other than the seller's normal working hours, the buyer agrees to pay the additional overtime expenses unless specifically stated otherwise in this proposal.
2. Each inspection shall normally include tests of circuitry for continuity and adequate insulation, and of components for proper functioning condition. If such tests are not possible due to plant operation, this shall be noted on the Inspection Report.
  3. The CONTRACTOR shall replace equipment found defective due to improper design, or faulty manufacture within the terms of the installation purchase agreement. If the defectiveness is the result of conditions not disclosed to the CONTRACTOR at the time of system design, or improper handling by the OWNER, or a change in plant conditions, the charges incurred to bring the system up to the proper standard of protection shall be borne by the OWNER. The CONTRACTOR shall replace equipment, subject to normal deterioration such as batteries, explosive devices, etc., and the expense of such replacement shall be borne by the OWNER. If plant conditions exist which accelerate such deterioration, such conditions shall be noted in the Inspection Report.
  4. The CONTRACTOR, in the event of actuation of the protection system, shall provide service personnel to inspect the installation and recommend the reconditioning and/or replacement of equipment necessary to return the protection system to its original state. Costs for reconditioning and/or replacement to be borne by the OWNER. The system shall not be placed in operation until final inspection by the CONTRACTOR'S service personnel has been performed. A report (in duplicate) shall be forwarded as stated in Paragraph III outlining the work performed.
  5. OWNER agrees to indemnify and hold harmless CONTRACTOR against claims, actions or demands against him, and against any damages, liabilities, for personal injury or death, or for loss or damage to property arising out of OWNER'S use of these systems. It is further agreed that CONTRACTOR is not liable for repairs, alterations or installations made by OWNER.
  6. The OWNER shall advise the CONTRACTOR of any changes made in the equipment, operating procedures, installation or plant, prior to the incorporation of such changes. This Contract shall not cover the charges for any work performed by the CONTRACTOR necessary to render the system satisfactory for the changed conditions.
  7. It is understood and agreed between the parties hereto that the CONTRACTOR is not an insurer, that the payments hereinbefore named are based solely on the value of the service in the maintenance of the system described, and that the CONTRACTOR assumes no liability whatsoever for the failure of the equipment to perform the service for which it is intended or for any losses of whatever nature which may result from any malfunction or alleged malfunction of the system.
  8. This Contract shall remain in force from the date of execution by CONTRACTOR and may be terminated by either party upon Thirty (30) Days written notice.
  9. In the event the settlement of the controversy or claim arising out of or relating to this agreement as to breach thereof, cannot be concluded by the parties to this Service Contract, they shall resort to arbitration upon written request one to the other. Such arbitration shall be in accordance with commercial arbitration rules then in effect of the American Arbitration Association and both parties agree to abide by a decision resulting from such arbitration. If necessary, the decision of the American Arbitration Association may be enforced by the courts having jurisdiction over this contract.
  10. In the event arbitration or legal action is brought by either party to this Contract, the prevailing party shall be entitled to costs and attorney's fee which will be made a part of the award of judgement.
  11. The laws of the State of Florida shall apply and bind the parties in any and all questions arising hereunder, regardless of the jurisdiction in which any action or proceeding may be initiated or maintained. It is understood, however, that this is a general form of agreement and if any of its provisions are contrary to the laws of the State or Territory, such provisions shall be deemed not to be a part of this agreement, and the remainder of this agreement shall remain in full force and effect.





7910 PROFESSIONAL PLACE • TAMPA, FLORIDA • 33637

THIS AGREEMENT made and executed in duplicate original by and between SECKMAN FIRE SPRINKLERS, INC., hereinafter called Corporation and Universal Waste & Transit Inc. hereinafter called Customer.

W I T N E S S E T H

1. In consideration of the sum of \$300.00 per annum, Corporation agrees to inspect the automatic fire extinguishing equipment and adjuncts on premises owned or occupied by Customer which are located at 2501 North Orient Road, Suite A, Tampa, Florida 33619 and being more particularly described as follows: Fire Sprinkler System

2. The Corporation shall inspect the above described equipment and adjuncts 4 times during each twelve month period hereunder, and shall make a written report to Customer following each inspection made.

3. Inspection reports to Customer shall include what items of maintenance, repairs, and replacements, if any, are necessary, in the Corporation's judgement, to maintain same in good working order.

4. The annual inspection fee of Corporation shall be paid immediately following the first inspection made, and is payable annually thereafter.

5. This agreement shall be effective for a period of one (1) year from date and shall be automatically renewed each year unless terminated by mutual agreement or by a thirty (30) days written notice by either party to the other.

6. Any work, other than inspection, shall be done at the written request of Customer as evidenced by letter, purchase order, authorized work order ordering charges for the additional work requested.

7. The Corporation shall inspect any additional fire extinguishing equipment or adjuncts added during the effective term of this agreement and Customer shall pay an additional inspection fee commensurate with the additional inspection work to be performed. A new contract shall be executed by the parties to show all items to be inspected and the adjusted annual inspection fee.

8. The Corporation shall have the right to enter the premises of Customer at all reasonable times and hours for the purposes of performing the work designated herein.

Customer's Mailing Address:

2501 North Orient Road/Suite A

Tampa, Florida 33619

Customer George P. Phelps

SECKMAN FIRE SPRINKLERS, INC.

By: Chet Seckman

Approved: Chet Seckman

SALES • DESIGN • CONTRACTORS • REPAIRS • INSPECTION

PAUL T. SGRICCIA  
38026 MUNGER AVE.  
LIVONIA, MICHIGAN 48154  
(313) 591-6116

### EXPERIENCE SUMMARY

Involved in all activities concerned with solid and hazardous waste (RCRA, TSCA and CERCLA) and wastewater discharge regulatory requirements. Prepared and provided technical liaison for a RCRA Part B permit application and three State of Michigan hazardous waste management facility permit applications. Coordinate and manage engineering projects for three solid waste landfills, a waste transfer stations and an industrial wastewater treatment facility. Developed environmental audit program for industrial facilities.

### EXPERIENCE HIGHLIGHTS

1984 - Present

#### CITY MANAGEMENT CORPORATION

Vice-President, Engineering - Responsible for environmental compliance and engineering staff for the waste management subsidiaries which include three municipal waste landfills, a municipal waste transfer station and process facility and an industrial wastewater treatment facility. Landfill projects include: investigate methane collection, treatment and sale; develop low cost leachate treatment system; develop and implement landfill design and construction changes to extend landfill life; responsible for regulatory liaison and compliance; coordinate engineering of construction and operation activities. Established quality control program for non-hazardous waste processing facility. Coordinated design and construction and operation of industrial wastewater treatment facility. Company representative on solid waste industry's (NSWMA) state steering and landfill committees and Wayne County Solid Waste Implementation Committee. Implemented groundwater monitoring program for Company's waste management facilities. Involved in disposal facility siting, planning, engineering design and permit preparation. Responsible for municipal resource recovery plant ash monofill cell design and construction.

1978 - 1984

#### FORD MOTOR COMPANY

Stationary Source Environmental Control Office (1978 - 1981)  
Plastics, Paint and Vinyl Division (1981 - 1984)

Environmental Engineer - Responsibilities and duties included: advise division and plant staff on environmental regulatory requirements; direct, conduct and evaluate environmental pollution surveys of manufacturing operations.

PAUL T. SGRICCIA

EXPERIENCE HIGHLIGHTS (continued)

FORD MOTOR COMPANY

Conduct and evaluate environmental compliance audits of Company facilities; supervisor of environmental laboratory personnel; conduct compliance audits of waste disposal facilities contracted by Company; develop and present federally required training for oil/hazardous waste emergency spill incidents; assist plants in preparation of environmental compliance strategies, permit applications and reports to regulatory agencies; develop programs for long-term waste management practices; coordinate groundwater monitoring program at a hazardous waste treatment facility; division coordinator for \$3.5MM wastewater treatment facility upgrade and hazardous waste facility closure.

1972 - 1977

SCANS ASSOCIATES, INC.

Designer/Manufacturer of specialized industrial test equipment

Test Engineer/Field Service Technician - Responsibilities and duties included: pneumatic, electrical and hydraulic design and drafting; field service and equipment startup.

EDUCATION

University of Michigan, Ann Arbor, Michigan  
B.S.E. Environmental Sciences Engineering

PROFESSIONAL AFFILIATIONS

- Professional Engineer - Michigan, Ohio
- Certified Wastewater Treatment Plant Operator - Michigan
- East Michigan Environmental Action Council - Board of Directors
- Engineering Society of Detroit - Chairman, Environmental Science Committee
- Wayne County Solid Waste Implementation Committee member
- Michigan Waste Industries Association (NSWMA) - Steering Committee, Landfill Committee
- Schoolcraft College - Industrial Waste Management Instructor
- Water Pollution Control Federation
- Air Pollution Control Association
- American Water Works Association
- American Electroplaters and Surface Finishers Society



**POSITION:      GENERAL MANAGER**

**BASIC FUNCTION:**      Continual Facility update of safety features and compliance measures. Effectively coordinate the activities of the Sales staff and the operational team to service clients and achieve certain profit criteria.

**POSITION RESPONSIBILITIES & DUTIES:**

- Reports to Vice President of the chemical group
- Assures timely and complete communications at all levels
- Preparation and presentation of required reports, plans and all documentation requested by superiors
- Oversee that the company equipment receives proper care and maintenance
- Assumes responsibility for loyalty to the company and encourages subordinates to do likewise
- Coordinates with Vice Presidents and General Managers to insure compliance with all laws, regulations, company policies and procedures
- Controls on a daily basis, the operational sales costs
- Insures a total work force that is trained, organized and motivated to effectively meet the company's current and future needs, objectives and goals
- Reviews from an economics and organizational standpoint, the feasibility of major capital expenditures
- Develops and maintains procedures designed to provide effective relationships between the company, the employees and the clients
- Initiates monthly, quarterly and yearly budgets; reports on profit and loss trends
- Responsible for development and submitting of Operating Permit modifications
- Final technical and cost review of all proposals, bids and sales quotes going to clients
- Conducts performance reviews while developing and arranging the right jobs for the right people

**EXPERIENCE & QUALIFICATIONS:**

- Degree in chemistry or related science field with both business and management experience (part of educational requirements may be met by qualifying experience).
- Ability to respond both effectively and quickly in critical situations
- Must possess personal people managing skills

UW&T Facility Job Description:

Position Title: Facility Manager

Position Responsibilities and Duties:

- Reports to General Manager
- Responsible for facility activities of storage, bulking, treating, and shipping
- Responsible procedures at the job site
- Responsible for laboratory
- Signs manifest

Experience and Qualifications

- Masters Degree in physical science and two years experience in waste management
- Or Bachelors Degree with four years experience

11/10/89



## OPERATIONS MANAGER

UW&T has opted not to institute the position of Operations Manager at the Tampa facility. If at some time in the future this position is made available a modification to the permit will be made.

Revised February, 1990

Volume 5 Tab 19

### UW&T Facility Job Description:

Position Title: Traffic Manager

### Position Responsibilities and Duties:

- Report to Facility Manager
- Schedule vac truck jobs
- Acquires necessary truck permits
- Schedule all customer pick ups
- Call clients to arrange pick up date and time
- Helps load and unload
- Maintain DOT records
- Knowledge of Facility SPill and Accident Plan, Contingency Plan and Emergency Procedures

### Experience and Qualification

- Bachelors Degree physical science and or engineering preferred Associates Degree with 4 years experience in Hazardous Waste
- 4 years experience with DOT regulations

11/13/89

UW & T Facility Job Description:

Position Title: Facility Chemist

Position Responsibilities and Duties:

- Reports to Facility Manager
- Log incoming waste
- Review waste manifests
- Conduct Quality Control Samples
- Analysis Hazardous Waste Samples
- Maintain laboratory and laboratory equipment
- Ships samples to outside Laboratories
- Knowledge of Facility's Spill and Accident Plan, Contingency Plan and Emergency Procedures

Experience and Qualifications:

- Bachelor Degree in Chemistry or Biology
- 2 Years laboratory experience

11/13/89



## UW&T Facility Job Descriptions

Position Title: Hazardous Waste Technician

### Position Responsibilities and Duties:

- Reports to Facility Manager
- Inspection of all incoming hazardous waste loads
- Determines which drums to take representative samples for laboratory verification
- Handles incoming and outgoing waste at facility
- Direct transport vehicle to staging area until verification complete
- Keeps track of types and number of drums
- Sign authorized manifests and retain required copies
- When manifest discrepancy occurs - contact waste generator and/or reject load and complete manifest
- Maintains Facility Supplies
- Knowledge of facility's Spill and Accident Prevention Plan, Contingency Plan and Emergency Procedures

### Experience and Qualifications:

- Bachelors Degree or Associates Degree in Environmental Technology
- One year experience in waste management field or three years in lieu of degree

11/13/89

UW & T Facility Job Description:

D.E.R.

DEC - 7 1989

Position Title: Emergency Response Crew

SOUTHWEST DISTRICT TAMPA

Position Responsibilities and Duties:

- Reports to General Manager
- Handles Hazardous Waste
- Responds to emergency situations
- Knowledge of spill and accident prevention plan, contingency plan and emergency procedures

Experience and Qualification

- Bachelors Degree or Associates Degree in Environmental
- One year experience in waste management field or three years in lieu of degree

11/13/89

UW&T Facility Job Description:

Position Title: Site Cleanup Supervisor

Position Responsibilities and Duties:

- Reports to General Manager
- Handles Hazardous Waste
- Responds to emergency situations
- Supervisor emergency response crew
- Knowledge of Spill and Accident prevention plan contingency plan and emergency procedures

Experience and Qualifications

- Bachelors degree preferred
- Associates degree accepted with

11/10/89



UW & T Job Description:

Position Title: Material Routing Supervisor/Analytical Technician

Position Responsibilities and Duties:

- Reports to Facility Manager
- Approves Waste Material Profile Sheets
- Fills out approvals for disposal sites
- Organizes out-bound loads for disposal
- Fills out Manifest
- Responsible for all original manifest including discrepancy reports to DOT
- Responsible for original waste material profiles
- Tells chemist where to send samples for approval

Experience and Qualifications

- Associates degree in environmental technology or related discipline
- Chemical Knowledge
- Able to speak with treatment facilities about treatment methods & pricing
- Organization is essential!!
- Knowledge of DOT & EPA regulations
- Computer Knowledge

11/13/89

## UW&T Facility Job Descriptions

Position Title: Waste Handling Technician

### Position Responsibilities and Duties:

- Reports to Facility Manager
- Conduct facility inspections
- Maintain facility's emergency equipment
- Handles incoming & outgoing waste at facility
- Respond to emergency situations
- Knowledge of facility's Spill and Accident Prevention Plan, Contingency Plan and Emergency Procedures
- Make appropriate entries into operating log, monitoring records, inspection records and maintenance record.
- Keeps facility building and adjoining property clean.

### Experience and Qualifications:

- 2 years industrial/municipal experience in related activities
- Associates Degree preferred, High School Diploma required with In-House Training

11/13/89

## ATTACHMENT 19

<u>Title</u>	<u>Job Description Prerequisites</u>
--------------	--------------------------------------

Facility Manager

Masters degree in physical science and two years experience in waste management or four years experience in waste management with bachelors degree in lieu of masters degree.

Operations-Manager

~~Masters degree in physical science and two years experience in waste management or three years experience in waste management with bachelors degree in lieu of masters degree.~~

Traffic Manager

Bachelors degree in physical science: engineering.

Facility Chemist

Bachelors degree in chemistry with two years experience in the waste management area.

Hazardous Waste Technician

Bachelors degree or associates degree in environmental technology and one year experience in waste management field or three years experience in lieu of degree.

Emergency Response Crew

Same as above minimum.

Site Cleanup Supervisor

Bachelors degree preferred, associates degree accepted with construction background.

Analytical Technician

Associates degree in environmental technology or related discipline.

Waste Handling Technician

Associates degree preferred, high school diploma required with in-house training mandatory.

Volume 5 Tab 19

*revised Feb 1990*



ATTACHMENT 19

Job Description Prerequisites

Title

Facility Manager

Masters degree in physical science and two years experience in waste management or four years experience in waste management with bachelors degree in lieu of masters degree.

Operations Manager

Masters degree in physical science and two years experience in waste management or three years experience in waste management with bachelors degree in lieu of masters degree.

Traffic Manager

Bachelors degree in physical science; engineering.

Facility Chemist

Bachelors degree in chemistry with two years experience in the waste management area.

Hazardous Waste Technician

Bachelors degree or associate degree in environmental technology and one year experience in waste management field or three years experience in lieu of degree.

Emergency Response Crew

Same as above a minimum.

Site Cleanup Supervisor

Bachelors degree preferred, associate degree accepted with construction background.

Analytical Technician

Associates degree in environmental technology or related discipline.

Waste Handling Technician

Associates degree preferred, high school diploma required with in-house training mandatory.

REPLACED LRM

CONTAINER CONTENTS: INCOMING MANIFEST NUMBER:  
DDATE: CLIENT CODE: DRUM:  
PROPER SHIP NAME:

UWT FACILITY CODE: DISPOSAL AUTHORIZATION NUMBER:  
DOT CONTAINER TYPE: CONTAINER SIZE:  
UN NA NUMBER: HAZ MAT:  
DOT HAZARD CLASS:  
EPA WASTE CODE NUMBER:  
EPA WASTE CODE CONTINUED:  
BIN NUMBER: DRUM WEIGHT:  
DISPOSAL SITE RECEIVING:  
OUTBOUND MANIFEST NUMBER:  
UWT WASTE PROFILE NUMBER:  
CONTAINER CONTENTS COMMENT:

CLIENT COMMENT COLUMN:

C < C= Clear, D= Done, H= Hold, R= Refresh

CONTAINER CONTENTS: LP INCOMING MANIFEST NUMBER: 87002

DDATE: 871101 CLIENT CODE: WWW DRUM: 1

PROPER SHIP NAME:

WASTE POISON B LIQUID NOS

UWT FACILITY CODE: DISPOSAL AUTHORIZATION NUMBER: TEST

DOT CONTAINER TYPE: 17H CONTAINER SIZE: 55

UN NA NUMBER: UN2810 HAZ MAT: X

DOT HAZARD CLASS: U223 P030

EPA WASTE CODE NUMBER:

EPA WASTE CODE CONTINUED:

BIN NUMBER: POIS DRUM WEIGHT: 345

DISPOSAL SITE RECEIVING: TEST

OUTBOUND MANIFEST NUMBER: 980001

UWT WASTE PROFILE NUMBER: PEST1234

CONTAINER CONTENTS COMMENT:

TEST XXXXXXXXXXXXXXXXXXXXXXXX

CLIENT COMMENT COLUM:

XX

C < C= Clear, D= Done, H= Hold, R= Refresh



OUTBOUND MANIFEST NUMBER: 87001  
DDATE: 871001 CLIENT CODE: YYY DRUM: 001  
PROPER SHIP NAME:  
WASTE CORROSIVE LIQUID NOS  
DOT CONTAINER TYPE: SPEC 34 CONTAINER SIZE: 55  
N NA NUMBER: NA1270 HAZ MAT: X  
DOT HAZARD CLASS: D002  
EPA WASTE CODE NUMBER:  
EPA WASTE CODE CONTINUED:  
BIN NUMBER: CORR  
OUTBOUND MANIFEST NUMBER: 87001 OUTBOUND SHIP DATE: 871201  
WORK ORDER NUMBER: TEST123456  
DISPOSAL AUTHORIZATION NUMBER: LPPP  
STATE WASTE CODE: NA STATE MANIFEST NUMBER: NA

U <D-one,H-ide,N-ext,Q-uery,R-efresh,U-pdate

INCOMING MANIFEST NUMBER: 87002 CLIENT CODE: XXX  
CONTAINER CONTENTS: LP INCOMING MANIFEST NUMBER: 87002

DDATE: 870101 CLIENT CODE: XXX DRUM: 001 CHEMIST: WAT

ROPER SHIP NAME:  
WASTE FLAMMABLE LIQUID  
UWT FACILITY CODE: DISPOSAL AUTHORIZATION NUMBER:

DOT CONTAINER TYPE: 17H CONTAINER SIZE: 55  
UN NA NUMBER: UN1993 HAZ MAT: X  
DOT HAZARD CLASS: FLAMMABLE LIQUID  
EPA WASTE CODE NUMBER: D001  
EPA WASTE CODE CONTINUED:  
BIN NUMBER: DRUM WEIGHT:  
OUTBOUND MANIFEST NUMBER:  
UWT WASTE PROFILE NUMBER:  
CONTAINER CONTENTS COMMENT:  
LAB PACK

R <D-one,H-ide,N-ext,Q-uery,R-efresh,U-pdate

DRUM: 1 BIN NUMBER: CORR DRUM WEIGHT: 500

CONTAINER CONTENTS: INCOMING MANIFEST NUMBER: 87005

QDATE: 871103 CLIENT CODE: WWW CHEMIST: WAT

PROPER SHIP NAME:

WASTE CORROSIVE LIQUID NOS

UWT FACILITY CODE: DISPOSAL AUTHORIZATION NUMBER: 123456

DOT CONTAINER TYPE: SPEC 34 CONTAINER SIZE: 55

UN NA NUMBER: UN1270 HAZ MAT: X

DOT HAZARD CLASS: CORROSIVE MATERIAL

EPA WASTE CODE NUMBER: D002 XXX XXX XXX XXX XXX XXX

EPA WASTE CODE CONTINUED: XXX XXX XXX XXX XXX XXX X

DISPOSAL SITE RECEIVING: WASTEWATER TREATMENT XXXX

OUTBOUND MANIFEST NUMBER: 99999

UWT WASTE PROFILE NUMBER: TEST1234

CONTAINER CONTENTS COMMENT:

XX

CLIENT COMMENT COLUMN:

XX

C < C= Clear, D= Done, H= Hold, R= Refresh



UWT BAY LOCATION  
PLEASE HAVE CURRENT BIN INVENTORY

DDATE: 871103 CLIENT CODE: WWW

DDATE: DDATE CLIENT CODE: CLI DRUM: DRU

CLIENT NAME: CLIENT NAME

PROPER SHIP NAME:

PROPER SHIP NAME

DOT HAZARD CLASS: DOT HAZARD CLASS UN NA NUMBER: UN NA

SIN NUMBER: BIN NUMB DRUM WEIGHT: DRU

Q <D-one,H-ide,N-ext,Q-uery,R-efresh,U-pdate Enter query values

UNT BAY LOCATION  
PLEASE HAVE CURRENT BIN INVENTORY

ODATE: 871103 CLIENT CODE: WWW

DDATE: 871103 CLIENT CODE: WWW DRUM: 001

CLIENT NAME:

PROPER SHIP NAME:

WASTE CORROSIVE LIQUID NOS

DOT HAZARD CLASS: CORROSIVE MATERIAL

UN NA NUMBER: UN1270

BIN NUMBER: CORR

DRUM WEIGHT: 600

U <D-one,H-ide,N-ext,Q-uary,R-efresh,U-pdate

Enter next command: OTS

ENTER INBOUND MANIFEST NUMBER --> 67005

1 combination of values was found. 0 lines containing only unknown data were skipped. 0 duplicate combinations of values were found.

.....

DRUM NUMBER	DR SIZE	DOT SPEC	PROPER SHIPPING NAME	DOT ID NUMBER	UWT BIN
*****					

871103	WWW	001	55	SPEC 34	WASTE CORROSIVE LIQUID NOS	UN1270	CORR
--------	-----	-----	----	---------	----------------------------	--------	------

DISPOSAL SITE \_\_\_\_\_ DATE RECEIVED \_\_\_\_\_ OFFLOADED BY \_\_\_\_\_

Enter next command:



## FILTER PRESS OPERATION

Universal Waste & Transit (UW&T) will operate the filter press in a manner such that acceptable liquid/solid separation can be affected. The filter press may be employed on any waste which is acceptable at UW&T with the exception of corrosive wastes.

All waste which enters the facility will have been previously analyzed and a UW&T Profile Sheet completed. Sufficient analytical data is available on this form to ascertain individual filter press operating conditions. All such individualized operating conditions will be the responsibility of the facility manager or his/her designated representative. All analytical data and individualized filter press operating conditions will become part of the facility operating record.

All general operating conditions are appended.

Revised February, 1990

Volume 5 Tab 21

## FILTER PRESS OPERATING INSTRUCTIONS

After receipt of a waste deemed acceptable for filtration the waste will be moved to the filter press area.

If necessary the waste will be recontainerized to allow sufficient outage for the addition of filter aids such as diatomaceous earth.

After addition of the filter aids the waste will be pumped into filter press for dewatering.

Manufacturer's recommendations will be followed for routine operation of the filter press. A copy of those operating instructions is attached.

All supernatant will be collected in containers and placed in an appropriate location within the facility for ultimate off-site disposal.

All dewatered sludges will be collected in bins or drums located under the filter press and consolidated for off-site disposal.

Revised February, 1990

Volume 5 Tab 21

If filter cloth deterioration is observed the cloth will be changed and the damaged filter cloth placed into acceptable containers for ultimate off-site disposal in accordance with all state and federal regulations. The filter press log will be completed. (See Volume 5 Attachment 14)

After each cycle the filter press will be inspected to determine if residual solids are remaining on the cloth. Any residual solids will be removed manually and placed into the solids receptacle.

During all filter press operations a qualified operator will be located in close proximity.

Revised February, 1990

Volume 5 Tab 21





FILTER PRESS

INSTRUCTION MANUAL

SERIAL NO. 30081

*Complete instruction manual  
at office 2002 N. CANTON RD.*

JWI, INC.  
2155 112th Avenue  
Holland, MI 49423  
(616) 772-9011

JWI FILTER PRESS MANUAL

TABLE OF CONTENTS

	<u>Section</u>
Filter Press Specification . . . . .	1
Set-Up Instructions . . . . .	2
Operation of Filter Press . . . . .	3
General Maintenance . . . . .	4
Trouble-shooting . . . . .	5
Hydraulic Closure System . . . . .	6
Filter Plates and Cloths . . . . .	7
Options . . . . .	8
Spare Parts . . . . .	9

IWI FILTER PRESS SPECIFICATIONS

MODEL NUMBER.....630N32-13/27-4/8DA  
SERIAL NUMBER.....3082  
TOTAL VOLUME -CU.FT.....4 TO 8  
VOLUME/CHAMBER - CU.FT.....3  
TOTAL AREA - SQ. FT.....140.4 TO 291.6  
NUMBER OF CHAMBERS.....13 TO 27  
OVERALL LENGTH OF PRESS.....43.5"  
OVERALL WIDTH OF PRESS.....37"  
CLEARANCE - FLOOR TO PLATES.....26"  
PLATE SIZE - INCHES.....24.8  
MM.....630  
PLATE STYLE.....NON-GASKETED  
GASKET STYLE.....O-RING  
FILTER CLOTH.....#7383 35CRM  
CLOSING DEVICE.....AIR POWERED HYD. PUMP  
CONTROL LOCATION.....LEFT HAND  
AIR SUPPLY REQUIRED - MAXIMUM.....28 CFM  
HYDRAULIC CLOSING PRESSURE MAX. PSI.....4450  
RELIEF VALVE SETTING - PSI.....4900  
HYDRAULIC RESERVIOR CAPACITY.....2 1/2 GALLONS  
HYDRAULIC OIL RECOMMENDED.....QUALITY BRAND-HYD. OIL  
HYDRAULIC CYLINDER - SIZE.....4" BORE, 18" STROKE  
TYPE.....PARKER  
MAXIMUM INLET FEED PUMP PRESSURE.....100 PSI  
DISCHARGE MANIFOLD (STYLE).....AIR BLOWDOWN  
OPTION: DISTANCE PIECE, DRUM DISPOSAL SYSTEM



JWI FILTER PRESS SPECIFICATIONS

MODEL NUMBER . . . . .

SERIAL NUMBER . . . . .

Total Volume - Cu. Ft. . . . .

Volume/Chamber - Cu. Ft. . . . .

Total Area - Sq. Ft. . . . .

Number of Chambers . . . . .

Overall Length of Press . . . . .

Overall Width of Press . . . . .

Clearance - Floor to Plates . . . . .

Plate Size - Inches . . . . .

MM . . . . .

Plate Style . . . . .

Gasket Style . . . . .

Filter Cloth . . . . .

Closing Device . . . . .

Control Location . . . . .

Air Supply Required - Maximum . . . . .

Hydraulic Closing Pressure Max. PSI . . . . .

Relief Valve Setting - PSI . . . . .

Hydraulic Reservoir Capacity . . . . .

Hydraulic Oil Recommended . . . . . Quality Brand-Hyd.

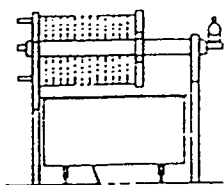
Hydraulic Cylinder - Size . . . . .

Type . . . . .

Maximum Inlet Feed Pump Pressure . . . . .

Discharge Manifold (Style) . . . . .

Options

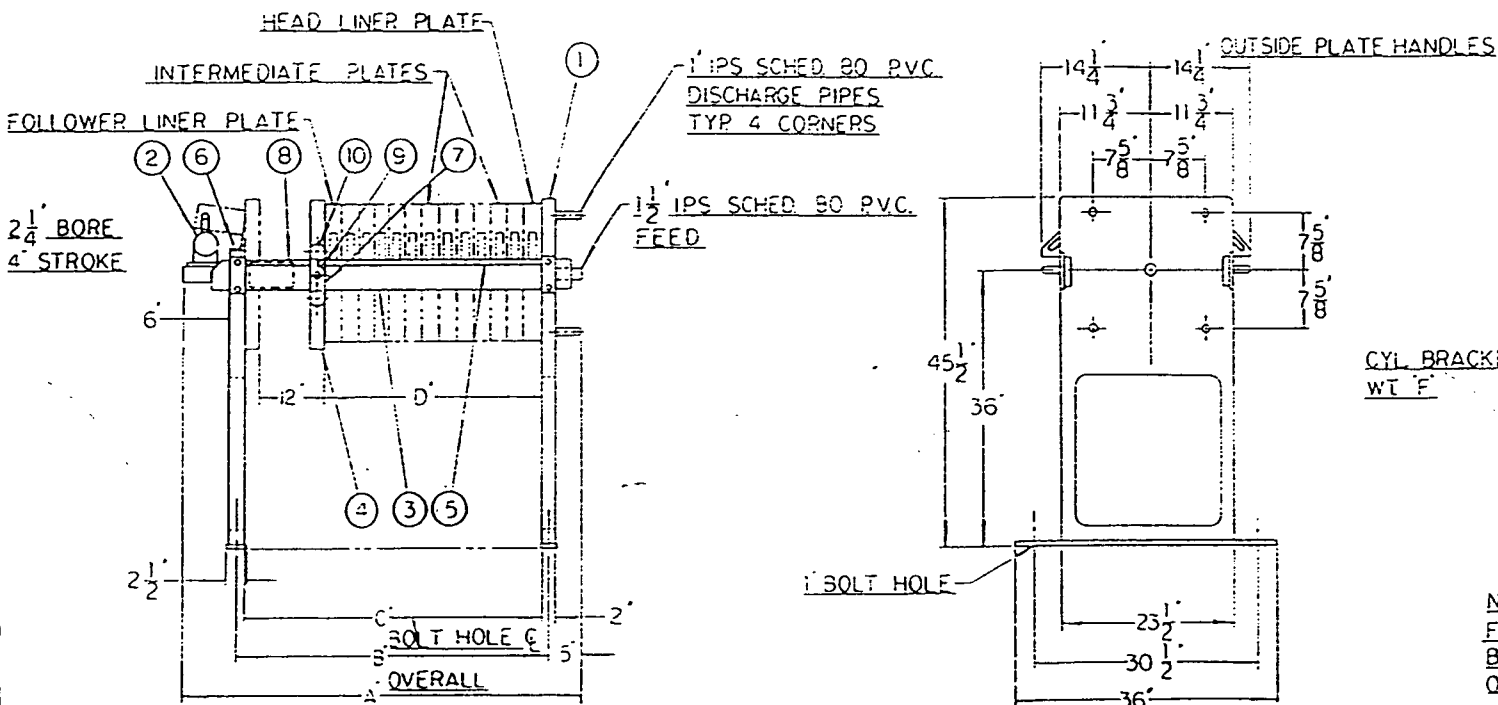


FILTER CAKE DUMPSTER  
OPTIONAL

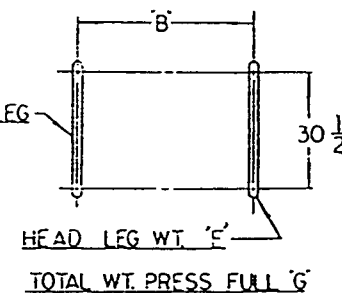
PLATES TO BE CENTER FEED 4 CORNER  
DISCHARGE. PLATES OF POLYPROPYLENE  
GASKETED CONSTRUCTION WITH  $\frac{19}{32}$ "  
RECESSES FOR  $1\frac{3}{16}$ " THICK CAKES

18.5 SIZE (470 MM) FILTER PRESS					
CUBIC FEET	A	B	C	D	NO. OF CHAMBERS
.5	38 $\frac{1}{8}$	26 $\frac{7}{8}$	24 $\frac{1}{8}$	10 $\frac{1}{8}$	4
1	43 $\frac{3}{8}$	31 $\frac{5}{8}$	29 $\frac{3}{8}$	15 $\frac{3}{8}$	6
1.5	52 $\frac{1}{4}$	40 $\frac{1}{4}$	38 $\frac{1}{4}$	24 $\frac{1}{4}$	10
2	59	47	45	31	13
3	75 $\frac{1}{4}$	63 $\frac{1}{4}$	61 $\frac{1}{4}$	47 $\frac{1}{4}$	20
4	91	79	77	63	27

ITEM NO.	QUAN.	DESCRIPTION
1	1	HEAD
2	1	HYDRAULIC PUMP
3	2	SIDE BAR
4	1	FOLLOWER
5	2	S.S. SIDE BAR CAP
6	1	CYLINDER BRACKET
7	2	ROLLER PLATE W/HANDLE
8	1	CYLINDER, PIVOTING
9	2	FOLLOWER GUIDE PLATE
10	4	FOLLOWER ROLLER

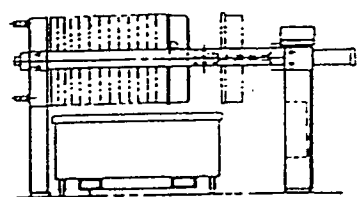


WEIGHT IN POUNDS			
CUBIC FEET	E	F	G
.5	780	480	1260
1	804	496	1300
1.5	870	540	1410
2	930	580	1510
3	990	620	1610
4	1330	920	2250



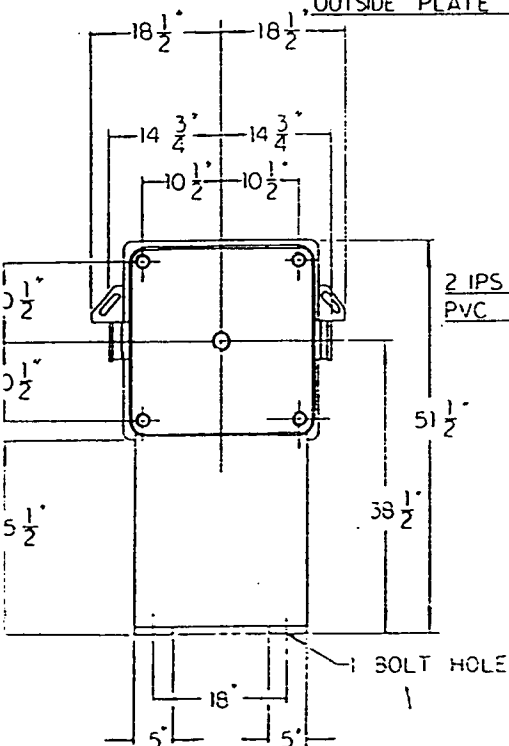
NOTE:  
FOUNDATION DIMENSIONS ARE FOR  
BASIC LAYOUT ONLY. GROUT BOLT  
ONLY AFTER INSTALLATION OF PRESS

470mm (18.5")	
FILTER PRESS	



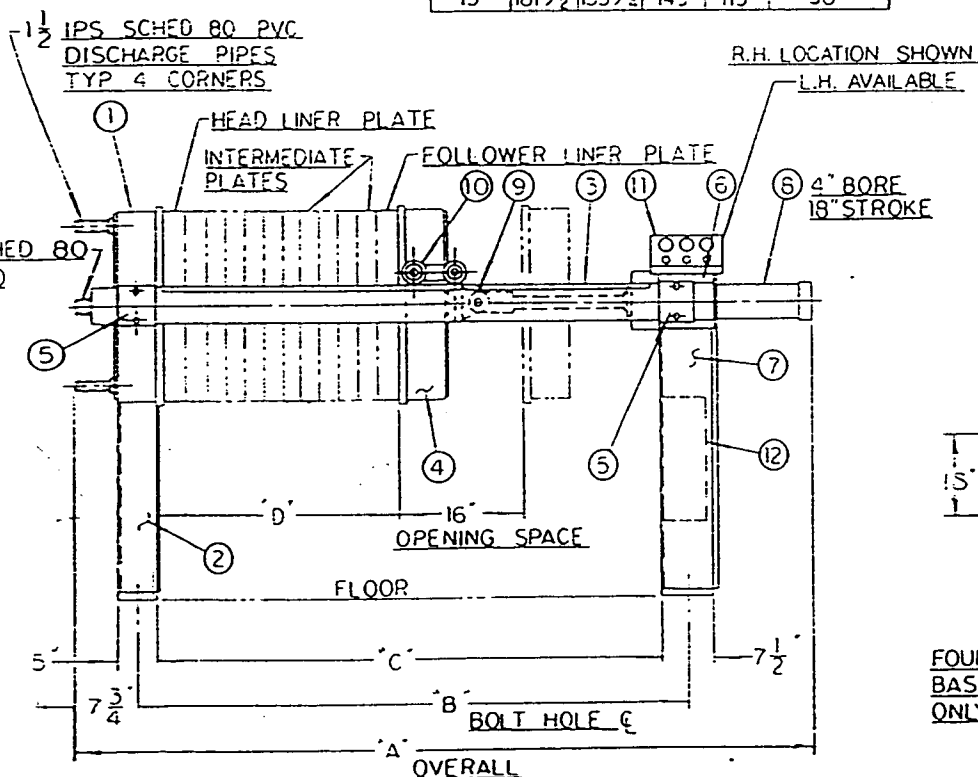
FILTER CAKE DUMPSTER  
(SELF DUMPING) OPTIONAL

OUTSIDE PLATE HANDLES



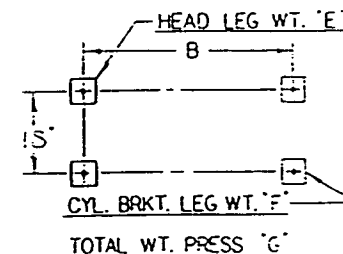
PLATES TO BE CENTER FEED 4 CORNER  
DISCHARGE PLATES OF POLYPROPYLENE  
GASKETED CONSTRUCTION WITH  $\frac{5}{8}$ "  
RECESSES FOR  $1\frac{1}{4}$ " THICK CAKES

24" SIZE (630 MM) FILTER PRESS					
CUBIC FEET	A	B	C	D	NO OF CHAMBERS
1	75 $\frac{1}{2}$	149 $\frac{1}{4}$	43	9	3
1.5	80 $\frac{3}{4}$	154 $\frac{1}{2}$	48 $\frac{1}{2}$	114 $\frac{1}{4}$	5
2	84	157 $\frac{3}{4}$	51 $\frac{1}{2}$	117 $\frac{1}{2}$	7
3	91	164 $\frac{3}{4}$	58 $\frac{1}{2}$	124 $\frac{1}{2}$	10
4	97 $\frac{3}{4}$	171 $\frac{1}{2}$	65 $\frac{1}{4}$	131 $\frac{1}{4}$	13
5	106 $\frac{3}{4}$	180 $\frac{1}{2}$	74 $\frac{1}{4}$	140 $\frac{1}{4}$	17
6	113 $\frac{1}{2}$	187 $\frac{1}{4}$	81	47	20
8	129 $\frac{1}{4}$	103	96 $\frac{3}{4}$	62 $\frac{3}{4}$	27
10	142 $\frac{3}{4}$	116 $\frac{1}{2}$	110 $\frac{1}{4}$	76 $\frac{1}{4}$	33
12	159 $\frac{1}{4}$	133	126 $\frac{3}{4}$	92 $\frac{3}{4}$	40
13	170	143 $\frac{3}{4}$	137 $\frac{1}{2}$	103 $\frac{1}{2}$	43
15	181 $\frac{1}{2}$	155 $\frac{1}{4}$	149	115	50



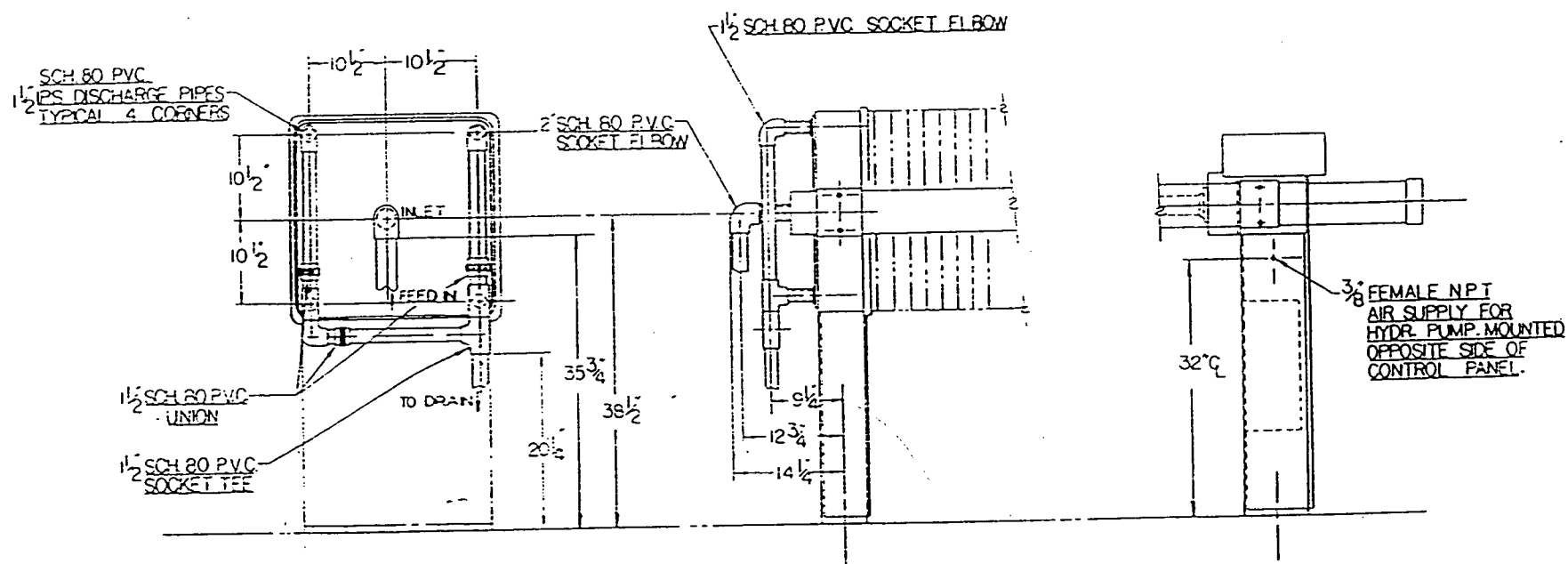
ITEM NO.	QUAN.	DESCRIPTION
1	1	HEAD
2	1	HEAD LEG
3	2	SIDE BAR
4	1	FOLLOWER
5	4	JOGGLE PLATE
6	1	CYLINDER BRACKET
7	1	CYLINDER BRACKET LEG
8	1	CYLINDER
9	2	SS SIDE BAR CAPS
10	3	FOLLOWER ROLLER
11	1	CONTROL CENTER
12	1	HYDRAULIC PUMPING UNIT

WEIGHT IN POUNDS			
CUBIC FEET	E	F	G
1	1208	805	2014
1.5	1274	849	2123
2	1335	891	2227
3	1445	963	2408
4	1553	1035	2589
5	1681	1121	2802
6	1789	1193	2982
8	2026	1350	3376
10	2242	1495	3737
12	2480	1653	4133
13	2595	1730	4325
15	2824	1883	4707



FOUNDATION DIMENSIONS ARE FOR  
BASIC LAYOUT ONLY. GROUT BOLTS  
ONLY AFTER INSTALLATION OF PRESS

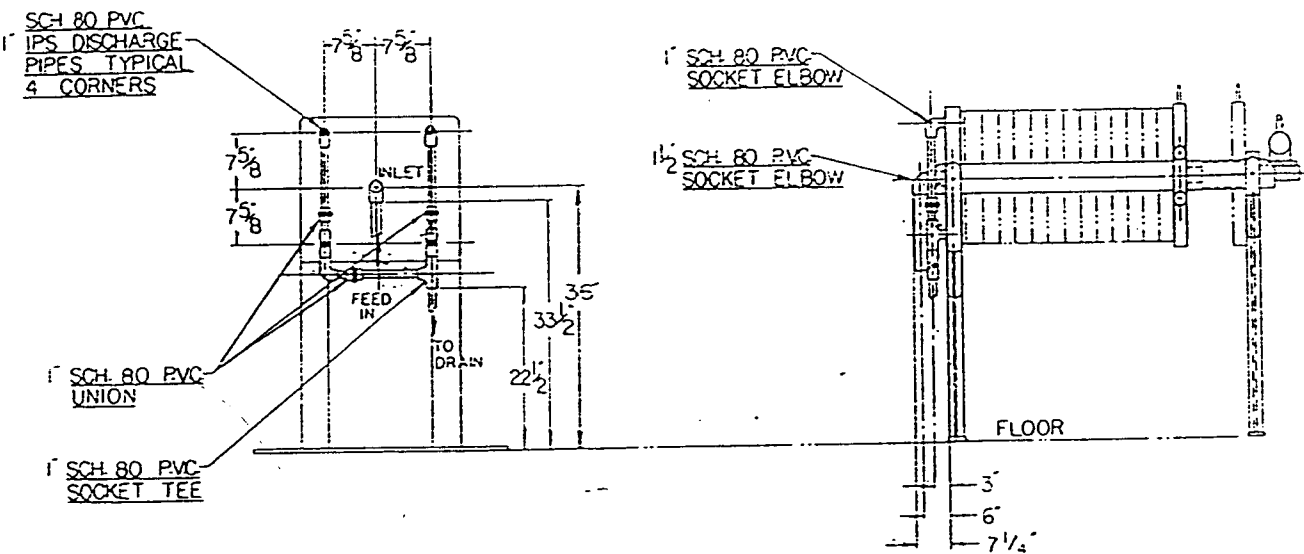
<b>JMI</b>	
630mm (24")	
FILTER PRESS	



STANDARD DISCHARGE MANIFOLD  
CENTER FEED-FOUR CORNER DISCHARGE  
POLYPROPYLENE PLATES

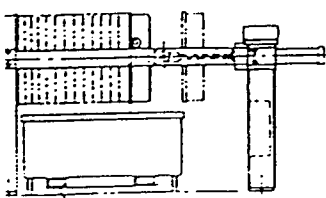
J.W.I. INC.	J-PRESS	CUSTOMER		
	PLATE SIZE 630MM			
	EDDIE PATT	DRAWN WILLS	CHICK	POWER
HOLLAND MICH. 48032	NO. OF CHAMBERS			





STANDARD DISCHARGE MANIFOLD  
CENTER FEED-FOUR CORNER DISCHARGE  
POLYPROPYLENE PLATES

J.W.I. INC.	J-PRESS PLATE SIZE 16 1/2" (419 MM)	CONTROLS			
		ENGINE PART	DRAWN WALLIS	CHAS	APPROVED
HOLLAND MFG. 2000	NO. OF CHAMBERS				

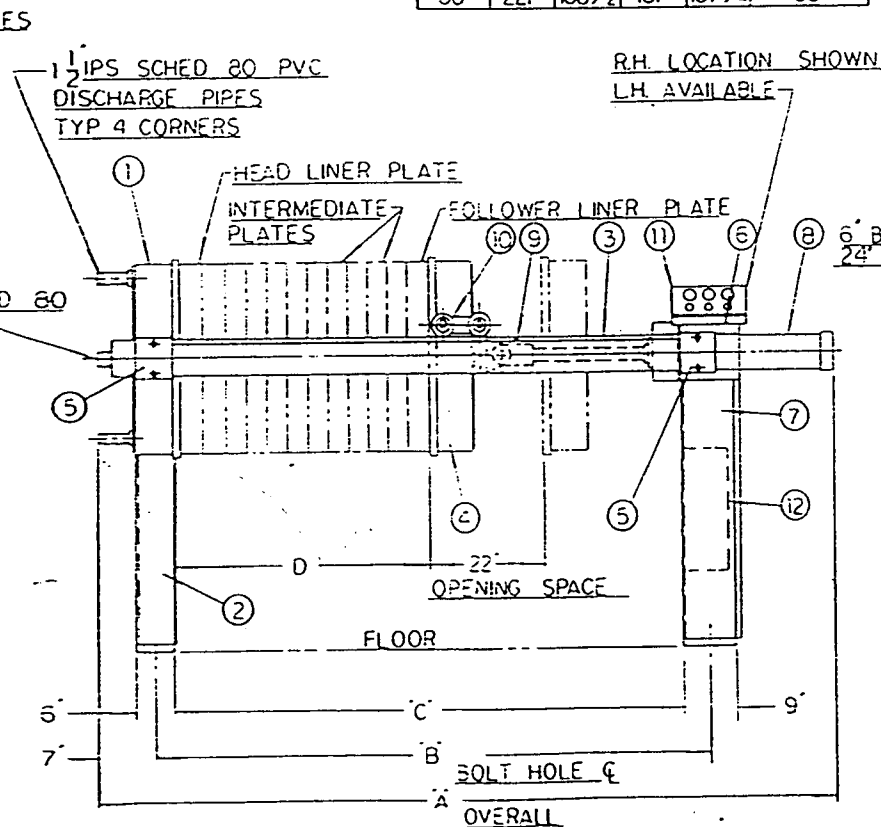
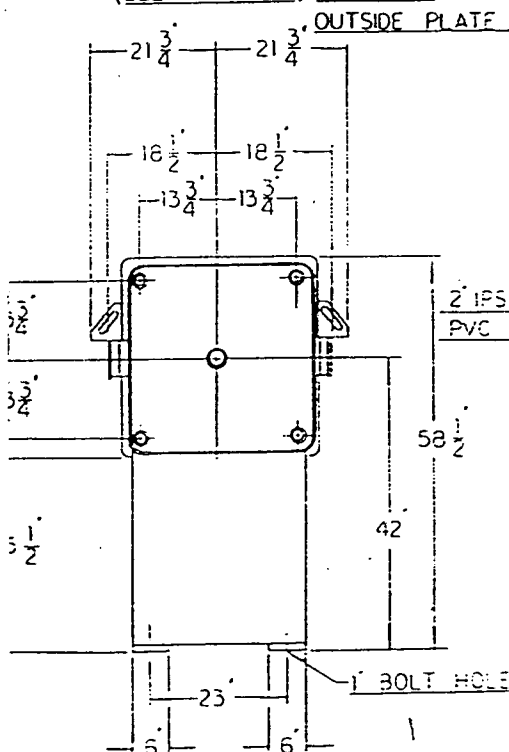


FILTER CAKE DUMPSTER  
(SELF DUMPING) OPTIONAL

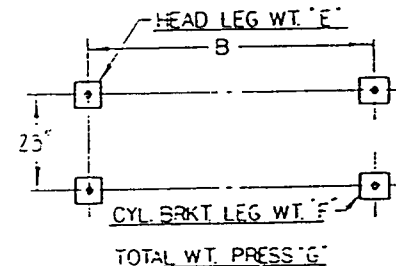
PLATES TO BE CENTER FEED 4 CORNER  
DISCHARGE. PLATES OF POLYPROPYLENE  
GASKETED CONSTRUCTION WITH 5"  
RECESSES FOR 1 1/4" THICK CAKES

30" SIZE (800 MM) FILTER PRESS					
CUBIC FEET	A	B	C	D	NO OF CHAMBERS
3	100 1/4	67 3/4	60 1/4	17	6
5	109 1/4	76 1/4	68 3/4	25 1/2	10
6	113 3/4	81 1/4	73 3/4	30 1/2	12
8	122 3/4	90 1/4	82 3/4	39 1/2	16
10	131 3/4	99 1/4	91 3/4	48	20
12	140 3/4	108 1/4	100 3/4	57	24
15	154 1/4	121 3/4	114 1/4	70 1/2	30
20	176 1/2	144	136 1/2	92 3/4	40
25	199	166 1/2	159	115 3/4	50
30	221	188 1/2	181	137 3/4	60

ITEM NO	QUAN	DESCRIPTION
1	1	HEAD
2	1	HEAD LEG
3	2	SIDE BAR
4	1	FOLLOWER
5	4	JOGGLE PLATE
6	1	CYLINDER BRACKET
7	1	CYLINDER BRACKET LEG
8	1	CYLINDER
9	2	SS SIDE BAR CAPS
10	3	FOLLOWER ROLLER
11	1	CONTROL CENTER
12	1	HYDRAULIC PUMPING UNIT

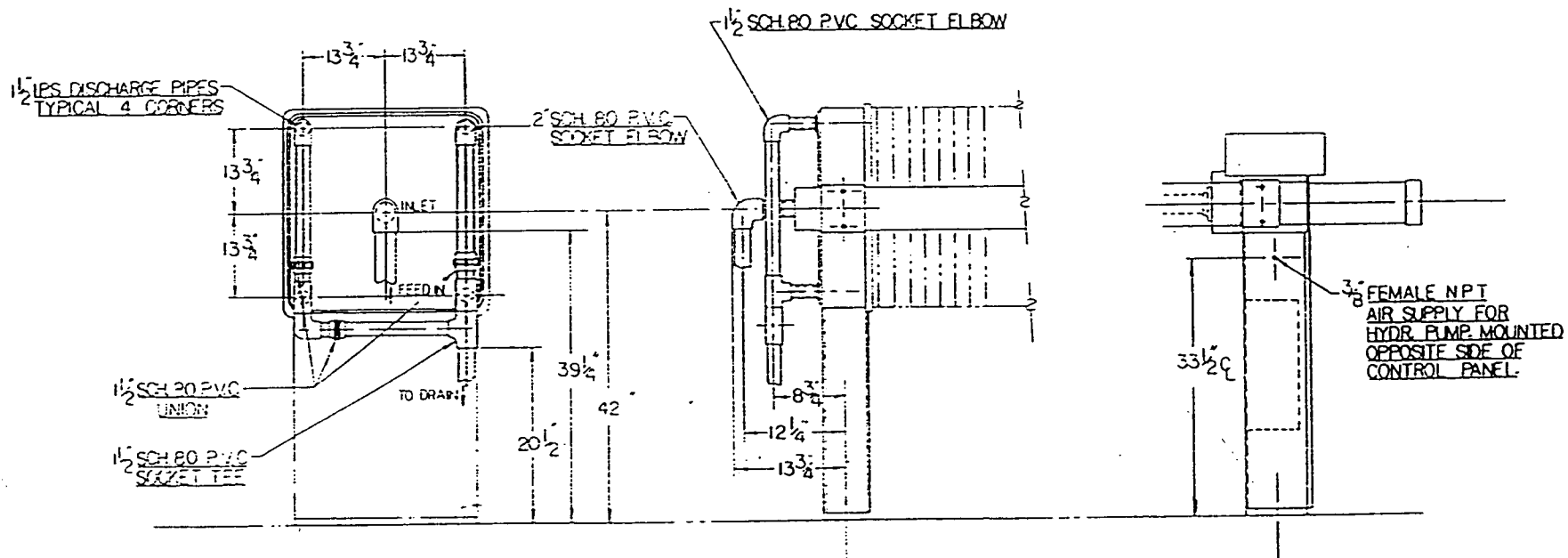


WEIGHT IN POUNDS			
CUBIC FEET	E	F	G
3	2130	1420	3550
5	2340	1560	3900
6	2460	1640	4100
8	2670	1780	4450
10	2880	1920	4800
12	3090	2060	5150
15	3420	2280	5700
20	3960	2640	6600
25	4500	3000	7500
30	5010	3340	8350



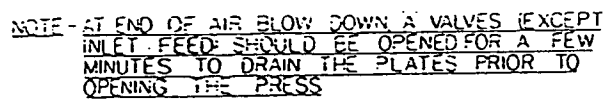
FOUNDATION DIMENSIONS ARE FOR  
BASIC LAYOUT ONLY. GROUT BOLTS  
ONLY AFTER INSTALLATION OF PRESS

JMI	
300mm (30")	
FILTER PRESS	



STANDARD DISCHARGE MANIFOLD  
CENTER FEED - FOUR CORNER DISCHARGE  
POLYPROPYLENE PLATES

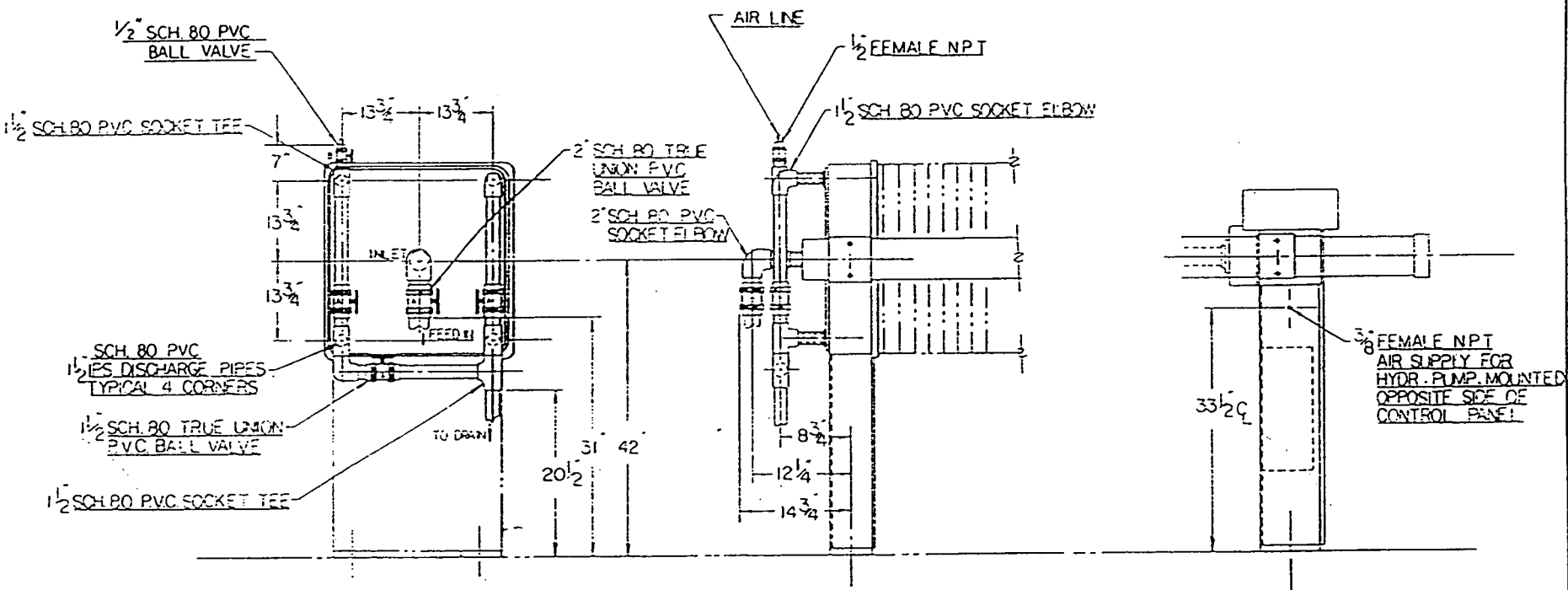
J.W.I. INC.	J-PRESS PLATE SIZE 800MM	CUSTOMER		
		DRAWN MILES	CHECK	APPROVED
HOLLAND MFG. SPR22	DATE OF CHANGE			



J.W.I. INC.	J-PRESS	CUSTOMER		
	PLATE SIZE 18 1/2" x 20 MM			
	CORIC FEET	NUMBER	PRICE	
HOLLAND DIV.	NO. OF COPIES			







- A VALVES - OPEN DURING FEED  
CLOSED DURING AIR BLOW DOWN
- B VALVE - CLOSED DURING FEED  
OPEN DURING AIR BLOW DOWN

NOTE: AT END OF AIR BLOW DOWN, 'A' VALVES (EXCEPT INLET FEED) SHOULD BE OPENED FOR A FEW MINUTES TO DRAIN THE PLATES PRIOR TO OPENING THE PRESS

AIR BLOW DOWN MANIFOLD  
CENTER FEED-FOUR CORNER DISCHARGE  
POLYPROPYLENE PLATES

J.W.I. INC.	J-PRESS	CUSTOMER		
	PLATE SIZE 800 MM			
MATERIAL SPEC.	ENGINE PART	DRAWN	CHECK	APPROVED
	NO. OF CHAMBERS	WELLS		

## SET UP INSTRUCTIONS

The JWI filter press is normally shipped completely assembled and pre-tested.

CAUTION: Use care in handling the filter press so as not to damage any components such as discharge extension pipes, plate handles, or hydraulic system.

1. Mount the filter press level to floor, platform, or extension legs through the base holes provided. NOTE: Press must be clamped up and square before exact dimension can be established. (See enclosed drawing)
2. Connect center inlet pipe to discharge of feed pump. (See enclosed filter press or manifold drawing)
3. Install drain pipe to bottom outlet of discharge manifold. (See enclosed manifold drawing) **IMPORTANT!** Be sure outlet of drain pipe is below level of discharge manifold outlet.
4. If optional air blowdown manifold is used, connect air supply as shown on manifold drawing. Use regulated air pressure 50 PSI maximum.

## Automatic Closure Models Only

### Connecting Air Supply

Air supply to the JWI filter press should be clean, dry air at 125 PSI maximum.

NOTE: An air line drying system should be installed if high levels of moisture are present in your air supply. This will prevent extensive damage to the air circuit components in the system.

1. Connect air supply, using a minimum 3/8" I.D. pipe, to fitting marked air inlet located at hydraulic cylinder end of filter press. NOTE: Use shut off valve in air line prior to filter press; air filter and regulators are incorporated within the filter press system.

## OPERATION OF A FILTER PRESS

### AUTOMATIC CLOSURE

JWI uses an air over hydraulic system to open and close the filter press. To close the filter press, air pressure is applied to the hydraulic fluid reservoir, forcing hydraulic fluid into the rear of the hydraulic cylinder, rapidly extending the ram. The hydraulic pump is then turned on to reach the maximum closing pressure. To open the filter press the hydraulic pressure is released thru a pilot operated valve. Air pressure is directed to the front of the hydraulic fluid back to the reservoir tank.

#### To Close Filter Press

1. With air supply connected to filter press, line air pressure will register on gauge.
2. Turn selector switch to close position.
3. Turn air supply switch to on position. Regulated air pressure will register on gauge. Hydraulic cylinder will extend, closing the press.
4. Leave open-close selector switch in close position. With ram fully extended, turn hydraulic pump switch to on position. Leave hydraulic pump switch in on position when press is in operation. The hydraulic pump will engage, developing maximum closing pressure on hydraulic gauge.  
NOTE: Small amounts of air escaping momentarily from the hydraulic pump prior to stroking is normal. If maximum hydraulic pressure (see specification page one) is not reached, follow the instructions titled "Regulated Air Pressure" on page 8.
5. Open inlet valve and start feed pump. With air diaphragm feed pump cycling will slow as press becomes filled. With press completely filled, feed pump will stall. This usually occurs within 2 hours.
6. Turn off feed pump. This is done by shutting off its air supply.
7. Air blowdown (optional). Maximum pressure is 40 PSI.
  - a. Close center inlet valve on line from feed pump.
  - b. Close the three valves on discharge manifold. (See diagram #3.)
  - c. Open air valve on discharge manifold expelling any water left in the press (approximately 2 minutes or longer).
  - d. Close air valve.
  - e. Open the three valves on discharge manifold. Leave inlet valve closed. This will allow gravity drainage of press (approximately 2 minutes).



## OPERATION OF A FILTER PRESS

### MANUAL CLOSURE

#### To Close Filter Press

1. Push the follower forward closing the stack of plates.
2. Pivot hydraulic ram downward into position.
3. Close release valve on hydraulic hand pump. NOTE:  
Hand tighten only.
4. Pump hydraulic hand pump until maximum closing pressure registers on gauge. (See specification sheet.)
5. Open inlet valve and start feed pump. With air diaphragm feed pump cycling will slow as press becomes filled. With press completely filled, feed pump will stall. This occurs within 2 hours. NOTE: In some applications it is recommended that the feed pump be started at a low pressure (25 PSI) then steadily increased to maximum 100PSI over a 15 minute period. See "Troubleshooting" on page 9.
6. Turn off feed pump. This is done by shutting off its air supply.
7. Air blow down (optional).
  - a. Close center inlet valve on line from feed pump.
  - b. Close the three valves on discharge manifold. (See enclosed diagram.)
  - c. Open air valve on discharge manifold expelling any water left in the press. (Approximately 2 minutes.) (NOTE: 50 PSI maximum.)
  - d. Close air valve.
  - e. Open the three valves on discharge manifold. Leave inlet valve closed. This will allow gravity drainage of press. (Approximately 2 minutes.)

### To Open Filter Press

1. Release hydraulic pressure by turning the manual release valve on hydraulic hand pump counter clockwise.
2. Retract the hydraulic ram. This is done by grasping the handle at the top of the follower and pulling it towards the hydraulic hand pump. NOTE: This is necessary only on hydraulic rams that have gravity return. Those with spring return will retract automatically.
3. Push follower forward tightly against the stack of plates.
4. Lift hydraulic hand pump handle to the full up position.
5. Pivot hydraulic ram upward and allow it to rest on top of hydraulic hand pump.
6. Roll follower back to hydraulic hand pump end of filter press.
7. Clean plates.
  - a. Manually separate the plates.
  - b. Use the non-abrasive nylon paddles furnished to remove any cake that has not fallen free.  
NOTE: Make sure gasket sealing surfaces are free of filter cake.
8. With the plates thoroughly cleaned, the press is ready for closing. NOTE: Follow instructions "To Close Filter Press."

CAUTION: If flow to the filter press is interrupted for a period of time such as overnight, it is recommended that the feed pump be restarted at a low pressure for 5 to 10 minutes before slowly increasing to maximum pressure. When the feed to the press is interrupted, the sludge build up will have a tendency to fall from the sides of the chamber and settle to the bottom, possibly blocking the center feed hole. Restarting with high feed pressure does not give the sludge time to resoften and distribute itself in the chamber. Blockage of the center feed can cause uneven pressure build up and result in plate breakage.

2

APPROXIMATE AIR USAGE FOR STANDARD J-PRESS®

(Press only, does not include feed pump)

Function and Ex. Pressure	Approx. SCFM/Number of Minutes						
	Cu. Ft. Press Size						
	.6 to 1.5	2 to 5	6 to 10	11 to 20	21 to 35	36 to 60	61 to 100
Pressing @ 60 PSI*	N/A	$\frac{25}{1 \text{ Min.}}$	$\frac{25}{1 \text{ Min.}}$	$\frac{30}{2 \text{ Min.}}$	$\frac{30}{2 \text{ Min.}}$	$\frac{30}{3 \text{ Min.}}$	$\frac{30}{3 \text{ Min.}}$
Opening @ 60 PSI	N/A	$\frac{25}{1 \text{ Min.}}$	$\frac{25}{1 \text{ Min.}}$	$\frac{30}{1 \text{ Min.}}$	$\frac{30}{1 \text{ Min.}}$	$\frac{30}{1 \text{ Min.}}$	$\frac{30}{1 \text{ Min.}}$
Blowdown @ 60 PSI**	$\frac{2 \text{ to } 5}{5 \text{ Min.}}$	$\frac{5 \text{ to } 15}{5 \text{ Min.}}$	$\frac{15 \text{ to } 25}{5 \text{ Min.}}$	$\frac{25 \text{ to } 50}{5 \text{ Min.}}$	$\frac{50 \text{ to } 90}{5 \text{ Min.}}$	$\frac{90 \text{ to } 150}{5 \text{ Min.}}$	$\frac{150 \text{ to } 250}{5 \text{ Min.}}$
After @ 60 PSI***	N/A	N/A	$\frac{2}{5 \text{ Min.}}$	$\frac{2}{10 \text{ Min.}}$	$\frac{3}{15 \text{ Min.}}$	$\frac{4}{20 \text{ Min.}}$	$\frac{4}{30 \text{ Min.}}$

\*A static pressure of 60 to 80 PSI with little or no consumption is required during press filling cycle.

\*\*Approximation only. Actual consumption based on cake porosity and other variables.

\*\*\*Based on approximate total cleaning time.

## GENERAL MAINTENANCE

### Manual Hydraulic System

Oil Reservoir: Check oil level in reservoir with ram fully retracted. Watch for any signs of hydraulic oil leaks.

Caution: Do not over pressure system above specified closing pressure.

### Air Over Hydraulic System

Check reservoir level periodically. Check complete hydraulic system for any signs of leaks.

Oil Reservoir: Hydraulic oil - with hydraulic ram fully retracted, oil level should be approximately 1" from top of sight tube on tank.

Caution: Be sure all air pressure is off to filter press prior to removing 1/2" fill plug located on top of reservoir tank.

### Air Filter

The air filter is of the automatic self-draining type. For filter element replacement, see section on air filter.

### Polypropylene Plates

Polypropylene plates should be inspected periodically for gasket deterioration and condition of filter cloths. See section on polypropylene plates and filter cloths.

Sealing surfaces of plates should be kept clean and free from build up.



## T R O U B L E S H O O T I N G

PROBLEM	CAUSE	SOLUTION
Pump will not cycle.	1. Inadequate air supply.	1. Check air pressure and check air system parts.
	2. Air filter plugged.	2. Check air regulator (see air regulator section).
	3. Air valve off.	3. Check air regulator (see air regulator section).
	4. Restriction in air line.	4. Check air regulator (see air regulator section).
	5. Pump seals bad.	5. Rebuild pump.
Pump cycles without building pressure or deadheading.	1. Check-valve in pump body malfunctions.	1. Clean, inspect and replace if necessary.
	2. Low reservoir level.	2. Fill reservoir with oil (see maintenance section.)
	3. Filter plugged.	3. Replace filter.
	4. Bad seals in release valve.	4. Replace seals in release valve.
	5. Bad cylinder seals.	5. Replace cylinder seals.
	6. Bad relief valve.	6. Reset or replace relief valve.
Pump continues to cycle after it has reached maximum hydraulic pressure.	1. Air pressure is set too high.	1. Decrease regulator pressure.
	2. Relief valve is set too low.	2. Set relief valve to maximum pressure.
	3. Malfunction of relief valve.	3. Replace relief valve cartridge.
	4. Failure of hydraulic cylinder seals.	4. Replace seals in cylinder.

## TROUBLESHOOTING (Continued)

PROBLEM	CAUSE	SOLUTION
Sludge pump stalls out, indicating press is full. However, when the press is opened, the filter cake is solid near the cloth but watery in the center.	<ol style="list-style-type: none"> <li>1. Too low sludge pump air pressure.</li> <li>2. Sludge pump not stalled out long enough.</li> <li>3. Oil in sludge forming an impermeable layer.</li> <li>4. Too high initial sludge pump pressure, causing particles to form too tightly on filter cloth.</li> <li>5. Filter cloths plugged.</li> </ol>	<ol style="list-style-type: none"> <li>1. Increase pressure 100 PSI maximum.</li> <li>2. Stall until one stroke/minimum is reached.</li> <li>3. Eliminate oil or add D.E. body feed.</li> <li>4. Start sludge pump at lower pressure, then slowly increase. (See operation of filter press.)</li> <li>5. See section on filter cloths.</li> </ol>
Water leaks out between plates.	<ol style="list-style-type: none"> <li>1. Gaskets loose or torn.</li> <li>2. Low hydraulic pressure.</li> </ol>	<ol style="list-style-type: none"> <li>1. Reinstall or replace. (See section on polypropylene plates.)</li> <li>2. Increase to required PSI.</li> </ol>
Filter cloths pull out of grooves during operation.	A full cake was not developed before wash or blowdown, causing cloth to be pushed out of caulking groove.	Be sure chambers are completely full before wash or blowdown. The filter cake will then support the cloth.
Filter cloths pull out of grooves during operation, even though full cakes are being built.	Improper size sash cord for cloth or application.	Future cloths should be made with a slightly larger sash cord. Contact JWI, Inc. for recommendations.

## AIR POWERED HYDRAULIC PUMP

### Description

On many applications involving polypropylene filter elements, especially where filtration temperatures are high and wash temperatures are low, it is best to have a closure that compensates for expansion and contraction of the filter stack. During high temperature filtration on a machine with a locked closing system, stack expansion can impose increased stresses on the filter skeleton. A wash with temperatures below ambient causes a subsequent contraction of the filter force. Excessive leakage and/or frame bowing or failure may result from insufficient clamping force.

Air powered hydraulic pumping units, supplied by JWI, Inc., can overcome problems of expansion and contraction of the filter stack simply and reliably. The pumps convert plant air to hydraulic pressure through a simple ratio system that uses a large air piston area at low pressure to produce a high hydraulic pressure on a small area hydraulic piston. Automatic reciprocation is controlled by the action of a pilot operated selector valve in the pneumatic section of the pump.

As the hydraulic output approaches the desired pressure dictated by the air pressure regulator setting, the pump slows down and finally stalls when the hydraulic force balances the air force. Hydraulic force is therefore maintained with no consumption of power.

During filtration operations, the air supply is left on the pump. If stack contraction occurs, hydraulic thrust is reduced, causing an imbalance in the pump. The pump then cycles to restore the hydraulic thrust to the desired setting and once again stalls. Under conditions of stack expansion, hydraulic thrust is increased. The excess hydraulic pressure that results is bled back to the hydraulic reservoir through a relief valve, thus maintaining the desired hydraulic thrust.

### Dual Ratio Hydraulic System

#### Description

Dual ratio hydraulic system can be indentified by noting two hydraulic pump units (piggy-back), mounted in the pump cabinet. Filter presses provided with dual ratio hydraulic systems operate in the same manner as a standard single ratio unit. The dual ratio system provides larger volumes of oil to the cylinder during clamping, greatly reducing the time required to close the press.

#### System Operation

With the pump switch turned to the "on" position, both pumps will start simultaneously. The high volume 21:1 ratio pump will stall out at around 2000 PSI. The standard 71:1 ratio pump will continue to operate until maximum closing pressure is reached. The 21:1 ratio pump operates at line air pressure while the 71:1 ratio pump operates on regulated air pressure to control closing pressure.



OTC Division  
Sealed Power Corporation  
Owatonna, MN 55060

Form No. 10061

## Parts List

1U5230

4002

61522

61522-CELETTE

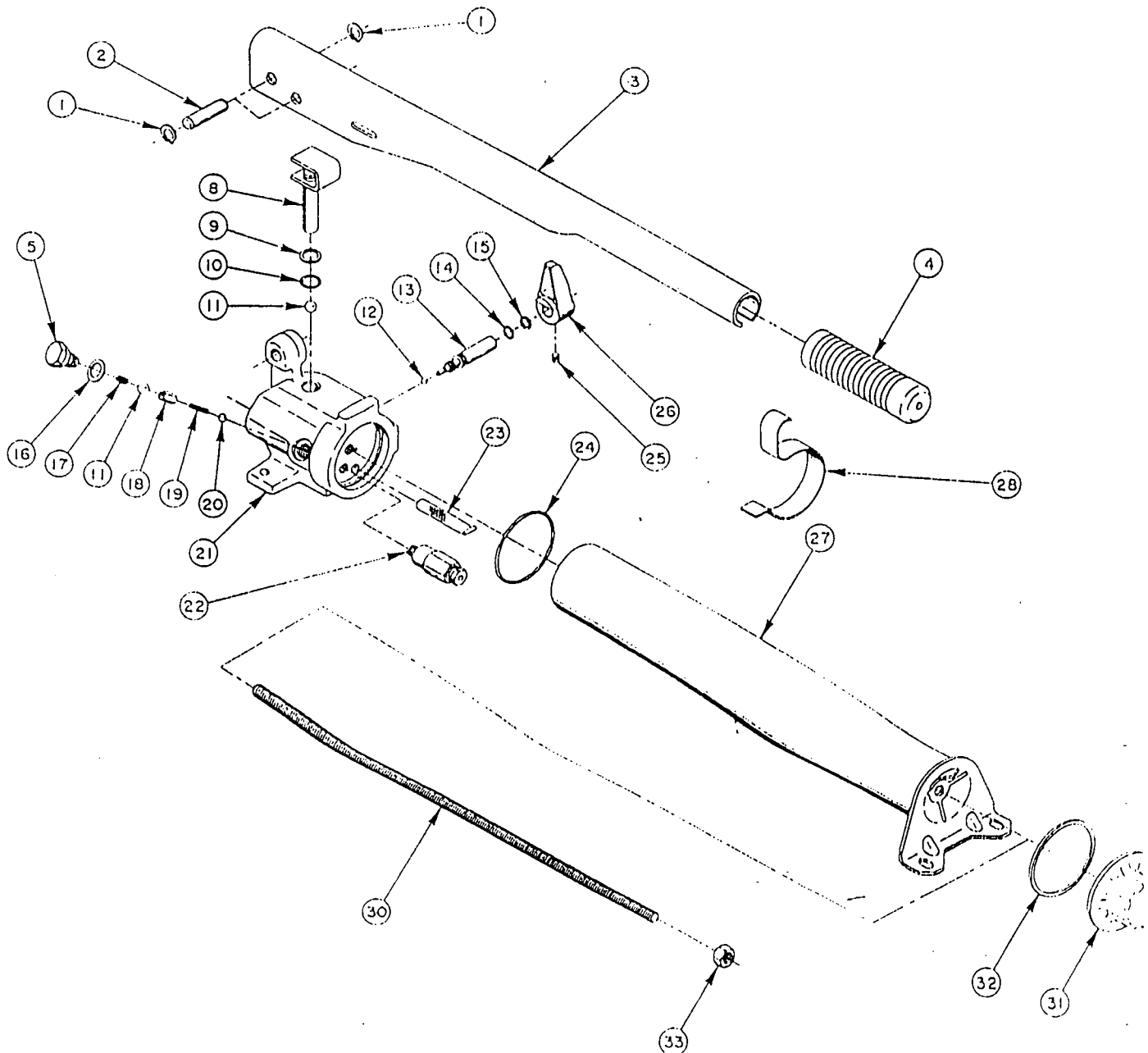
61715

H55

P55

P55S

## HYDRAULIC HAND PUMP SINGLE STAGE





## Parts List

Item No.	Part No.	No. Req'd	Description
1	211743	4	Retaining Ring
2	211742	2	Pin
3	46919	1	Handle (For P55S)
	46953-YE3	1	Handle (For 61715)
	61287-BL2	1	Handle (For 4002)
	61287-OR9	1	Handle (For P55)
	61287-RE10	1	Handle (For H55)
	61287-WH2	1	Handle (For 61522 and 61522-CELETTE)
	61287-TA2	1	Handle (For 1U5230)
4	211769	1	Handle Grip
5	305975	1	Valve Screw (Torque to 350/370 in. lbs.)
8	211468	1	Piston Ass'y
9	213987*†	1	Backup Washer
10	10271*†	1	"O" Ring
11	10378*†	2	Steel Ball
12	12223*†	1	Ball
13	304849	1	Release Valve Screw
14	10267*†	1	"O" Ring
15	15085*†	1	Backup Washer
16	14874*†	1	Copper Washer
17	10444*†	1	Compression Spring
18	29782	1	Spacer
19	211797*†	1	Compression Spring
20	10375*†	1	Steel Ball
21	61295	1	Pump Body
22	21278	1	Relief Valve (Set at 10,100 to 10,700 PSI)
	21278-80	1	Relief Valve (Set at 8,100/8,700 PSI; For 61715)
23	24789	1	Filter
24	211495*†	1	"O" Ring
25	10556	1	Set Screw
26	21643	1	Knob
27	46952	1	Reservoir Ass'y (For 61715)
	305910	1	Reservoir Ass'y
	307940	1	Reservoir Ass'y (For P55S)
28	307066	1	Handle Retainer
30	214008	1	Tie Rod (For P55S)
	214079	1	Tie Rod (For 61715)
	211547	1	Tie Rod
31	52711	1	Reservoir Cap
32	212739*†	1	"O" Ring
33	10204	1	Nut (Torque to 230/250 in. lbs.)

### PARTS INCLUDED BUT NOT SHOWN

306006	1	Trade Name Decal (For 4002)
306007	1	Trade Name Decal (For P55 & P55S)
307069	1	Trade Name Decal (For H55)
212985	1	Trade Name Decal (For 61522)
13758	1	Trade Name Decal (For 1U5230)
305977*†	1	Caution Decal

Part numbers marked with an asterisk (\*) are contained in Repair Kit 300450.  
Part numbers marked with a dagger (†) are contained in Repair Kit 1U5229.

Refer to any operating instructions that may accompany the product for detailed information concerning such topics as disassembly, testing, operation, preventive maintenance, troubleshooting and reassembly.

Additional enquiries can be directed to the OTC Technical Service staff (507) 451-5860.



OTC Division  
Sealed Power Corporation  
Owatonna, MN 55060

Form No. 10252

## Operating Instructions

1U5230	61715
4002	H55
61522	P55
61522-CELETTE	P55S

## HYDRAULIC HAND PUMP

SINGLE STAGE — 2 WAY VALVE

These instructions should be read and carefully followed. Most problems with new equipment are caused by improper operation or installation.

NOTE: These instructions are intended for many various models of hydraulic hand pumps. Some statements may not pertain to your particular model.

## SAFETY PRECAUTIONS

### WARNING

#### General Operation

- All WARNING statements must be carefully observed to prevent personal injury.
- Before operating the pump, make sure all hose connections are tightened with the proper tools. Do not overtighten. Connections need only be tightened securely and leak-free. Overtightening may cause premature thread failure, or may cause high pressure fittings to split at pressures lower than their rated capacities.
- Should a hydraulic hose ever rupture, burst, or need to be disconnected, shift the control valve twice to release all pressure. Never attempt to grasp a leaking hose under pressure with your hands. The force of escaping hydraulic fluid could cause serious injury.
- Do not subject the hose to potential hazard such as fire, extreme heat or cold, sharp surfaces, or heavy impact. Do not allow the hose to kink, twist, curl, or bend so tightly that the oil flow within the hose is blocked or reduced. Periodically inspect the hose for wear because any of these conditions can damage the hose and possibly result in personal injury.
- Do not use the hose to move attached equipment. Stress may damage the hose and possibly cause personal injury.
- Hose material and coupler seals must be compatible with the hydraulic fluid used. Hoses also must not come in contact with corrosive materials such as creosote-impregnated objects and some paints. Consult the manufacturer before painting a hose. Never paint the couplers. Hose deterioration due to corrosive materials may result in personal injury.

#### Pump

- Do not exceed the PSI hydraulic pressure rating noted on the pump name plate, or tamper with the internal high pressure relief valve. Creating pressure beyond rated capacities may result in personal injury.
- Before replenishing the oil level, retract the system to prevent overfilling the pump reservoir. An overfill may cause personal injury due to excess reservoir pressure created when cylinders are retracted.

#### Cylinder

- Do not exceed rated capacities of the cylinders. Excess pressure may result in personal injury.
- Do not set poorly-balanced or off-center loads on a cylinder. The load may tip and cause personal injury.

## Operating Instructions

### PREPARATION & SET-UP

#### Hydraulic Connections

**IMPORTANT:** Seal all hydraulic connections with pipe sealant. Teflon tape may also be used to seal hydraulic connections if only one layer of tape is used. Apply the tape carefully to prevent it from being "pinched" by the coupler and broken off inside the pipe end. Any loose pieces of tape could travel through the system and obstruct the flow of oil or cause jamming of precision-fit parts.

1. Clean all the areas around the oil ports of the pump and ram, and all hose ends, couplers, and union ends. Remove thread protectors from hydraulic oil outlets and connect the hose assembly. Couple hose to the ram. See Figure 1.
2. An in-line hydraulic gauge (not included) is strongly recommended and can be installed at this time. To install, thread a tee adapter with gauge between the hose coupling and the pump hydraulic outlet port or metering valve, if so equipped. Do not over-tighten hose connections. See Figure 1.

**WARNING:** The gauge must be of the proper rating to handle the hydraulic pressure produced. Personal injury may result if an improper gauge is used.

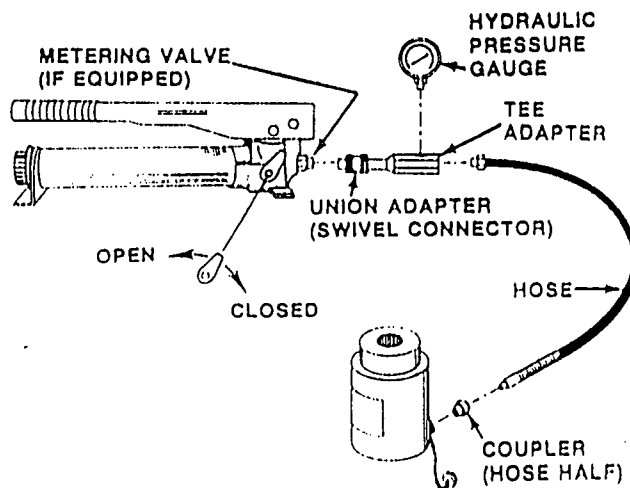


FIGURE 1

### OPERATION

The hand pump will function in the horizontal position or in the vertical position when the head is pointing downward.

1. To extend the ram, turn the valve knob clockwise to a closed (seated) position. Work the pump handle up and down to build pressure.
2. To release pressure, open the valve by turning the knob counter-clockwise.

### PREVENTIVE MAINTENANCE

#### IMPORTANT:

- Any repair or servicing which requires dismantling the pump must be performed in a dirt-free environment by a qualified technician.

#### Lubrication

Apply lubricant periodically to all pivot and rubbing points. Use a good grade of No. 10 motor oil or grease. Do not use dry lubricants.

#### Bleeding Air From The System

During the initial set-up or after prolonged use, air may accumulate in the hydraulic system. This trapped air may cause the ram to respond slowly or in an unstable manner. To remove the air, loosen the filler cap and run the system through several cycles (extend and retract) free of any load. The ram must be positioned at a lower level than the pump to allow air to be released through the pump reservoir.



OTC Division  
Sealed Power Corporation  
Owatonna, MN 55060

Form No. 10252

## Operating Instructions

1U5230	61715
4002	H55
61522	P55
61522-CELETTE	P55S

### Hydraulic Fluid Level

Check the oil level in the reservoir after every 10 hours of use. The oil level should come to the filler hole when the pump is resting on its base and the ram is retracted. See Figure 2.

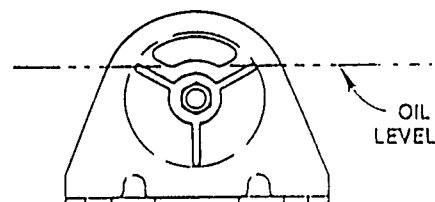


FIGURE 2

### Draining and Flushing the Reservoir

It is important that the reservoir be drained, then flushed with a nonflammable flushing fluid and refilled with an approved high grade hydraulic oil, such as OTC #16355, after every 300 hours of use.

1. Unscrew the filler cap. To drain the oil, stand the pump on end with the filler hole down.
2. Unscrew the nut located on the end of the pump. Separate the pump body from the head and clean the reservoir and the filter. Re-assemble and refill the reservoir with OTC #16355 as specified.

**NOTE:** Before draining and flushing the reservoir, wipe the pump exterior clean. After draining and flushing the reservoir, drain and clean the other hydraulic system components (hoses, cylinders, etc.) before reconnecting them to the pump. This will prevent contaminated oil from re-entering the pump.

### Refilling the Reservoir

1. Clean the entire area around the filler cap. Remove the filler cap and insert a clean funnel with filter. Position the pump with head down and the filler hole up. This is a sealed reservoir and overfilling is hazardous, so be certain that the ram is fully retracted when adding the oil to the reservoir. To check for an overfill, set the pump on its base without the filler cap installed and allow the excess oil to drain out. See Figure 2.

### Periodic Cleaning

Keep the pump and any attached equipment clean. The hydraulic oil outlet and all unused couplers should be sealed with thread protectors whenever the hydraulic system is dismantled. All hose connections must be kept free of grit and grime.



## Operating Instructions

### TROUBLESHOOTING

Refer to Parts List #100617 when attempting the following troubleshooting procedures.

PROBLEM	CAUSE	SOLUTION
Pump not delivering oil	1. Low oil level in reservoir 2. Dirt in pump body 3. Seats worn and not seating properly 4. Reservoir overfilled with oil	1. Check oil level per instructions 2. Disassemble pump body and clean all parts 3. Reseat required seats in casting 4. Check oil level per reservoir instructions
Pump losing pressure	1. Oil leaking past outlet ball seat(s) 2. Pressure control knob leaks, not adjusted properly	1. Reseat ball seat(s) 2. Reseat pressure control assembly or replace assembly
Pump does not reach full pressure	1. Low oil level 2. Reservoir overfilled with oil	1. Check oil level per reservoir instructions 2. Check oil level per reservoir instructions
Handle raises after each stroke	1. Oil leaking past outlet ball seat(s)	1. Replace ball and/or reseat
Pump handle can be pushed down (slowly) without raising the load	1. The inlet ball is not seating	1. Check for dirt and/or reseat valve seat
Pump handle operates with a spongy action	1. Air has been trapped in the line 2. Reservoir overfilled with oil	1. Set ram lower than the pump and extend and return ram several times 2. Check oil level per reservoir instructions



OWATONNA TOOL COMPANY

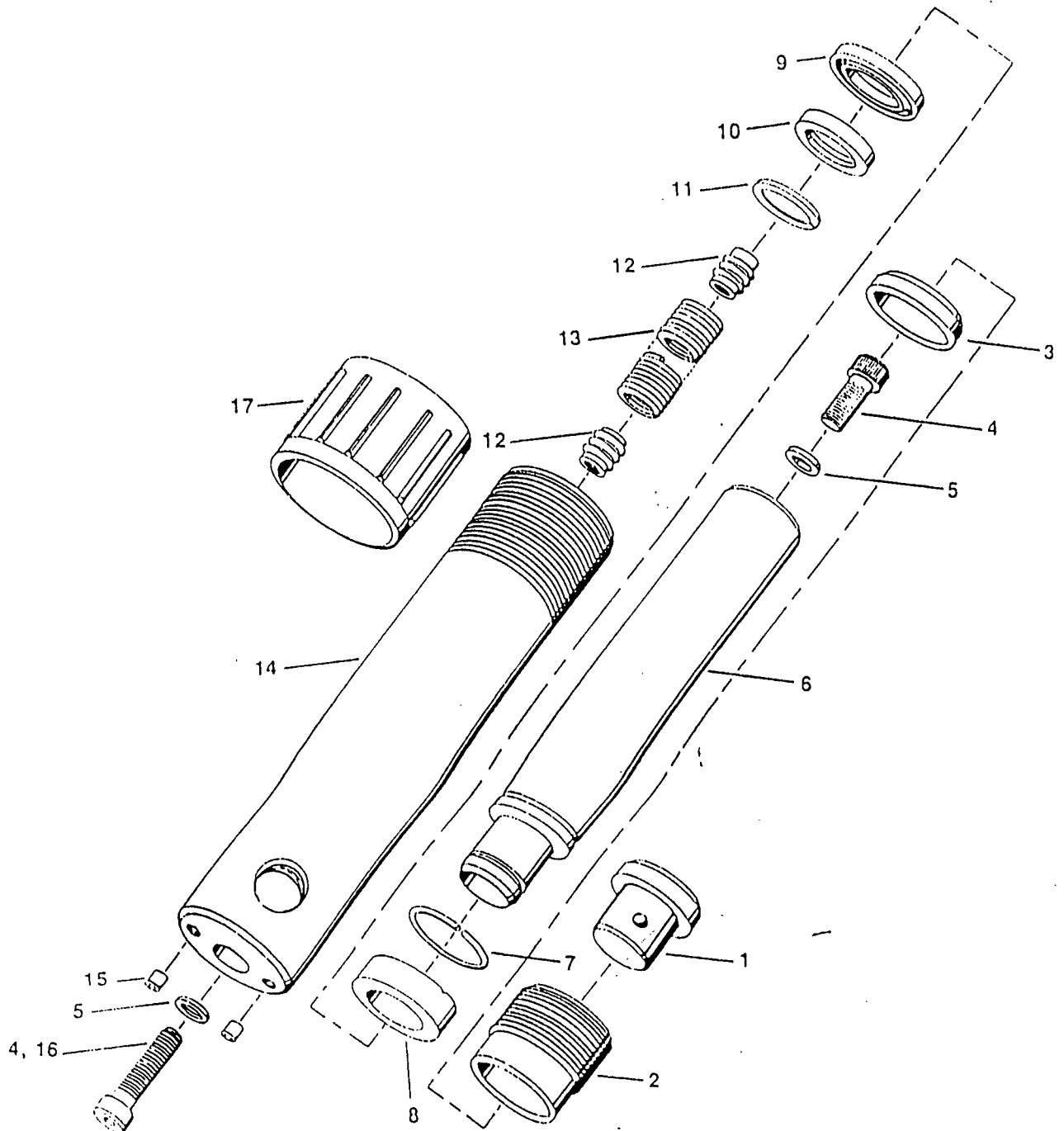
OWATONNA, MINNESOTA 55060, U.S.A. — TELEX: 29-0076

**PARTS  
LIST  
FOR**

POWER TEAM ..... C25  
C252C, C254C, C25  
C2510C, C25

## HYDRAULIC CYLINDERS

SINGLE ACTING — SPRING RETURN  
CAPACITY: 25.8 TONS AT 10,000 PSI MAX.



# PARTS LIST (CONT'D)

Item No.	Part No.	No. Req'd	Description
1	201412	1	Thread Adapter
2	36085	1	Retainer Nut ( <i>Torque to 90/100 ft. lbs.</i> )
3	16085*	1	Rod Wiper
4	10053	1	Soc. Hd. Cap Screw, $\frac{3}{8}$ -16 $\times$ 1 $\frac{1}{4}$ ( <i>Torque to 500/550 in. lbs. - Model Nos. C256C, C2510C, &amp; C2514C</i> )
	10053	2	Soc. Hd. Cap Screw, $\frac{3}{8}$ -16 $\times$ 1 $\frac{1}{4}$ ( <i>Torque to 500/550 in. lbs. - Model Nos. C251C, C252C, &amp; C254C</i> )
5	12042*	2	Copper Washer
6	43225	1	Piston Rod ( <i>Model No. C251C</i> )
	43202	1	Piston Rod ( <i>Model No. C252C</i> )
	43116	1	Piston Rod ( <i>Model No. C254C</i> )
	42181	1	Piston Rod ( <i>Model No. C256C</i> )
	42182	1	Piston Rod ( <i>Model No. C2510C</i> )
	42183	1	Piston Rod ( <i>Model No. C2514C</i> )
7	201447	1	Retaining Ring
8	201352	1	Piston Head ( <i>Assembly with groove toward shoulder</i> )
9	15915*	1	"U" Cup Piston Seal
10	201353	1	Slip Retainer
11	16084*	1	Retaining Ring
12	201417	2	Spring Retainer
13	204453	1	Extension Spring ( <i>Model No. C251C</i> )
	204389	1	Extension Spring ( <i>Model No. C252C</i> )
	204276	1	Extension Spring ( <i>Model No. C254C</i> )
	201448	1	Extension Spring ( <i>Model No. C256C</i> )
	201449	1	Extension Spring ( <i>Model No. C2510C</i> )
	201450	1	Extension Spring ( <i>Model No. C2514C</i> )
14	51261	1	Cylinder Body ( <i>Model No. C251C</i> )
	51241	1	Cylinder Body ( <i>Model No. C252C</i> )
	51213	1	Cylinder Body ( <i>Model No. C254C</i> )
	50821	1	Cylinder Body ( <i>Model No. C256C</i> )
	50823	1	Cylinder Body ( <i>Model No. C2510C</i> )
	50825	1	Cylinder Body ( <i>Model No. C2514C</i> )
15	10566	2	Soc. Set Screw, $\frac{1}{2}$ -13 $\times$ $\frac{1}{2}$
16	11531	1	Soc. Hd. Cap Screw, $\frac{3}{8}$ -16 $\times$ 2" ( <i>Torque to 500/550 in. lbs. - Model Nos. C256C, C2510C, &amp; C2514C</i> )
17	36147	1	Thread Protector ( <i>Plastic</i> )

Spring must not extend beyond threads of spring retainer (both ends). Stretch, clean and lubricate before assembly.

## PARTS INCLUDED BUT NOT SHOWN

25600	1	Ram Half Coupler
18668	1	Decal, Trade Name ( <i>Model No. C251C</i> )
18667	1	Decal, Trade Name ( <i>Model No. C252C</i> )
18666	1	Decal, Trade Name ( <i>Model No. C254C</i> )
16161	1	Decal, Trade Name ( <i>Model No. C256C</i> )
16162	1	Decal, Trade Name ( <i>Model No. C2510C</i> )
16163	1	Decal, Trade Name ( <i>Model No. C2514C</i> )
203908*	1	Decal, Caution ( <i>Model Nos. C251C, C252C, C254C &amp; C256C</i> )
37782*	1	Decal, Caution ( <i>Model Nos. C2510C &amp; C2514C</i> )

Part numbers marked with an asterisk (\*) are contained in Repair Kit No. 300147.



OWATONNA TOOL COMPANY

OWATONNA, MINNESOTA 55060, U.S.A. — TELEX: 29-0777

## OPERATING & MAINTENANCE INSTRUCTIONS CONT'D

HYTEC  
MAJOR MOTORS  
O.E.M.  
POWER TEAM  
SERVICE TOOLS  
TOOLS & EQUIPMENT  
TRACTOR

Single Acting Ram  
or Cylinders  
Various Capacities

# HYDRAULIC CYLINDERS

Single Acting — Spring Return — Gravity Return

TROUBLE	CAUSE	REMEDY
IV. Cylinder advances slower than normal	4. Pump not working correctly	<i>D. Check pump operating instructions</i>
	5. Leaking seals	<i>E. Replace seals</i>
V. Cylinder advances but does not maintain pressure	1. Leaky connection	<i>A. Clean connection and use a non-hardening pipe thread compound or teflon tape if needed</i>
	2. Cylinder seals leaking	<i>B. Replace seals</i>
	3. Pump valve malfunctioning	<i>C. Check pump operating instructions</i>
VI. Cylinder leaks oil	1. Worn or damaged seals	<i>A. Replace seals</i>
	2. Loose connections	<i>B. Tighten fittings</i>
VII. Cylinder will not retract or retracts slower than normal	1. Pump release valve closed	<i>A. Open pump release</i>
	2. Couplers not fastened	<i>B. Fasten couplers</i>
	3. Blocked hydraulic lines	<i>C. Clean and flush</i>
	4. Weak or broken retraction springs	<i>D. Send to service center</i>
	5. Cylinder damaged internally	<i>E. Send to service center</i>
	6. Pump reservoir too full	<i>F. Drain oil to correct level</i>



# OPERATING & MAINTENANCE INSTRUCTIONS (CONT'D)

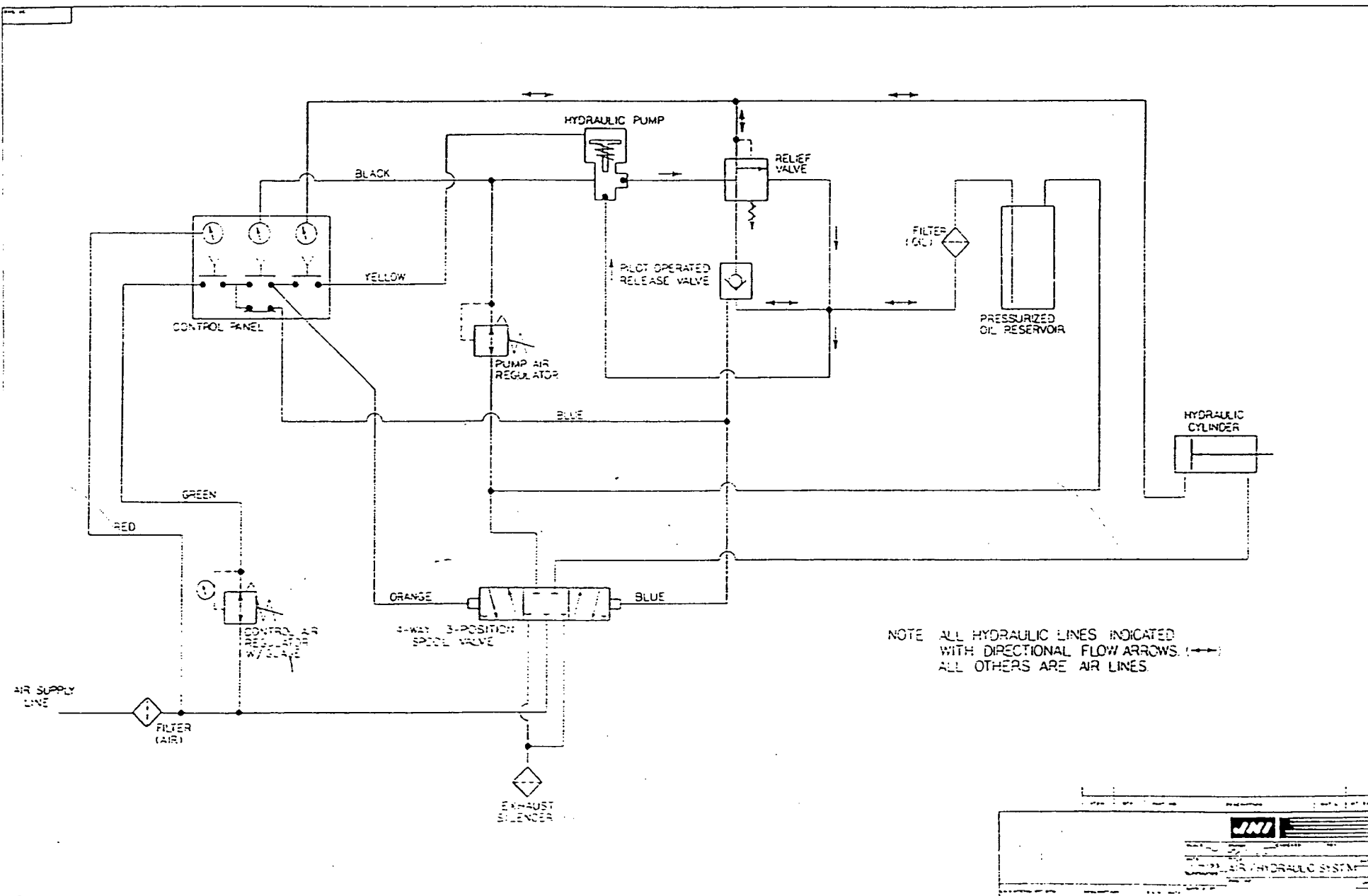
## TROUBLESHOOTING CYLINDERS

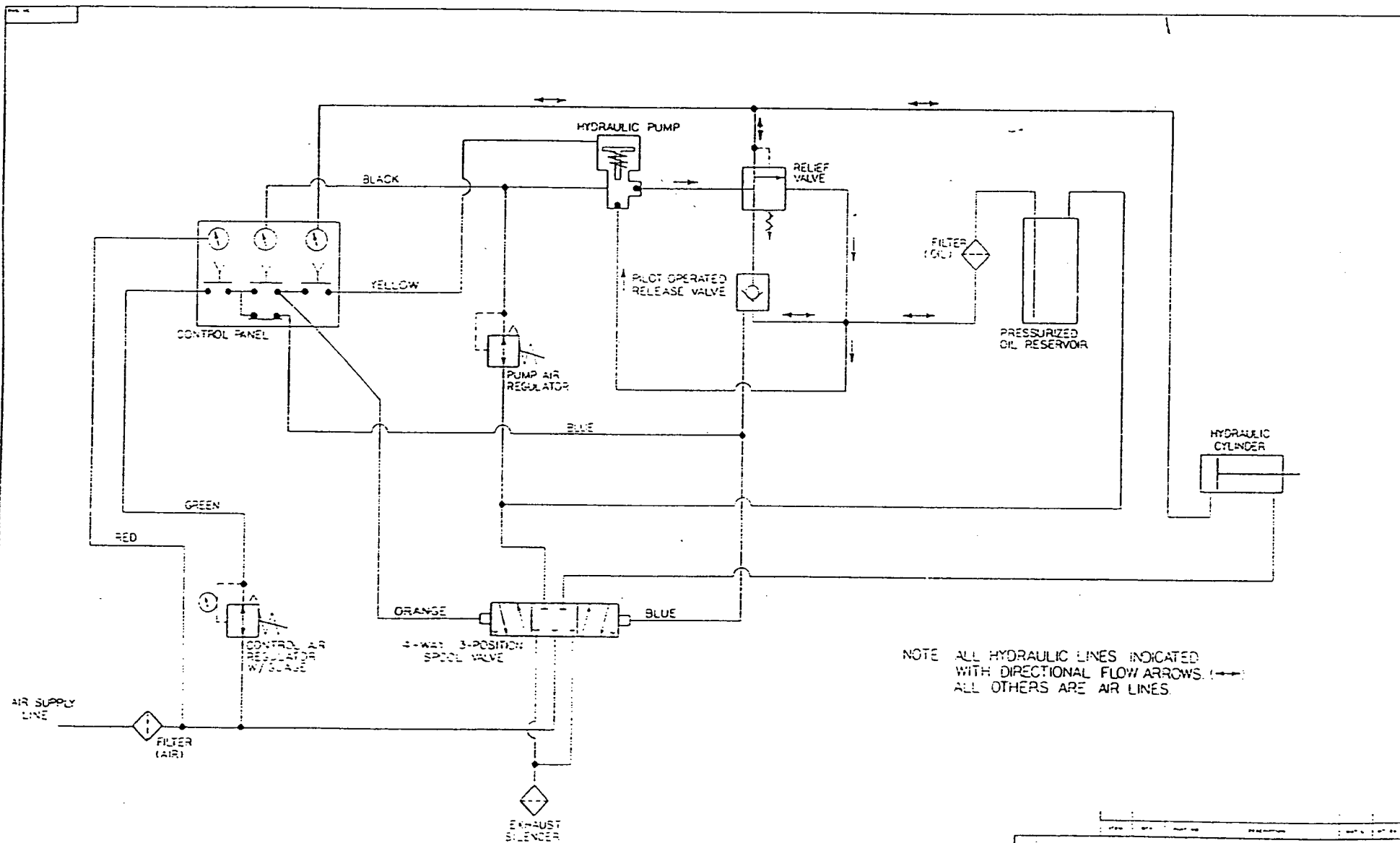


**CAUTION:** The troubleshooting and repair procedures listed below should only be performed by qualified personnel familiar with this equipment. Use the proper equipment when troubleshooting!

**NOTE:** All the statements below may not apply to your particular model cylinder. Use the following guide as a general reference for troubleshooting.

TROUBLE	CAUSE	REMEDY
I. Erratic Action	1. Air in system	A. <i>Bleed air and check for leaks</i>
	2. Viscosity of oil too high	B. <i>Change to lower viscosity oil</i>
	3. Internal leakage in cylinder	C. <i>Replace worn packings Check for excessive contamination or wear</i>
	4. Cylinder sticking or binding	D. <i>Check for dirt, gummy deposits or leaks as above. Check for misalignment worn parts or defective packing</i>
II. Cylinder does not advance	1. Open pump release valve	A. <i>Close release valve</i>
	2. Low or no oil in pump reservoir	B. <i>Fill with oil and bleed the system</i>
	3. Air locked pump	C. <i>Bleed the system</i>
	4. Loose couplers	D. <i>Tighten couplers &amp; bleed</i>
	5. Plugged hydraulic line	E. <i>Flush and clean system</i>
	6. Pump not operating	F. <i>Check pump's operating instructions</i>
	7. Load is above the capacity of the system	G. <i>Correct equipment</i>
III. Cylinder extends only partially	1. Pump reservoir is low on oil	A. <i>Fill and bleed</i>
	2. Cylinder piston rod binding	B. <i>Check for dirt, gummy deposits or leaks as above. Check for misalignment, worn parts or defective packing</i>
IV. Cylinder advances slower than normal	1. Loose connection	A. <i>Tighten and bleed</i>
	2. Leaky connection	B. <i>Clean connection and use a non-hardening pipe thread compound or teflon tape if needed</i>
	3. Restricted hydraulic line or fitting	C. <i>Clean or replace if damaged</i>





## ADJUSTING HYDRAULIC PRESSURES

### Instructions for Adjusting Pressure Relief Valve

1. Pressure relief valve setting should be 300 to 400 PSI above maximum hydraulic closing pressure. (See specification Sheet No. 1.00)
2. To prepare relief valve for adjusting, remove cap and washer from adjusting screw. (See drawing no. 6.18)
3. Close press and allow hydraulic pump to build hydraulic pressure. (See Operation Instructions No. 3.00)
4. If air hydraulic pump stalls out before maximum closing pressure is reached, air pump regulator will have to be turned clockwise to increase pressure to air hydraulic pump. This must be done in small intervals, allowing pump to stall between each interval until maximum hydraulic closing pressure is reached.
5. With maximum hydraulic closing pressure reached, turn hydraulic air pump regulator clockwise to increase hydraulic pressure 300 to 400 PSI above maximum hydraulic closing pressure.
6. If air hydraulic pump does not stall and keeps pumping after reaching 300 to 400 PSI above maximum closing pressure, relief valve is operating and is set at proper pressure.
7. If the air hydraulic pump continues to pump and hydraulic pressure does not increase above maximum closing pressure, pressure relief valve setting is too low and must be adjusted.
8. WARNING: If at any time, pressure exceeds 400 PSI above maximum closing pressure for your press, relief valve must be readjusted. Loosen locknut around adjusting screw and back out adjusting screw (counter-clockwise) and proceed with instructions below.
9. To adjust relief valve, loosen locknut and turn screw with a hex key in a clockwise direction while watching hydraulic pressure gauge as pressure increases. Increase pressure to the 300 to 400 PSI above maximum closing pressure for your press as indicated on the specification sheet. Tighten locknut.
10. To check adjustment of pressure relief valve, turn hydraulic pump switch to "off" and drop pressure by momentarily turning selector valve to open position until hydraulic pressure drops to zero on panel gauge. Once pressure has dropped to zero, return selector knob to closed position and turn hydraulic pump on.
11. Allow hydraulic pump to build hydraulic pressure and watch pressure gauge and note at what pressure pump continues to pump, but no longer builds any greater hydraulic pressure.



12. If pressure is in the 300 to 400 PSI range above maximum recommended closing pressure for your press, adjustment has been made correctly.
13. At this time, cap and washer can be reinstalled on adjusting screw.

#### Instructions for Adjusting Maximum Closing Hydraulic Pressure

14. Now press can be adjusted for maximum closing hydraulic pressure.
15. Return hydraulic pressure back to zero by momentarily turning selector valve to open position until hydraulic pressure drops to zero on panel gauge.
16. Turn air pump regulator in a counter-clockwise direction, two to four turns adjusting pump air pressure to about 20 PSI by watching pump air pressure gauge on control panel.
17. Now with press selector in closed position, turn hydraulic pump on, allow pump to build hydraulic pressure, waiting for pump to stall out.
18. Pump should stall out at a pressure lower than maximum hydraulic closing pressure.
19. Once pump has stalled, pressure to air hydraulic pump can now be increased. Turn pump air regulator in a clockwise direction, until hydraulic pressure on panel gauge reaches maximum hydraulic closing pressure. Allow pump to stall between each slight incremental adjustment.

RELIEF VALVE  
CARTRIDGE

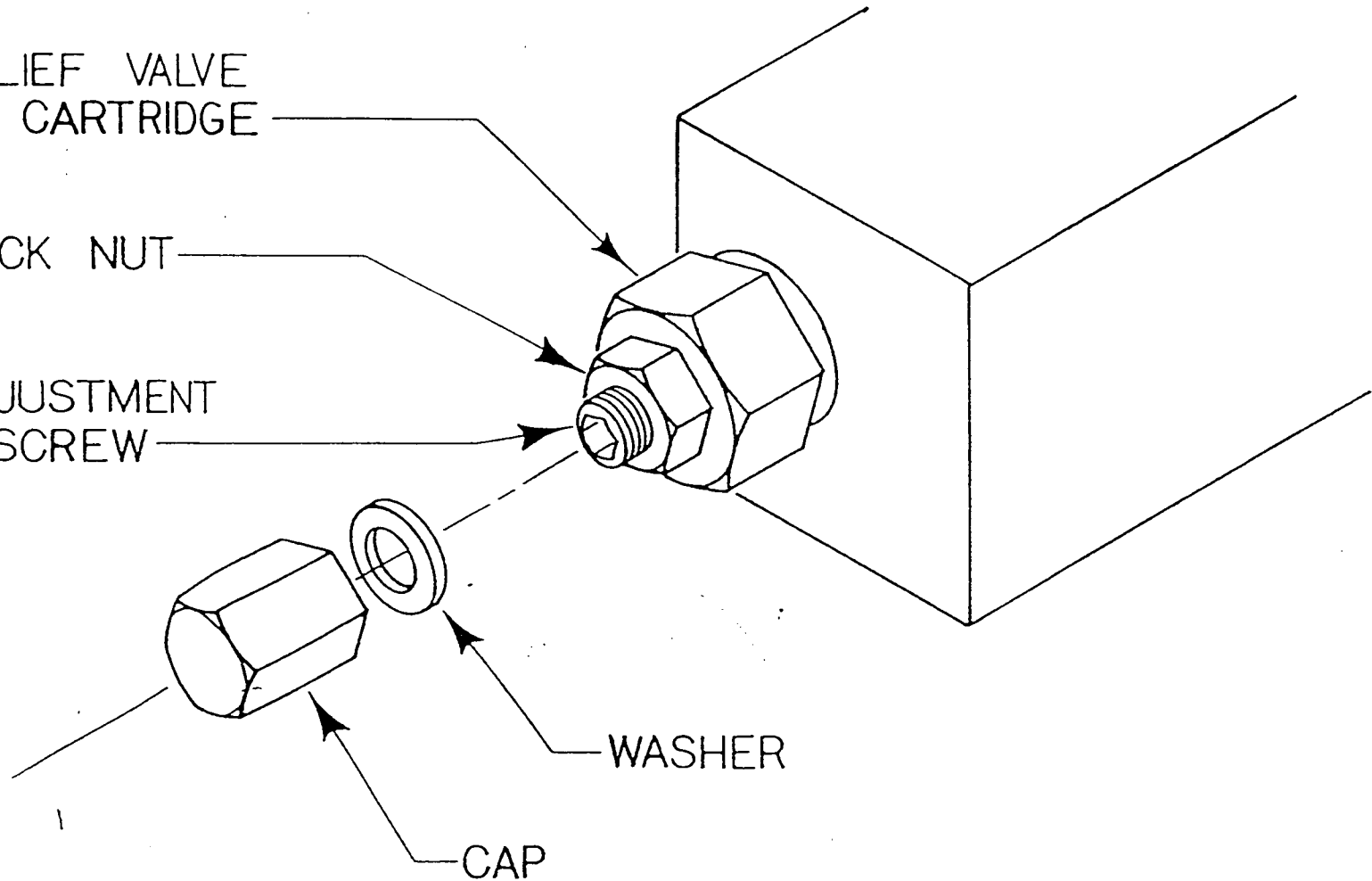
LOCK NUT

ADJUSTMENT  
SCREW

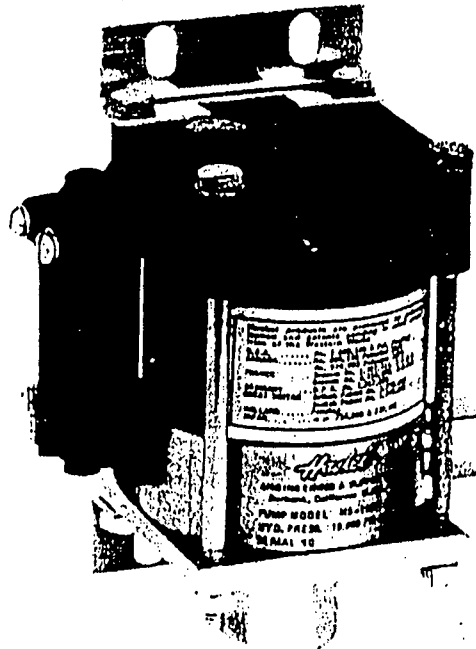
WASHER

CAP

RELIEF VALVE



**OPERATING and MAINTENANCE INSTRUCTIONS**  
for  
**MINIATURIZED AIR DRIVEN HYDRAULIC PUMPS**



MODEL NUMBER \_\_\_\_\_ SERIAL NUMBER \_\_\_\_\_ DATE \_\_\_\_\_

**WHEN ORDERING REPLACEMENT PARTS ALWAYS INCLUDE THE PUMP SERIAL NUMBER.**

**WARRANTY**

Haskel manufactured products are warranted free of original defects in material and workmanship. This warranty does not include packings, seals, nor failures caused by lack of proper maintenance; incompatible fluids; foreign materials in the driving media; in the pumped media; or application of pressures beyond catalog ratings.

Products believed to be originally defective may be returned for repair and/or replacement to the distributor, authorized service representative, or to the factory. If upon inspection by the factory or authorized service representative, the problem is found to be originally defective material or workmanship, repair or replacement will be made at no charge for labor or materials, F.O.B. the point of repair or replacement. No consequential damages from use of this equipment are covered under the terms of this warranty.

Permission to return under warranty should be requested before shipment and include the following; the original purchase date, purchase

order number, serial number, model number, or other pertinent data to establish warranty claim, and to expedite the return or replacement to the owner.

If pump has been disassembled and reassembled in a facility other than Haskel, warranty is void if it has been improperly reassembled or substitute parts have been used in place of factory manufactured parts.

Any modification to any Haskel product which you have made or may make in the future has been and will be made at your sole risk and responsibility, and without Haskel's approval or consent. Haskel disclaims any and all liability, obligation, or responsibility for the modified product; and for any claims, demands, or causes of action for damage or for personal injuries resulting from the modification and/or use of such a modified Haskel product.

NOTE: Warranty period is ONE year from date of manufacture.

"Haskel" is the registered trademark of Haskel, Inc.

***Haskel***  
INC.

## INSTALLATION & OPERATION

### General

Pump may be mounted in any position. However, models with separation chamber construction must be mounted vertically so that any leakage from the chamber vent port will not migrate into the air drive. Do not pipe vent port back to fluid source. If in doubt, consult factory or Haskel Distributor.

### Air System

It is not necessary nor desirable to use an airline lubricator. Install an airline filter and regulator with a minimum of 1/4" NPT port size. Also, review air system upstream and eliminate any restrictions to provide 1/4" minimum inside diameter. If required by system, install a cycling shut off— speed control valve, 1/4" NPT port minimum at pump air inlet port.

### Hydraulic System

**CAUTION:** Do not loosen hydraulic fittings on pump to facilitate makeup of piping connections. These fittings must be tight to avoid leakage or damage. Do not reduce the size of the inlet piping! Larger piping should be used with heavy fluids or if suction head is over three feet. The piping size can only be reduced if the inlet is supercharged. A suction filter may be desirable in the inlet line. 100 mesh is normally ample to protect the pump itself.

**NOTE:** See the current catalog for rating of various pump models.

### Priming

Install a high pressure fitting or valve at pump outlet capable of use as an air vent or bleed at start up. Open air control valve slowly. Allow pump to cycle for approximately fifteen seconds, pumping fluid through vent or bleed. Close. If adequately primed, pump will begin to cycle slower due to increase in output resistance. If not, open vent and repeat.

### Operation

Note that the pump model number includes its nominal area ratio as a suffix. The pump will cycle rapidly initially and as it approaches an output pressure equal to the ratio times the air drive pressure, it will slow down and finally "stall". Most air pressure regulators have 5 PSI or more differential between "flow" and "no flow" air pressures. Where it is necessary to pump an appreciable volume near the "stall" pressure, a high flow precision type air regulator should be used, or maximum pump pressure should be controlled by some other device such as a relief valve, pressure switch, or pressure operated shut-off valve, such as a Haskel air pilot switch.

## MAINTENANCE

### Air Drive Section

Air drive section of all liquid pumps are prelubricated at time of assembly at the factory with Haskel 28442 Lubricant and require no other means of lubrication. To lubricate the spool or air piston, or to inspect and repair or replace any parts, disassemble and assemble the pump parts in the sequence shown on assembly drawing. See assembly drawing for appropriate torques.

**Important Note:** The most common cause of air drive malfunction will be o-ring 568011 on the end of spool 17157. Inspect here first, replace if necessary and retest — before further disassembly of air drive. Spool 17157 is most easily removed by "blowing out" the spool and sleeve assembly with drive air. First remove the upper muffler cap and hold a cloth over the exhaust port.

### Hydraulic Section

To inspect, clean and/or replace any parts, disassemble and assemble the pump parts as shown on individual assembly drawing.

## TROUBLE SHOOTING GUIDE

### SYMPTOM

### CAUSE

### REMEDY

A. Pump will not cycle or bypasses air.

1. Inadequate air supply.
2. Contaminated air system.

1. See "Air System" under "Installation & Operation".

2. Remove sleeve and cycling spool (under upper cap of muffler). Clean, inspect, relubricate with light silicone grease P/N 28442 or equivalent.

B. False cycle or leak out pilot exhaust (top center of cap).

1. Leakage of pilot system.

1. Install new air section seal kit.

C. Pump cycles without pumping or does not dead-head.

1. Check valve(s) not seating.

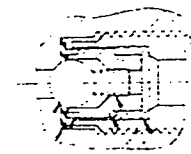
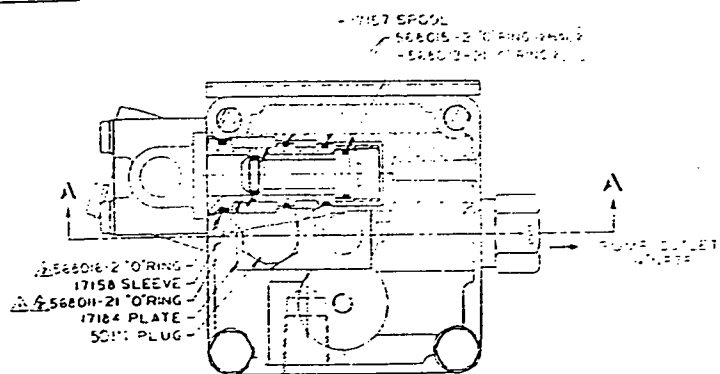
1. Inspect and clean check valve(s). First: Inlet check. Then outlet check.

D. Pump fluid appears at muffler (or vent port on separation models).

1. High pressure seal leak.

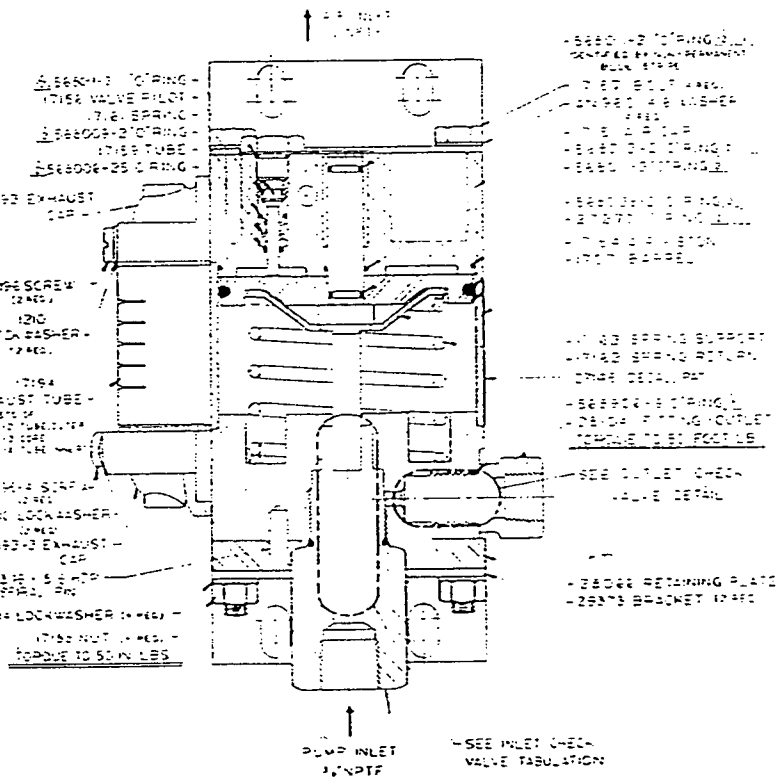
1. Install new liquid section seal kit.



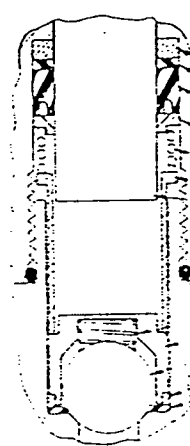


- 25012 SPRING  
 - 25013 SPRING  
 - 25013-2 SPRING

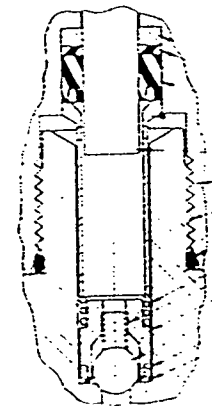
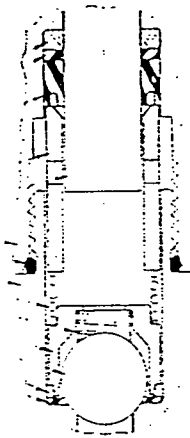
SOLE CHECK VALVE

[illegible]

CROSS SECTION A-A

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INLET CHECK VALVE M-21 AND M-36

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INLET CHECK VALVE M-71, M-110 AND M-155

TORQUE FITTING TO 125 FOOT LB

1. NAME OF THE COMPANY		2. ADDRESS OF THE COMPANY		3. CITY AND STATE		4. COUNTRY		5. PHONE NO.		6. TELETYPE NO.		7. FAX NO.		8. E-MAIL ADDRESS		9. WEBSITE ADDRESS		10. OTHER INFORMATION																					
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329. NAME OF THE PROJECT MANAGER		330. ADDRESS OF THE PROJECT MANAGER		331. CITY AND STATE		332. COUNTRY		333. PHONE NO.		334. TELETYPE NO.		335. FAX NO.		336. E-MAIL ADDRESS		337. WEBSITE ADDRESS		338. OTHER INFORMATION		339. NAME OF THE PROJECT MANAGER		340. ADDRESS OF THE PROJECT MANAGER		341. CITY AND STATE		342. COUNTRY		343. PHONE NO.		344. TELETYPE NO.		345. FAX NO.		346. E-MAIL ADDRESS		347. WEBSITE ADDRESS		348. OTHER INFORMATION	
349. NAME OF THE PROJECT MANAGER		350. ADDRESS OF THE PROJECT MANAGER		351. CITY AND STATE		352. COUNTRY		353. PHONE NO.		354. TELETYPE NO.		355. FAX NO.		356. E-MAIL ADDRESS		357. WEBSITE ADDRESS		358. OTHER INFORMATION		359. NAME OF THE PROJECT MANAGER		360. ADDRESS OF THE PROJECT MANAGER		361. CITY AND STATE		362. COUNTRY		363. PHONE NO.		364. TELETYPE NO.		365. FAX NO.		366. E-MAIL ADDRESS		367. WEBSITE ADDRESS		368. OTHER INFORMATION	
369. NAME OF THE PROJECT MANAGER		370. ADDRESS OF THE PROJECT MANAGER		371. CITY AND STATE		372. COUNTRY		373. PHONE NO.		374. TELETYPE NO.		375. FAX NO.		376. E-MAIL ADDRESS		377. WEBSITE ADDRESS		378. OTHER INFORMATION		379. NAME OF THE PROJECT MANAGER		380. ADDRESS OF THE PROJECT MANAGER		381. CITY AND STATE		382. COUNTRY		383. PHONE NO.		384. TELETYPE NO.		385. FAX NO.		386. E-MAIL ADDRESS		387. WEBSITE ADDRESS		388. OTHER INFORMATION	
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409. NAME OF THE PROJECT MANAGER		410. ADDRESS OF THE PROJECT MANAGER		411. CITY AND STATE		412. COUNTRY		413. PHONE NO.		414. TELETYPE NO.		415. FAX NO.		416. E-MAIL ADDRESS		417. WEBSITE ADDRESS		418. OTHER INFORMATION		419. NAME OF THE PROJECT MANAGER		420. ADDRESS OF THE PROJECT MANAGER		421. CITY AND STATE		422. COUNTRY		423. PHONE NO.		424. TELETYPE NO.		425. FAX NO.		426. E-MAIL ADDRESS		427. WEBSITE ADDRESS		428. OTHER INFORMATION	
429. NAME OF THE PROJECT MANAGER		430. ADDRESS OF THE PROJECT MANAGER		431. CITY AND STATE		432. COUNTRY		433. PHONE NO.		434. TELETYPE NO.		435. FAX NO.		436. E-MAIL ADDRESS		437. WEBSITE ADDRESS		438. OTHER INFORMATION		439. NAME OF THE PROJECT MANAGER		440. ADDRESS OF THE PROJECT MANAGER		441. CITY AND STATE		442. COUNTRY		443. PHONE NO.		444. TELETYPE NO.		445. FAX NO.		446. E-MAIL ADDRESS		447. WEBSITE ADDRESS		448. OTHER INFORMATION	
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469. NAME OF THE PROJECT MANAGER		470. ADDRESS OF THE PROJECT MANAGER		471. CITY AND STATE		472. COUNTRY		473. PHONE NO.		474. TELETYPE NO.		475. FAX NO.		476. E-MAIL ADDRESS		477. WEBSITE ADDRESS		478. OTHER INFORMATION		479. NAME OF THE PROJECT MANAGER		480. ADDRESS OF THE PROJECT MANAGER		481. CITY AND STATE		482. COUNTRY		483. PHONE NO.		484. TELETYPE NO.		485. FAX NO.		486. E-MAIL ADDRESS		487. WEBSITE ADDRESS		488. OTHER INFORMATION	
489. NAME OF THE PROJECT MANAGER		490. ADDRESS OF THE PROJECT MANAGER		491. CITY AND STATE		492. COUNTRY		493. PHONE NO.		494. TELETYPE NO.		495. FAX NO.		496. E-MAIL ADDRESS		497. WEBSITE ADDRESS		498. OTHER INFORMATION		499. NAME OF THE PROJECT MANAGER		500. ADDRESS OF THE PROJECT MANAGER		501. CITY AND STATE		502. COUNTRY		503. PHONE NO.		504. TELETYPE NO.		505. FAX NO.		506. E-MAIL ADDRESS		507. WEBSITE ADDRESS		508. OTHER INFORMATION	
509. NAME OF THE PROJECT MANAGER		510. ADDRESS OF THE PROJECT MANAGER		511. CITY AND STATE		512. COUNTRY		513. PHONE NO.		514. TELETYPE NO.		515. FAX NO.		516. E-MAIL ADDRESS		517. WEBSITE ADDRESS		518. OTHER INFORMATION		519. NAME OF THE PROJECT MANAGER		520. ADDRESS OF THE PROJECT MANAGER		521. CITY AND STATE		522. COUNTRY		523. PHONE NO.		524. TELETYPE NO.		525. FAX NO.		526. E-MAIL ADDRESS		527. WEBSITE ADDRESS		528. OTHER INFORMATION	
529. NAME OF THE PROJECT MANAGER		530. ADDRESS OF THE PROJECT MANAGER		531. CITY AND STATE		532. COUNTRY		533. PHONE NO.		534. TELETYPE NO.		535. FAX NO.		536. E-MAIL ADDRESS		537. WEBSITE ADDRESS		538. OTHER INFORMATION		539. NAME OF THE PROJECT MANAGER		540. ADDRESS OF THE PROJECT MANAGER		541. CITY AND STATE		542. COUNTRY		543. PHONE NO.		544. TELETYPE NO.		545. FAX NO.		546. E-MAIL ADDRESS		547. WEBSITE ADDRESS		548. OTHER INFORMATION	
549. NAME OF THE PROJECT MANAGER		550. ADDRESS OF THE PROJECT MANAGER		551. CITY AND STATE		552. COUNTRY		553. PHONE NO.		554. TELETYPE NO.		555. FAX NO.		556. E-MAIL ADDRESS		557. WEBSITE ADDRESS		558. OTHER INFORMATION		559. NAME OF THE PROJECT MANAGER		560. ADDRESS OF THE PROJECT MANAGER		561. CITY AND STATE		562. COUNTRY		563. PHONE NO.		564. TELETYPE NO.		565. FAX NO.		566. E-MAIL ADDRESS		567. WEBSITE ADDRESS		568. OTHER INFORMATION	
569. NAME OF THE PROJECT MANAGER		570. ADDRESS OF THE PROJECT MANAGER		571. CITY AND STATE		572. COUNTRY		573. PHONE NO.		574. TELETYPE NO.		575. FAX NO.		576. E-MAIL ADDRESS		577. WEBSITE ADDRESS		578. OTHER INFORMATION		579. NAME OF THE PROJECT MANAGER		580. ADDRESS OF THE PROJECT MANAGER		581. CITY AND STATE		582. COUNTRY		583. PHONE NO.		584. TELETYPE NO.		585. FAX NO.		586. E-MAIL ADDRESS		587. WEBSITE ADDRESS		588. OTHER INFORMATION	
589. NAME OF THE PROJECT MANAGER		590. ADDRESS OF THE PROJECT MANAGER		591. CITY AND STATE		592. COUNTRY		593. PHONE NO.		594. TELETYPE NO.		595. FAX NO.		596. E-MAIL ADDRESS		597. WEBSITE ADDRESS		598. OTHER INFORMATION		599. NAME OF THE PROJECT MANAGER		600. ADDRESS OF THE PROJECT MANAGER		601. CITY AND STATE		602. COUNTRY		603. PHONE NO.		604. TELETYPE NO.		605. FAX NO.		606. E-MAIL ADDRESS		607. WEBSITE ADDRESS		608. OTHER INFORMATION	
609. NAME OF THE PROJECT MANAGER		610. ADDRESS OF THE PROJECT MANAGER		611. CITY AND STATE		612. COUNTRY		613. PHONE NO.		614. TELETYPE NO.		615. FAX NO.		616. E-MAIL ADDRESS		617. WEBSITE ADDRESS		618. OTHER INFORMATION		619. NAME OF THE PROJECT MANAGER		620. ADDRESS OF THE PROJECT MANAGER		621. CITY AND STATE		622. COUNTRY		623. PHONE NO.		624. TELETYPE NO.		625. FAX NO.		626. E-MAIL ADDRESS		627. WEBSITE ADDRESS		628. OTHER INFORMATION	
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669. NAME OF THE PROJECT MANAGER		670. ADDRESS OF THE PROJECT MANAGER		671. CITY AND STATE		672. COUNTRY		673. PHONE NO.		674. TELETYPE NO.		675. FAX NO.		676. E-MAIL ADDRESS		677. WEBSITE ADDRESS		678. OTHER INFORMATION		679. NAME OF THE PROJECT MANAGER		680. ADDRESS OF THE PROJECT MANAGER		681. CITY AND STATE		682. COUNTRY		683. PHONE NO.		684. TELETYPE NO.		685. FAX NO.		686. E-MAIL ADDRESS		687. WEBSITE ADDRESS		688. OTHER INFORMATION	
689. NAME OF THE PROJECT MANAGER		690. ADDRESS OF THE PROJECT MANAGER		691. CITY AND STATE		692. COUNTRY		693. PHONE NO.		694. TELETYPE NO.		695. FAX NO.		696. E-MAIL ADDRESS		697. WEBSITE ADDRESS		698. OTHER INFORMATION		699. NAME OF THE PROJECT MANAGER		700. ADDRESS OF THE PROJECT MANAGER		701. CITY AND STATE		702. COUNTRY		703. PHONE NO.		704. TELETYPE NO.		705. FAX NO.		706. E-MAIL ADDRESS		707. WEBSITE ADDRESS		708. OTHER INFORMATION	
709. NAME OF THE PROJECT MANAGER		710. ADDRESS OF THE PROJECT MANAGER		711. CITY AND STATE		712. COUNTRY		713. PHONE NO.		714. TELETYPE NO.		715. FAX NO.		716. E-MAIL ADDRESS		717. WEBSITE ADDRESS		718. OTHER INFORMATION		719. NAME OF THE PROJECT MANAGER		720. ADDRESS OF THE PROJECT MANAGER		721. CITY AND STATE		722. COUNTRY		723. PHONE NO.		724. TELETYPE NO.		725. FAX NO.		726. E-MAIL ADDRESS		727. WEBSITE ADDRESS		728. OTHER INFORMATION	
729. NAME OF THE PROJECT MANAGER		730. ADDRESS OF THE PROJECT MANAGER		731. CITY AND STATE		732. COUNTRY		733. PHONE NO.		734. TELETYPE NO.		735. FAX NO.		736. E-MAIL ADDRESS		737. WEBSITE ADDRESS		738. OTHER INFORMATION		739. NAME OF THE PROJECT MANAGER		740. ADDRESS OF THE PROJECT MANAGER		741. CITY AND STATE		742. COUNTRY		743. PHONE NO.		744. TELETYPE NO.		745. FAX NO.		746. E-MAIL ADDRESS		747. WEBSITE ADDRESS		748. OTHER INFORMATION	
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769. NAME OF THE PROJECT MANAGER		770. ADDRESS OF THE PROJECT MANAGER		771. CITY AND STATE		772. COUNTRY		773. PHONE NO.		774. TELETYPE NO.		775. FAX NO.		776. E-MAIL ADDRESS		777. WEBSITE ADDRESS		778. OTHER INFORMATION		779. NAME OF THE PROJECT MANAGER		780. ADDRESS OF THE PROJECT MANAGER		781. CITY AND STATE		782. COUNTRY		783. PHONE NO.		784. TELETYPE NO.		785. FAX NO.		786. E-MAIL ADDRESS		787. WEBSITE ADDRESS		788. OTHER INFORMATION	
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1. THESE PARTS ARE INCLUDED IN HYDRAULIC SECTION SEALS KIT

2. THESE PARTS ARE INCLUDED IN AIR DRIVE SEALS KIT

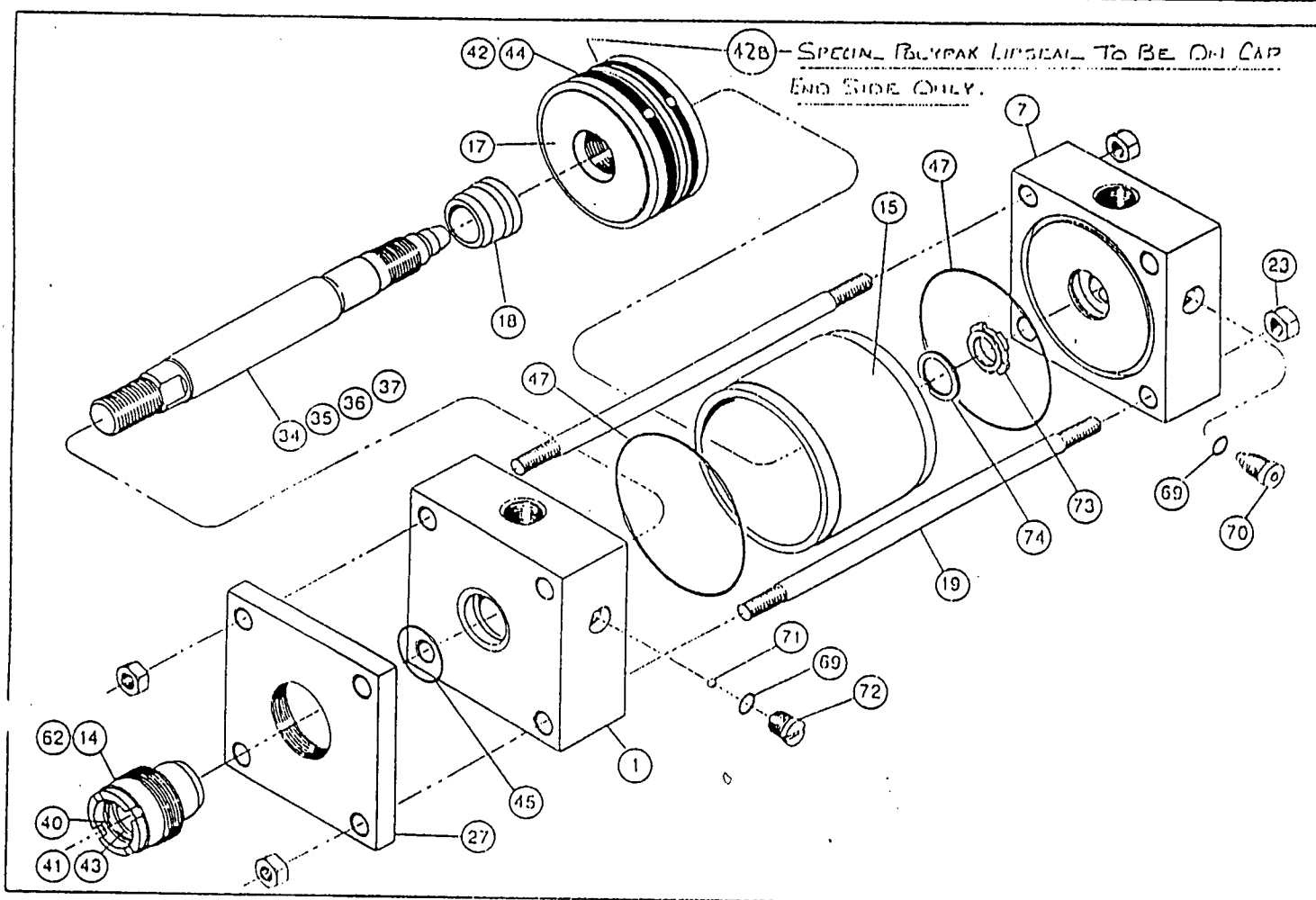
3. DO NOT INCLUDE LISTING OF WASKEL ELEMENTS  
IN LISTED HYDRAULIC SEALS OR AIR DRIVE SEALS.

NOTE

285506

Parts  
Identification

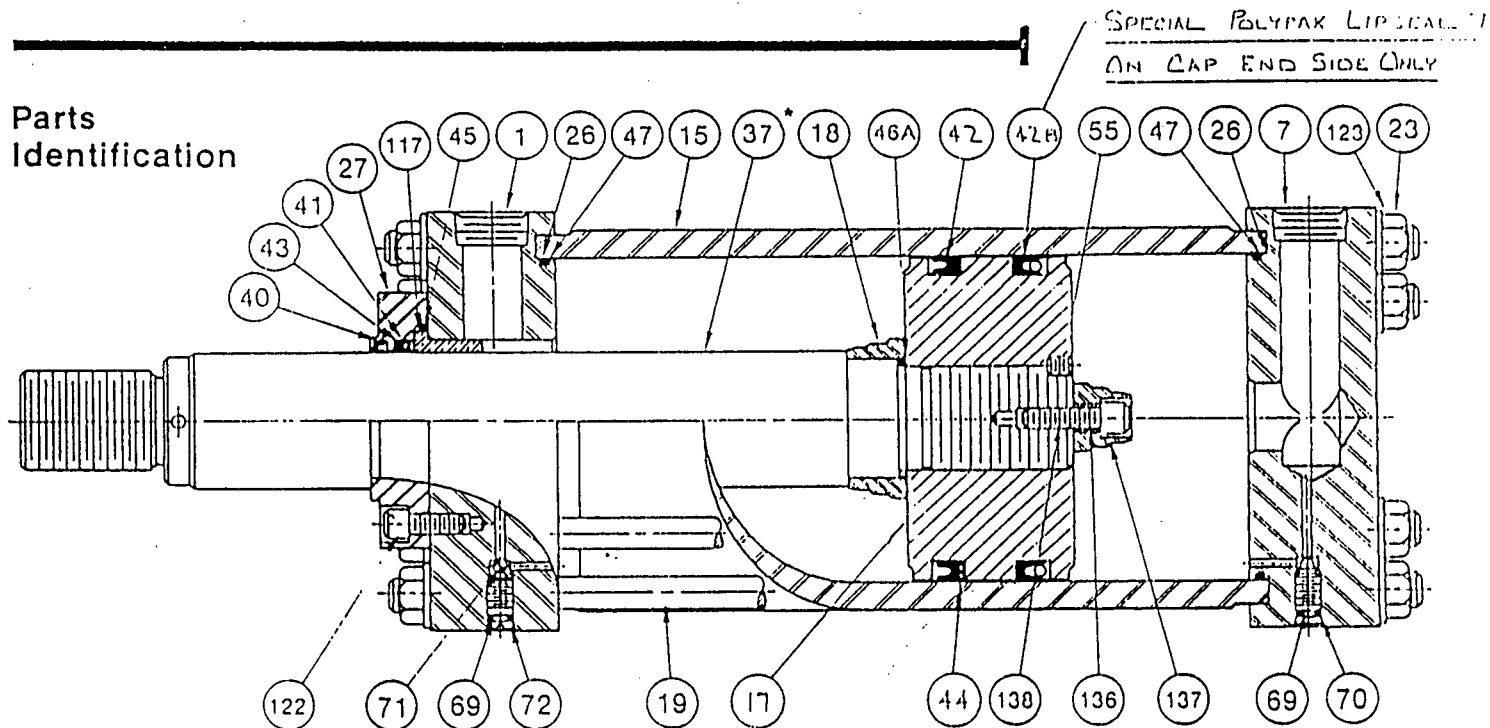
# Parker Series 2H, Cylinders



PARTS		ASSEMBLIES (INCLUDES SYMBOL NUMBERS SHOWN)			
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	ROD TYPE PISTON	HEAD TYPE PISTON
1	Head, piston, non-cushioned	1	Head, piston, cushioned	1, 10, 10, 11 & 12	1, 10, 10, 11 & 12
7	Cap, piston, non-cushioned	7	Cap, piston, cushioned	7, 10, 10, 11 & 12	7, 10, 10, 11 & 12
14	Gland	14	Gland, cushioned	14, 10, 10, 11 & 12	14, 10, 10, 11 & 12
15	Cylinder body	15	Cylinder body, cushioned	15, 10, 10, 11 & 12	15, 10, 10, 11 & 12
16	Piston rod, non-cushioned	16	Piston rod, cushioned	16, 10, 10, 11 & 12	16, 10, 10, 11 & 12
17	Piston rod, non-cushioned	17	Piston rod, cushioned	17, 10, 10, 11 & 12	17, 10, 10, 11 & 12
18	Cushion sleeve (cushioned cylinder only)	18	Cushion sleeve (cushioned cylinder only)	18, 10, 10, 11 & 12	18, 10, 10, 11 & 12
19	To rod	19	To rod	19, 10, 10, 11 & 12	19, 10, 10, 11 & 12
23	To rod nut	23	To rod nut	23, 10, 10, 11 & 12	23, 10, 10, 11 & 12
27	Attacher	27	Attacher	27, 10, 10, 11 & 12	27, 10, 10, 11 & 12
34	Piston rod, single rod type, non-cushioned	34	Piston & rod assembly, single rod type—non-cushioned	16, 10, 10, 11 & 12	16, 10, 10, 11 & 12
35	Piston rod, single rod type, cushioned head end	35	Piston & rod assembly, single rod type—cush—head end	16, 10, 10, 11 & 12	16, 10, 10, 11 & 12
36	Piston rod, single rod type, cushioned cap end	36	Piston & rod assembly, single rod type—cush—cap end	16, 10, 10, 11 & 12	16, 10, 10, 11 & 12
37	Piston rod, single rod type, cushioned both ends	37	Piston & rod assembly, single rod type—cush—both ends	16, 10, 10, 11 & 12	16, 10, 10, 11 & 12
40	Wiperseal, gland	40	Wiperseal, gland	40, 10, 10, 11 & 12	40, 10, 10, 11 & 12
41	Lipseal, gland	41	Lipseal, gland	41, 10, 10, 11 & 12	41, 10, 10, 11 & 12
42	Lipseal, piston	42	Lipseal, piston	42, 10, 10, 11 & 12	42, 10, 10, 11 & 12
43	Back-up washer, gland	43	Back-up washer, gland	43, 10, 10, 11 & 12	43, 10, 10, 11 & 12
44	Back-up washer, piston	44	Back-up washer, piston	44, 10, 10, 11 & 12	44, 10, 10, 11 & 12
45	O-ring, gland to head seal	45	O-ring, gland to head seal	45, 10, 10, 11 & 12	45, 10, 10, 11 & 12
46	O-ring, cylinder body end seal	46	O-ring, cylinder body end seal	46, 10, 10, 11 & 12	46, 10, 10, 11 & 12
47	Piston ring	47	Piston ring	47, 10, 10, 11 & 12	47, 10, 10, 11 & 12
48	Piston rod, double rod type, non-cushioned	48	Piston & rod assembly, double rod type—non-cushioned	16, 10, 10, 11 & 12	16, 10, 10, 11 & 12
49	Piston rod, double rod type, cushioned one end	49	Piston & rod assembly, double rod type—cush—one end	16, 10, 10, 11 & 12	16, 10, 10, 11 & 12
50	Piston rod, double rod type, cushioned both ends	50	Piston & rod assembly, double rod type—cush—both ends	16, 10, 10, 11 & 12	16, 10, 10, 11 & 12
51	Piston rod extension, double rod type—non-cushioned	51	Piston rod extension, double rod type—non-cushioned	51, 10, 10, 11 & 12	51, 10, 10, 11 & 12
52	Piston rod extension, double rod type—cushioned	52	Piston rod extension, double rod type—cushioned	52, 10, 10, 11 & 12	52, 10, 10, 11 & 12
53	O-ring, cushion adjustment & check valve screw	53	O-ring, cushion adjustment & check valve screw	53, 10, 10, 11 & 12	53, 10, 10, 11 & 12
54	Needle valve, cushion adjustment	54	Needle valve, cushion adjustment	54, 10, 10, 11 & 12	54, 10, 10, 11 & 12
55	Ball, check valve	55	Ball, check valve	55, 10, 10, 11 & 12	55, 10, 10, 11 & 12
56	Plug screw, check valve	56	Plug screw, check valve	56, 10, 10, 11 & 12	56, 10, 10, 11 & 12
57	Cushion bushing, cap end & mating check valve	57	Cushion bushing, cap end & mating check valve	57, 10, 10, 11 & 12	57, 10, 10, 11 & 12
58	Retaining ring, mating cushion bushing	58	Retaining ring, mating cushion bushing	58, 10, 10, 11 & 12	58, 10, 10, 11 & 12
59	Seal, cushion sleeve	59	Seal, cushion sleeve	59, 10, 10, 11 & 12	59, 10, 10, 11 & 12
60	Piston, hi-load type	60	Piston, hi-load type	60, 10, 10, 11 & 12	60, 10, 10, 11 & 12
61	Outer ring	61	Outer ring	61, 10, 10, 11 & 12	61, 10, 10, 11 & 12
62	Inner ring	62	Inner ring	62, 10, 10, 11 & 12	62, 10, 10, 11 & 12
63	Wear ring	63	Wear ring	63, 10, 10, 11 & 12	63, 10, 10, 11 & 12
42B	LIPSEAL (POLYPAK)	42B	LIPSEAL (POLYPAK)	42B, 10, 10, 11 & 12	42B, 10, 10, 11 & 12

# Parts Identification

## Parker Series 3H Large Bore High Pressure Hydraulic Cylinders



\*OR 34, 35, 36

SYM. NO.	
1	HEAD, Basic Style BB, DB, DD, HB & HH
2	HEAD, Style C
3	HEAD, Style E
5	HEAD, Style D
7	CAP, Basic Style D, DB, JB & JJ
8	CAP, Style C
9	CAP, Style E
11	CAP, Style DB
12	CAP, Style BB
15	CYLINDER BODY
16	PISTON BODY — Ring Type Piston
17	PISTON BODY — Lipseal
18	CUSHION SLEEVE
19	TIE ROD
20	TIE ROD, DD Style Head End
21	TIE ROD, DD Style Cap End
23	TIE ROD NUT — Non-Locking
26	BACK-UP WASHER, Cylinder Body
27	RETAINER
28A	HEAD, Style JJ
28B	HEAD, Style JB
29A	CAP, Style HH
29B	CAP, Style HB
34	PISTON ROD, Non Cushion
35	PISTON ROD, Cushion Head
36	PISTON ROD, Cushion Cap
37	PISTON ROD, Cushion Both Ends
40	WIPERSEAL
41	ROD SEAL (Polypak)
42	LIPSEAL, Piston
42B	LIPSEAL, (POLYPAK)

SYM. NO.	
43	BACK-UP WASHER, Polypak
44	BACK-UP WASHER, Lipseal
45	O-RING, Gland to Head
46A	CUSHION SEALING RING
47	O-RING Cylinder Body
48	PISTON RING
55	PISTON LOCK PIN
57	PISTON ROD — Non Cushion K-Type
58	PISTON ROD, Cushion One End K-Type
59	PISTON ROD, Cushion Both K-Type
60	EXTENSION ROD, Non-Cushion K-Type
61	EXTENSION ROD, Cushion Both Ends K-Type
66	TRUNNION
67	SCREWS, DD Mounting
69	O-RING, Cushion Adj. & Check Screws
70	CUSHION ADJUSTING NEEDLE SCREW
71	CHECK VALVE BALL
72	CHECK VALVE SCREW
86	PIVOT PIN — BB Mount
87	RETAINING RINGS FOR PIVOT PIN — BB Mount
117	ROD BEARING
118	PISTON BODY — HI-LOAD
119	OUTER PISTON RING
120	INNER PISTON RING
121	WEAR RING
122	RETAINER BOLT
123	WASHER, TIE ROD NUT
136	SPACER, Cushion
137	CUSHION SPEAR, Detachable
138	BOLT, Cushion Spear

BORE SIZE	SEAL KIT NUMBER	TIE ROD NUT TORQUE-FT. LB.
4"	WMH 3343	130
6"	WMH 3344	525
8"	WMH 3345	1160

### Servicing The Piston Seals

The piston is sealed and securely locked to the piston rod with anaerobic adhesive. This threaded connection should only be disassembled or reassembled by factory trained personnel.

Disassemble the cylinder completely, remove the old seals and clean all of the parts. The cylinder bore and the piston should then be examined for evidence of scoring.

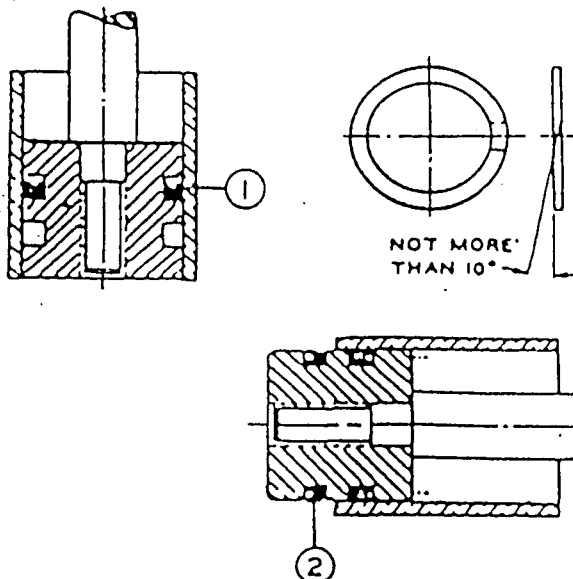
Iron piston rings seldom need replacement. If the rings show no signs of damage or abnormal wear, they may be reused. To install piston and rings, collapse the rings one at a time, while inserting the piston into the cylinder body, using a light oil to aid this process.

"Lipseal" piston seals must always be installed with backup washers, symbol 44. These are supplied from the factory as continuous rings, and must be slit on as flat an angle as possible (see sketch below) to allow them to be placed over the piston.

Install one piston seal in the groove nearest the rod. The two "lips" of this Lipseal should face toward the rod end of the piston. Then insert the piston in the cylinder body as shown in (1).

Next, turn cylinder body on its side and push piston through barrel just far enough to expose groove for second seal. (See 2).

Install second piston seal and backup washers as shown. Then push the piston into the cylinder body and proceed to assemble cylinder heads, tie rods and tie rod nuts as follows:



"O" rings (symbol 47) should be lightly coated with lubricant then worked into place by hand. Cylinder body can then be assembled to the cap by rocking it down over the seal until the end of the cylinder body is in metal-to-metal contact with the cap. Install "O" ring (symbol 47) in head. Head is then fitted over the rod and assembled to cylinder body. Rock gently into place until body and head are in metal-to-metal contact.

Next, screw gland part way into gland retainer and slip both gland and retainer over end of the rod. Tighten entire assembly, torquing tie rod nuts to the valves specified on reverse side. Finally, using a gland wrench, firmly seal the gland.

With an intermediate trunnion mounted — Series L, 2L, or 3L cylinder, care must be taken to prevent binding the cylinder body when repositioning the trunnion collar. Proper reassembly of this type of cylinder is as follows:

After the piston seals have been inserted and the piston is in the cylinder body, slip the trunnion collar over the cylinder body to its approximate position.

Fit the cap with its seal and backup washer onto the body. Then "stud" into the trunnion collar the four tie rods that connect the cap to the trunnion collar. Bring up the four tie rod nuts at the cap. Distances from inner face of cap to finished face of trunnion collar should then be made equal at all four tie rods when all four tie rod nuts are in contact with the cap.

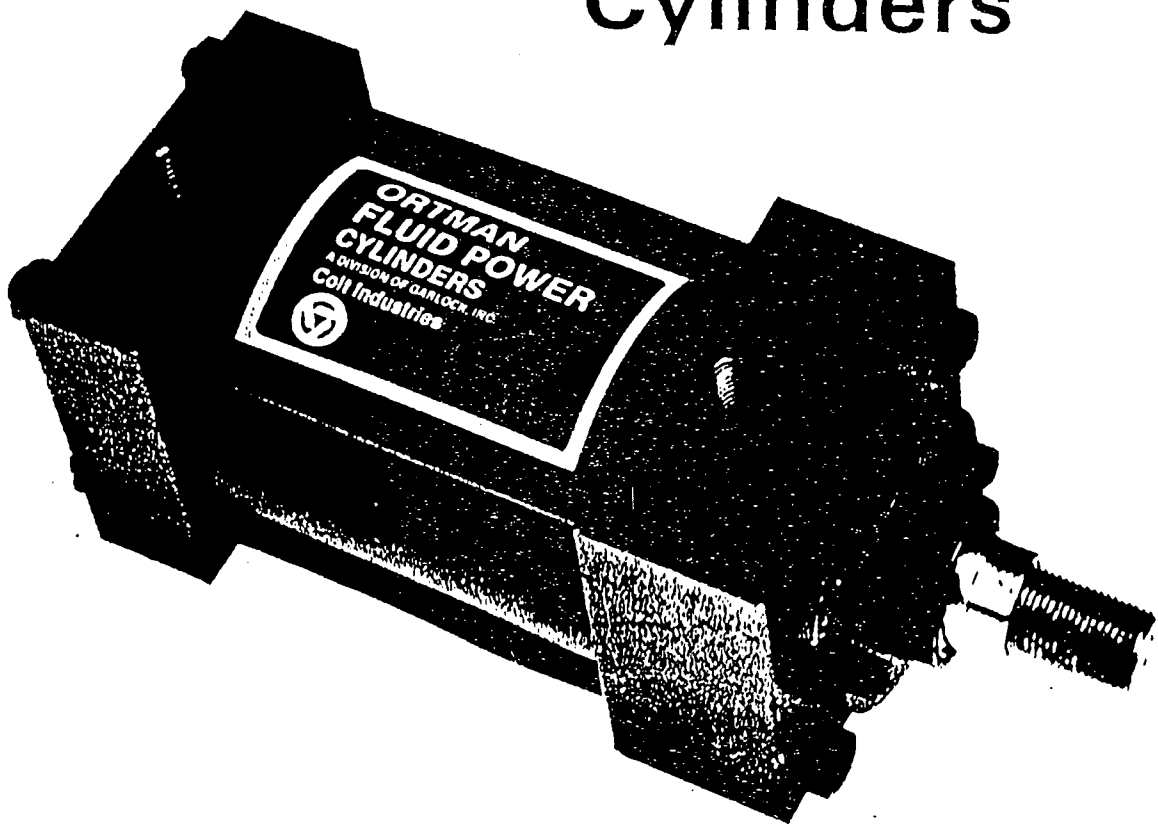
Finally, when the assembly is ready for final tightening, it may be necessary to adjust the tie rod nuts at the cap when torquing the tie rod nuts at the head in order to position the trunnion collar in its final position.

NOTE: An extreme pressure lubricant (such as molybdenum disulfide) should be used on the tie rod threads and nut bearing faces to control friction and reduce tie rod twist. Tie rod twist can be eliminated by chalking a straight line on each tie rod before torquing, and backing off the nut after torquing so this line is straight again. This is particularly important on long stroke cylinders.



## INSTALLATION AND SERVICE INSTRUCTIONS

# ORTMAN Series "3TH" Heavy Duty Hydraulic Cylinders



### WARNING

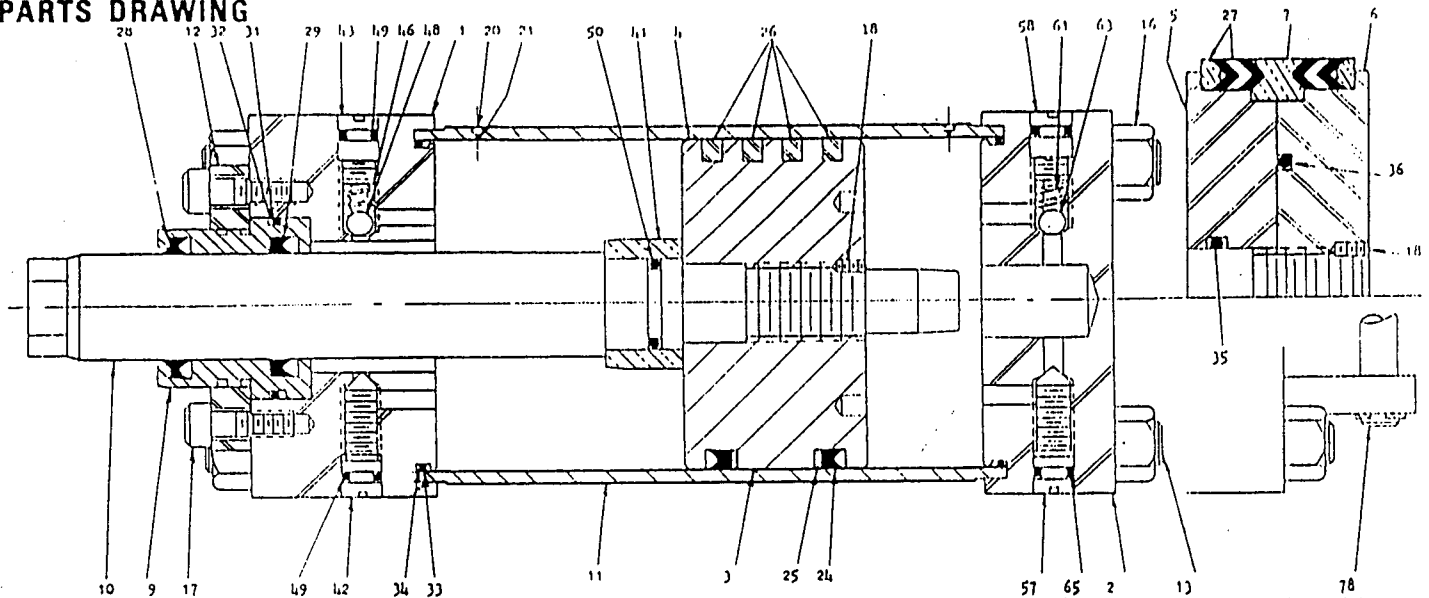
READ INSTALLATION  
SERVICE INSTRUCTIONS  
AND GENERAL PARTS  
BREAKDOWN  
BEFORE INSTALLATION,  
OPERATION, OR SERVICING

1.50 to 14.00 Bores

Nineteen 143rd Street, Hammond, IN 46320  
Telephone: (219) 932-0120 Telex: 72-5489

# **GENERAL PARTS BREAKDOWN INSTALLATION AND SERVICE INSTRUCTIONS FOR SERIES 3TH CYLINDER**

## **PARTS DRAWING**



## **PARTS**

ITEM	PART NAME	ITEM	PART NAME	ITEM	PART NAME	USE
1	HEAD END COVER	20	BLEEDER SCREW	36	PISTON PLATE O-RING	ITEMS CYLINDERS
2	CAP END COVER	21	BLEEDER BALL	41	H'D END CUSH. NOSE	1-36 - NON-CUSH.
3	BLOCK VEE PISTON	22	ROD PKG. RET. RING	(1)42	H'D CUSH. ADJ. N'DLE	1-50 - CUSH. H'D
4	SCR PISTON	24	BLOCK VEE PISTON PKG.	(1)43	H'D BALL CH'K SCREW	END
5	VEE PISTON PLATE-FWD.	25	PISTON PKG. NON-EXT. RING	(1)46	H'D BALL CH'K SPRING	1-36&
6	VEE PISTON PLATE-REAR	26	SCR PISTON PKG.	(1)48	H'D BALL CH'K BALL	57-65- CUSH. CAP
7	PISTON BRG.	27	VEE PISTON PKG. ASS'Y.	(1)49	H'D N'DLE & CH'K O-RING	END
9	ROD BEARING CART	28	ROD WIPER	50	CUSH. NOSE O-RING	1-65 - CUSH. BOTH
10	PISTON ROD	29	ROD PKG. POLY U-CUP	57	CAP CUSH. ADJ. N'DLE	ENDS
11	TUBE	30	ROD PKG. ASS'Y. UNEEPAC	58	CAP BALL CH'K SCREW	
12	CART. RET. PLATE	31	ROD CART. O-RING	61	CAP BALL CH'K SPRING	
13	TIE ROD	32	ROD CART. NON-EXT. RING	63	CAP BALL CH'K BALL	
16	TIE ROD NUT	33	END COVER O-RING	65	CAP N'DLE & CH'K O-RING	
17	CART. RET. PLATE SCREW	34	END COVER NON-EXT. RING	78	CLEVIS PIN ASS'Y.	
18	PISTON LOCK SCREW	35	PISTON SEAL O-RING			

(1) Not used in 1.50, 2.00, and 2.50 bores with max. rod sizes.

## **KITS**

### KIT NAME

<u>SEAL KITS</u>	<u>KIT TYPE</u>	<u>ITEM NUMBERS</u>
ROD GLAND CARTRIDGE ASSY.	3530	9, 28, 29, 31, 32
ROD GLAND SEAL KIT	3540	28, 29, 31, 32
COMPLETE REPAIR KIT VEE (CUSH)	3564	9, 27(2), 28, 29, 31, 32, 33(2), 34(2), 35, 36, 49(2), 50, 65(2)
COMPLETE REPAIR KIT BV (CUSH)	3568	9, 24(2), 25(2), 28, 29, 31, 32, 33(2), 34(2), 49(2), 50, 65(2)
COMPLETE SEAL KIT VEE (CUSH)	3574	27(2), 28, 29, 31, 32, 33(2), 34(2), 35, 36, 49(2), 50, 65(2)
COMPLETE SEAL KIT BV (CUSH)	3578	24(2), 25(2), 28, 29, 31, 32, 33(2), 34(2), 49(2), 50, 65(2)
COMPLETE REPAIR KIT SCR (CUSH)	3584	9, 28, 29, 31, 32, 33(2), 34(2), 49(2), 50, 65(2)
COMPLETE SEAL KIT SCR (CUSH)	3594	28, 29, 31, 32, 33(2), 34(2), 49(2), 50, 65(2)

### SERVICE ASSEMBLY KITS

SCR PISTON ASSY. KIT	3610	4, 18, 26, 33(2), 34(2)
B-V PISTON ASSY. KIT	3619	3, 18, 24(2), 25(2), 33(2), 34(2)
VEE PISTON ASSY. KIT	3620	5, 6, 7, 18, 27(2), 33(2), 34(2), 35, 36
CUSH HEAD ASSY. KIT	3632	1, 33, 34, 42, 43, 46, 48, 49(2)
CUSH CAP ASSY. KIT	3643	2, 33, 34, 57, 61, 63, 65(2)
Also 78 for clevis mt. cyl. only		

INSTALLATION AND SERVICE INSTRUCTIONSJTH CYLINDERS

1. GENERAL: The parts drawing on Page 2 shows a complete listing of parts and is applicable to all standard Series JTH hydraulic cylinders. This parts drawing, when used in conjunction with the listed parts and kits, should facilitate the ordering of any replacement parts or kits by specifying: (1) cylinder serial number, as it appears on the name plate; and (2) item number and part name or kit type and name.

2. INSTALLATION OF CYLINDER: Standard cylinders are furnished with seals compatible with petroleum base fluids. These seals work best within the temperature range of -40°F. to 200°F. For fluids other than petroleum base, different seal material may have to be used.

For the cylinder to perform well, it must be properly installed. Alignment of the cylinder with load is most important. Forcing rod, clevis pins or mounting bolts into position indicates that the cylinder is not properly aligned, and permanent damage may result from such installation.

Protective port covers should not be removed before installing piping, as dirt or other foreign particles may enter the cylinder. All pipe and fittings must be clean before making final connections.

3. PROCEDURE FOR REPLACEMENT OF ROD SEALS AND CARTRIDGE:

- Disconnect cylinder and drain oil from head end port.
- In cases of circular cartridge retainer (12), remove socket head screws (17). In cases of square retainer (12), remove tie rod nuts (16). (See cylinder bore/rod combinations using square retainer, Page 4).
- Remove circular or square retainer.
- Remove rod bearing cartridge (9) from head (1). To facilitate removal, a screwdriver can be used to pry in the external groove.
- Remove rod wiper (28), rod seal (29), rod cartridge O-ring (31) and rod cartridge non-extrusion ring (32).
- Reassemble the cartridge with corresponding replacement parts, cleaning all parts thoroughly. Swelling, shrinking, wear, nicks, cuts, and indentations are all signs of defective seals. Such seals should be replaced.
- Prior to installation, all rubber parts must be well coated with lubricant. Place the cartridge with new replacement parts on the rod end, and use a twisting motion in starting it onto the rod.
- Guide the cartridge over the rod and carefully insert it into the head end cover (1); replace cartridge retainer plate (12) and screws (17). Tighten the screws with a hexagon key. In tightening the socket head screws for circular retainers, use the following torque:  
 SCREW SIZE No. 10-32 .25-28 .31-24  
 TORQUE (Ft.-lbs.) 6 15 30
- Square retainer (re-installation), see tie rod torque, Page 4.

4. PROCEDURE FOR REPACKING CYLINDERS

- Disconnect cylinder and drain oil from head and cap end ports.
- Remove the tie rod nuts (16) and tie rods (13).
- Remove cap end (2) and then head end (1). The rod bearing cartridge (9) and cartridge retainer plate (12) will come off with the head end.
- Remove piston and rod assembly from tube (11).
- Remove cartridge retainer plate screws (17) and rod bearing cartridge (9) from head end (1).
- To disassemble piston rod (10), clamp in soft jaws, remove piston lock screw item (18) and proceed as follows:

CAUTION

Piston types (SCR and Block Vee) are also retained

Heat (approximately 500°F. -550°F. for 30 minutes) must be applied to the piston in order to remove the piston from the rod.

\* Registered Trademark, Loctite Corp.

NOTE: The piston and rod assembly should not require disassembly unless replacement of pistons (3) or (4), the piston rod (10) or head end cushion nose (41) is required.

(1) SCR Type Piston

- Heat piston to required temperature.
- The piston (4) is threaded onto the piston rod (10) and can be removed once the located assembly has broken loose. Use the pin spanner holes provided in the rear face of the piston.
- Remove head end cushion nose (41) and cushion nose O-ring (50) as applicable.
- Remove piston packing rings (24).

(2) Block Vee Type Piston

- Heat piston to required temperature.
- Loosen piston (3) and remove from the piston rod. Use the pin spanner holes provided in rear face of piston.
- Remove head end cushion nose (41), and cushion nose O-ring (50) as applicable.
- Remove block vee packing (24) and back-up (non-extrusion) ring (25).

(3) Vee Type Piston

- Remove piston plate lock screws (18), loosen rear piston plate (6) and remove from piston rod. Use pin spanner holes provided in rear piston plate.
- Remove piston bearing (7), forward piston plate (5), and head end cushion nose (41), as applicable.
- Remove vee piston packing assemblies (24) from forward and rear piston plates.

G. Re-assemble each type piston with the corresponding replacement parts, cleaning all parts thoroughly.

CAUTIONCAUTION

Re-assemble piston types (SCR and Block Vee) with the proper grade Loctite as noted above and tighten securely.

NOTE: Assembly with Loctite in per the manufacturer's recommendations.

H. To disassemble cap and cover (2):

- Remove end cover O-ring (33) and non-ext. ring (34).
- Remove ball check screw (59), spring (61), ball (63), and O-ring (65).
- Remove cush. adj. needle (57) and O-ring (45).

I. To disassemble head end cover (1):

- Remove end cover O-ring (33) and non-ext. ring (34).
- Remove ball check screw (43), spring (46), ball (48), and O-ring (49).
- Remove cush. adj. needle (42) and O-ring (49).

5. CLEANING: Clean all parts thoroughly. The packings and seals in this cylinder are compatible with hydraulic oils, air and neutral fluids. The cleaning agent must also be compatible to avoid damage to packings and seals. Whenever a particular lubricant is specified for an installation, do not deviate from this specification without checking for compatibility.

6. INSPECTION:

- Inspect all packings, seals, and non-extrusion rings for swelling, shrinking, wear, nicks, cuts, and indentations. Discard all damaged packings, seals, and non-extrusion rings.
- Check and inspect bore of tube for scratches, excessive wear, and any other defect that might damage piston packing or cause piston bypass.
- Inspect piston rod for signs of wear, nicks, dents, scratches, or anything that may damage rod packing or rod bearing. Excessive wear on one side of piston rod or rod bearing usually indicates misalignment in installation and should be corrected.
- Inspect all remaining items for evidence of damage or wear. In most cases, a little collection of

7. REPLACEMENT: Replace all damaged packings, seals, rod wipers, and non-extrusion rings.
8. REASSEMBLY: The procedure for reassembly is essentially the reverse of disassembly. However, the following exceptions and considerations should be noted:
- All O-rings and non-extrusion rings should be well coated with lubricant after they are installed in their respective grooves and prior to reassembly with the mating part. Care must be taken when assembling O-rings and packings that they are not damaged, as this will cause leakage.
    - It is sometimes difficult to install assembled vee type pistons into a tube. If this should happen, it may be necessary to assemble the piston within the tube.
    - Care must be taken to be sure the rear plate (6) is tight against the forward plate (5). Any gap between these plates may permit the piston plate O-ring (36) to extrude. This can lead to piston bypass.
  - Tie rod threads and nut bearing faces should be well lubricated to allow tightening the nuts evenly for proper prestressing. To avoid twisting of the tie rods during tightening hold with vice grip or clamp. To assure equal pre-stressing of the tie rods, first turn on nuts even and snug to align assembly; then the nuts are to be tightened alternately. For proper tie rod pre-stressing, they should be torqued as recommended:

CYLINDER BORE	1½	2-2½	3½-4	5	6	7	8	10-12-14
TORQUE FT. LB.	29	60	148	282	374	560	690	374

9. TESTING:
- After the cylinder has been completely reassembled, it should be tested, either on a test bench or in the regular installation. Watch for the following as the cylinder is cycled at pressures ranging from normal operating pressure to 50 percent over, depending on the availability of the higher pressures:
    - Rod cartridge leakage.
    - Leakage at end cover O-rings.
    - Leakage at cushion adjusting needle.
    - Leakage at ball check plug.
  - Final adjustment of cushion adjusting needle must be made after cylinder is installed in system, as applicable.
10. Cylinders with the following bore/rod combinations have non-bolted square retainers. Cartridge removal requires removal of tie rod nuts/tie rods:
- All Mounts:
    - 1.50" bore with 1.00" rod
    - 2.00" bore with 1.38" rod
    - 2.50" bore with 1.75" rod
  - Additional Bore/Rod Combinations in "B" and "HB" Mounting Styles Only:
    - 1.50" bore with .62" rod
    - 2.00" bore with 1.00" rod
    - 2.50" bore with 1.00" and 1.38" rods
    - 3.25" bore with 1.75" and 2.00" rods
    - 4.00" bore with 2.50" rod

11. Piston torques (All rod sizes within a bore)

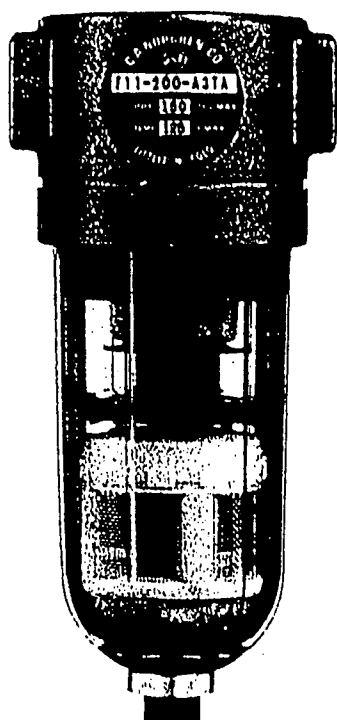
BORE	TORQUE (ft.-lbs.)
1.50	25
2.00	80
2.50	110
3.25	220
4.00	420
5.00	880
6.00	1100
7.00	2280
8.00	2500
10.00	3000
12.00	3700
14.00	4500

12. Removability of Rod Cartridge in Style CC- Foot Mount  
Foot lugs interfere with cartridge removal in the following sizes:

- 1.50 and 2.00 bores with all rod sizes
- 2.50 bore with 1.38 and 1.75 rods
- 3.25 bore with 1.75 and 2.00 rods
- 4.00 bore with 2.50 rod
- 5.00 bore with 3.00 and 3.50 rods
- 6.00 bore with 4.00 rod
- 7.00 bore with 4.50 and 5.00 rods
- 8.00 bore with 5.50 rod

"Neither seller nor manufacturer shall be liable for any injury, loss or damage, direct or consequential, arising out of the misuse or improper use of or the inability to use the product. Before using, user should determine the suitability of the product for his intended use and assumes all responsibility for such determination. The foregoing may not be altered except in writing signed by an authorized representative of seller and manufacturer."





### *The Streamlined "Designer"*

The internal configuration of the F11 has been redesigned; reducing the number of parts from six to three with improved performance and maintenance. Filter elements are interchangeable between previous and current F11s.

### ORDER TABLE

Standard models normally available from distributor stock.

PIPE SIZE	BOWL TYPE	DRAIN TYPE	MODEL NUMBER* (50-Micron)
1/4"	Transparent	Manual Automatic	F11-200-M3TA F11-200-A3TA
3/8"	Transparent	Manual Automatic	F11-300-M3TA F11-300-A3TA

#### \*OPTION NOTES:

When ordering products with optional features, substitute the designated letter or digit in the appropriate position of the model number.

#### Metal Bowl

Substitute the letter "M" in the 9th position.

#### 3-Oz. Polycarbonate Bowl (with manual drain)

(Not available with automatic drain.)

Substitute the letter "B" in the 9th position.

#### Bowl Guard (1/3-Pint)

Substitute the letter "P" in the 9th position.

#### Filter Element

##### 5-Micron

Substitute the digit "1" in the 8th position.

##### 25-Micron

Substitute the digit "2" in the 8th position.

##### 75-Micron

Substitute the digit "4" in the 8th position.

TYPE F

# DESIGNER SERIES 1/4" BASIC FILTER

FOR COMPRESSED AIR SYSTEMS  
1/4" & 3/8" PIPE SIZES  
MANUAL OR AUTOMATIC DRAIN

### APPLICATION

The "Designer" F11 Filter is intended for use in general application in compressed air systems where effective filtration and water removal are required.

### SPECIFICATIONS

PIPE SIZES: 1/4" PTF, 3/8" PTF

FILTER ELEMENTS:

SINTERED BRONZE -- 50-micron (Std)  
5 & 25-micron (Opt)

SINTERED HDPE -- 25-micron (Opt)

STAINLESS STEEL SCREEN -- 75-micron (Opt)

BOWLS:

1/3-PINT TRANSPARENT POLYCARBONATE (Std)

METAL BOWL GUARD (Opt)

1/3-PINT ALUMINUM & 3-Oz. POLYCARBONATE (Opt)

BOWL DRAINS:

MANUAL OR AUTOMATIC

MAXIMUM RATED OPERATING CONDITIONS:

POLYCARBONATE BOWL

150 psig (10.3 bar) 125°F. (52°C)

METAL BOWL

250 psig (17.2 bar) 175°F. (80°C)

### FEATURES

- OUTSTANDING WATER REMOVAL EFFICIENCY OVER 96+ % -- HELPS PROTECT DOWNSTREAM EQUIPMENT.
- ALL ALUMINUM DIE-CAST BODY -- LIGHTWEIGHT YET RUGGED.
- NOW 50% FEWER PARTS, GIVING BETTER PERFORMANCE WITH EASIER MAINTENANCE.
- EASILY REPLACED AUTOMATIC OR MANUAL DRAINS -- SCREW-ON TYPE BOWL REDUCES MAINTENANCE TIME AND INVENTORY REQUIREMENTS.
- INTERNAL PARTS CAN BE DISASSEMBLED FOR CLEANING WITHOUT USE OF TOOLS AND WITHOUT REMOVING FILTER FROM AIRLINE.
- DESIGNER STYLING THAT COMPLIMENTS THE APPEARANCE OF OEM EQUIPMENT.

**NORGREN**  
LITTLETON, COLORADO



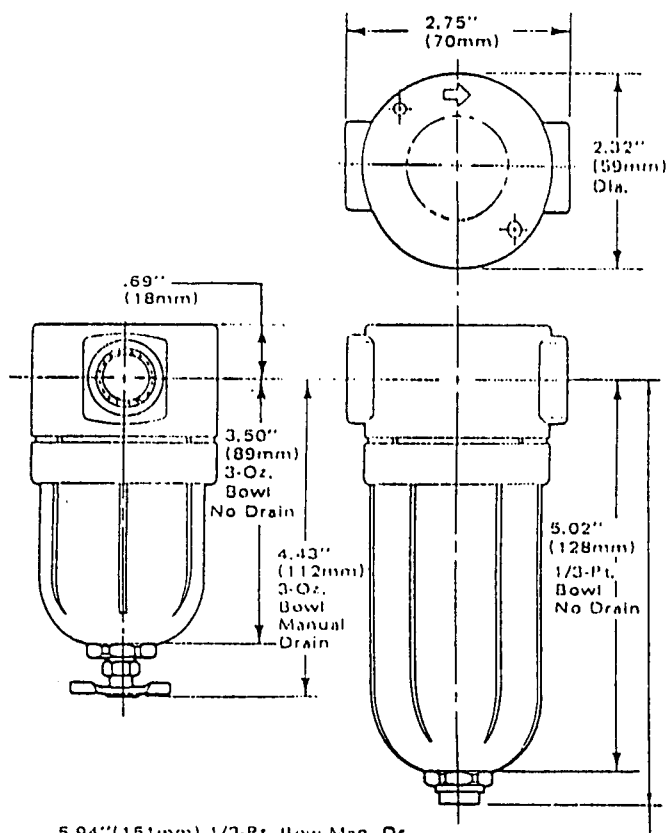
## OPERATION

Air entering the filter is guided into a swirling pattern by special design louvers (A). Airborne liquid and coarse particles are thrown against the bowl's wall by centrifugal force and run down to the bottom of the bowl. The Deflector Shield (B) is used to ensure that all air impinges against the bowl's wall and does not pass directly through the Filter Element (C) while it still retains liquid. The Baffle (D) creates a "quiet zone" at the bottom of the bowl to prevent air turbulence for re-entraining separated liquid into the outgoing air stream. Air leaving the bowl passes through the filter element where finer solid particles are removed and retained.

The filter may have either a manual or automatic drain. The Manual Drain (E) is a simple petcock at the bottom of the bowl. Manual drain models must be drained periodically. If liquid level in bowl is allowed to rise above the baffle, liquid will be carried downstream.

Filters with an automatic drain dump liquid as it collects. The liquid accumulates in the bottom of the bowl, causing the drain's float to rise, admitting bowl pressure into the drain mechanism which opens a bleed valve and allows the liquid to be expelled under pressure. The automatic drain's filter screen protects the drain mechanism from large particles that will not pass through the drain.

## DIMENSIONS



## PARTS

<b>Repair Kits:</b>	
Elastomers (no element)	3163-01
5-Micron Element (with element seals)	3163-03
Automatic Drain Assembly (standard)	3000-10
Automatic Drain Assembly (low flow)	3000-11

<b>Repair Parts:</b>	
25-Micron Filter Element (Sintered HDPE)	3161-14
50-Micron Filter Element (Sintered Bronze)	3161-03
75-Micron Filter Screen (Stainless Steel)	5361-01
Baffle/Filter Shield	3140-88

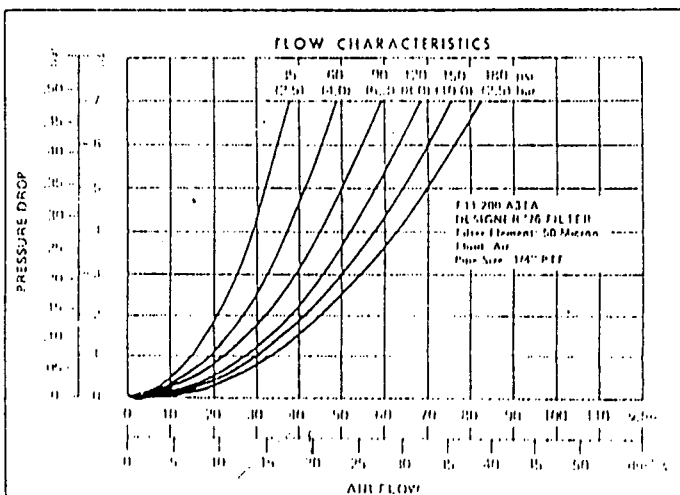
<b>Bowl Assemblies:</b>	
Transparent Polycarbonate	
3-Oz. with manual drain	3796-51
3-Oz. with closed bottom	3796-87
1/3-Pint with manual drain	3155-53
1/3-Pint with automatic drain	3154-58
1/3-Pint with automatic drain (low flow)	3154-57

<b>Bowl Guard:</b>	
1/3-Pint size	5176-02

<b>Metal Bowls:</b>	
1/3-Pint with manual drain	3170-50
1/3-Pint with automatic drain	3170-52
1/3-Pint with closed bottom	3170-01

<b>Accessories:</b>	
Bowl Guard (when ordered separately)	5176-02
Wall Mounting Bracket Kit (includes screws)	5203-02

## PERFORMANCE CHARACTERISTICS



## CAUTION

THIS FILTER MUST NOT BE USED WHERE PRESSURE OR TEMPERATURE MAY EXCEED RATED OPERATING CONDITIONS.

THE POLYCARBONATE PLASTIC BOWL USED ON THIS DEVICE CAN BE DAMAGED AND POSSIBLY FAIL IF EXPOSED TO CERTAIN SOLVENTS, STRONG ALKALINE SUBSTANCES, OR COMPRESSOR OILS CONTAINING AROMATIC HYDROCARBONS (FIRE RETARDANT OILS). FUMES OF THESE SUBSTANCES IN CONTACT WITH THE POLYCARBONATE BOWL, EXTERNALLY OR INTERNALLY, CAN ALSO DAMAGE THE BOWL. CLEAN WITH WARM WATER.

FOR USE IN LIFE SUPPORT SYSTEMS, OR FOR USE WITH FLUIDS OTHER THAN AIR, OR INERT GASES, CONSULT YOUR DISTRIBUTOR FOR FACTORY APPROVAL.

**C. A. NORGREN CO.**



## POLYPROPYLENE FILTER PLATES

### Description

Our standard polypropylene recessed, center feed, four corner alternating discharge chamber plates are superior in corrosion resistance, design and function and are available in two basic types; gasketed and non-gasketed. We also offer flush plates/frames and membrane plates.

### Maintenance

#### Gasketed Type

With this type plate, the filter cloth is caulked into a groove located around the outer edge of the plate recess.

#### Redressing Procedures:

##### To Remove Filter Cloth

To remove a filter cloth, insert a thin bladed screw driver into the groove at the outer edge of the caulking and pry a small section of the cloth out. Grab the exposed caulking with vise grip pliers and pull the remaining cloth out of the caulking groove. After the cloth is removed, inspect and remove any accumulated solids from the groove before inserting the new cloth.

##### To Install New Filter Cloth

On plates having a center feed eye with sewn centers, it will be necessary to fold the cloth on one side into a small section so that it can be inserted through the center feed eye. Once the cloth is pulled through the eye, it can be unfolded for caulking.

##### Sewn in Sash Cord Type

The drainage surface on a gasketed chamber plate has a caulking groove approximately 3/8" wide by 3/8" deep. Filter cloths are made for this type of plate by sewing in a high density polypropylene sash cord around the outer edge of the cloth. Cord diameter will depend on type of cloth and relative thickness being used. In most cases, a No. 12 (3/8" diameter) cord is used. The filter press specifications will indicate the type of cloth used. **NOTE:** It is important to keep in mind that if you change the type of filter cloth, you may have to use a different number (diameter) sash caulking. Consult JWI, Inc. for proper sizing.



### O-Ring Caulking Type

The drainage surface on this type gasketed plate has a machined caulking groove which utilizes an o-ring to hold the filter cloth in place.

The tool for caulking is a simple wedge of polypropylene or some other non-shattering type material. 1" thick x 3" wide x 8" long with one end tapered down to 5/16" thickness x 3" width, for use against the caulking material. Do not use a metal wedge.

Place the cloth against the plate and tap in a small section on the top to hold the cloth in position. Line up and caulk the diagonal sections first to insure proper alignment of the cloth. Distribute the caulking on the sides, top and bottom by caulking in the center of these long sections first. Then proceed to insert the balance of the caulking, making sure you distribute the caulking properly. Even though there may appear to be a surplus of material, this can be worked in easily.

NOTE: O-Ring Style Caulking: A hot knife is used to trim the excess cloth from the outer edge of the groove. The hot knife eliminates fraying of the filter cloth.

### Regasketing Procedure:

The o-ring type gasket material is retained in dove tail grooves around the sealing surfaces and corner discharge eyes. The gasket is installed into the grooves so that approximately .030" to .060" of the gasket is protruding out of the groove providing the plate to plate seal.

When installing the gasket, make sure the gasket end is cut square. Insert the gasket starting at the bottom center of the filter plate using a wood or plastic mallet. Many installers will stretch the gasket which reduces the cross section sizing making it easier to insert. However, by stretching it for easier insertion, it has a tendency to creep and open the butted joints of the gasket and cause a leak.

Push the gasket into the groove around the outer edge of the plate until it mates up with the center of the plate. Cut the gasket approximately 1/2" to 1" longer than required, cutting the end square. Apply one or two drops of Eastman 910 (or super glue) to one end of the gasket and quickly join it to other end and hold it under hand pressure for approximately 30 seconds. Then, crowd the excess 1/2" to 1" of gasket into the groove to insure fullness of gasket material.

The same procedure applies for the discharge eye (ring) gaskets including the bonding together of the butted ends.

Gasket life will depend on many factors, such as length of filtration cycle, temperature, and excessive closing forces. Gasket replacement should take place if the gasket appears to be delaminating.

or shreading into small particles. Also, if excessive temperatures exist and cycles are very long, the Nordel may go into additional cure, causing it to harden slightly.

While the Nordel elastomer is our standard gasket material, many other types have been used including Hypalon, neoprene, and Viton A. If the gasket life is unsatisfactory, contact JWI, Inc. for a suitable replacement.

Special Note: When gasketed plates are first put into use, the new gasket material may be slightly gummy and cause a few gaskets to pull out of the grooves when separating the plates. This condition will eliminate itself as product films are built up and act as a releasing agent. If a few of the gaskets show this characteristic, apply a silicone spray until the filter has been used for several days.

#### Non-Gasketed Type

With this type plate, the filter cloth provides the seal between the plates. Leakage will occur during operation even though JWI supplies most of the non-gasketed plate cloths with latex edging. The latex will cut down the wicking action somewhat but will not eliminate it.

#### Redressing Procedure:

##### To Remove Filter Cloth

Use diagonal cutters or snips to cut ties (if Supplied) on vertical sides and lift one cloth side off cloth pins on top of plate. Fold cloth and push thru center eye.

##### To Install New Filter Cloth

Fold and roll cloth on one side into a small section so that it can be inserted thru the center feed eye. Once the cloth is pulled thru, it can be unfolded and installed over the cloth pins on top of plate. Most types and sizes of cloth will be supplied with holes and/or grommets along the vertical sides for the installation of small plastic cable wire ties to further position and locate the cloth.

## FILTER CLOTH WASHING

Filter cloths provided with the filter press have been selected specifically for use on each particular application.

Proper care and maintenance of the filter cloths are very important to the performance of the filter press.

During filtration, the filter cloth is the initial barrier that separates solids from liquid, therefore, the filter cloth must remain porous to provide high filtration rates.

During normal operation the filter cloth may gradually become plugged with minute particles, such as those from a metal finishing sludge. These particles penetrate the cloth and become lodged in the depth of the weave, which leads to decreased filterability. These particles must be removed periodically to maintain high filtration rates and drier cakes.

Filter cloth washing is required when one of the following factors indicate plugging has occurred.

1. Initial high filtration pressure.
2. Long filtration cycles.
3. Wet filter cakes.

There are several methods used to wash cloths while they are still installed in the press. The most commonly used method with metal finishing sludge is acid washing which requires the following:

1. Acid storage tank of sufficient capacity to fill press and allow for recirculation, approximately 1.5 x holding capacity of press (7.5 gallons per cubic foot).
2. A 25% solution of hydrochloric (muriatic) acid. A lower or higher concentration may be necessary due to solubility levels of entrapped particles. NOTE: Extreme care must be taken when handling acid.
3. Low pressure (20-30 PSI max.) Acid resistant pump.
4. Necessary plumbing (hoses or rigid PVC pipe) to isolate the press from the sludge stream and allow for both recirculation to the acid storage tank and final draining of the spent acid solution. A throttling valve installed in the return line to the acid tank may be necessary to insure complete top to bottom press filling and washing of the cloths.

### Method

1. Clean all filter cloths of all sludge cake with nylon spatulas furnished.

2. Close filter press.
3. Disconnect center feed line from sludge pump.
4. Connect outlet of acid pump to center feed line to filter press.
5. Connect lower outlet of filter press to acid recirculation tank.
6. Open acid feed line to filter press.
7. Start acid feed pump. It will take considerable time to fill all of the chambers of the filter press before the acid will return to storage tank. Continually inspect filter press for leakage during filling and recirculating.
8. Allow pump to recirculate for one to two hours.
9. Turn off acid feed pump.
10. Follow air blowdown sequence in operation instructions to purge acid from filter press (use maximum 15 PSI air).
11. Disconnect acid feed system and reinstall sludge pump and outlet lines.
12. Filter press is now ready for operation.

CAUTION: Acid washing is not recommended on non-gasketed type filters unless extra precautions are taken to contain the leakage between plates.

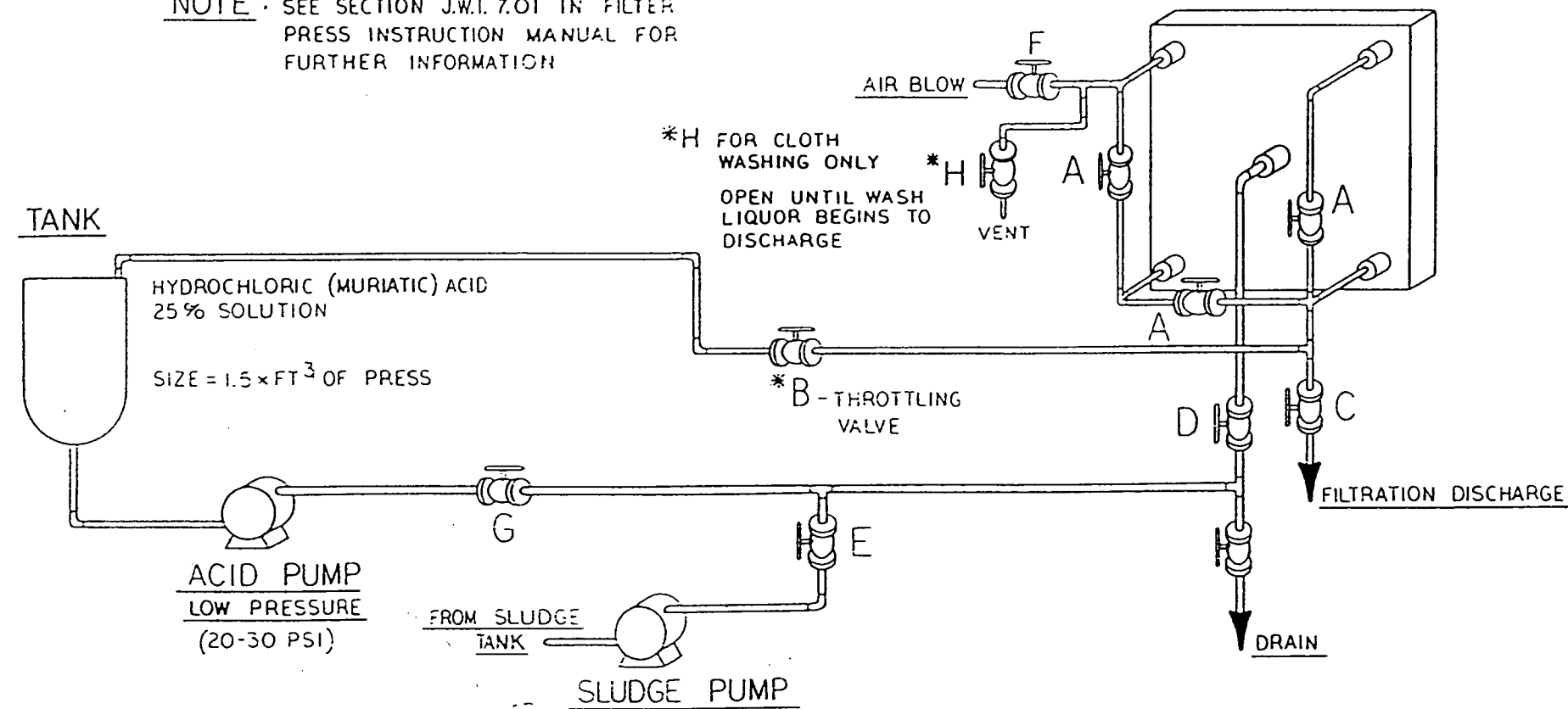
You can also acid "dip" wash the plates by immersing them in a tank of acid. The immersion method though is less efficient than thru washing in the press and will probably require at least an overnight soaking to clean out the depth of the weave. Another slight problem is that the plates are lighter than water and will float, so some method of keeping them submerged must be used.

Another method used for cloth washing is a portable high pressure (800-1200 PSI at 2-10 GPM) cold water spray unit. These units come with a hand held power wand with spray nozzle which is slowly moved over the cloths. They clean by not only flushing off the cloth surfaces but by also penetrating the cloth to flush particles out of the depth of the weave. Contact JWI Inc. for more information on availability.



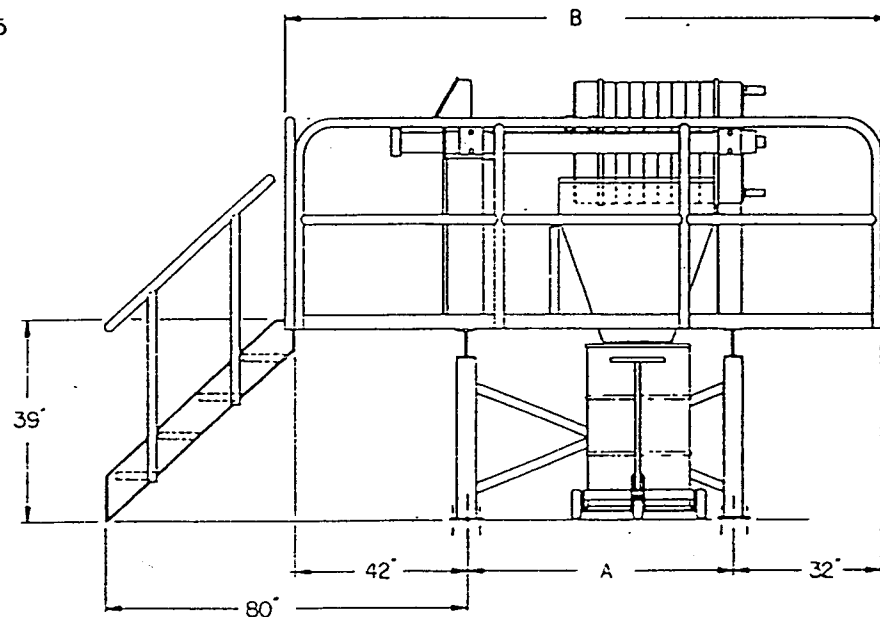
NO.

NOTE : SEE SECTION J.W.I. 7.01 IN FILTER PRESS INSTRUCTION MANUAL FOR FURTHER INFORMATION

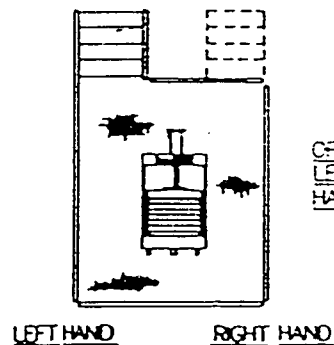


TIME OF CYCLE	A	B	C	D	E	F	G	H
FILTRATION	O	X	O	O	O	X	X	X
AIR BLOW	X	X	O	X	X	O	X	X
CLOTH WASHING	O	*	X	O	X	X	O	*
NOT SCALE	X = CLOSED				O = OPEN			

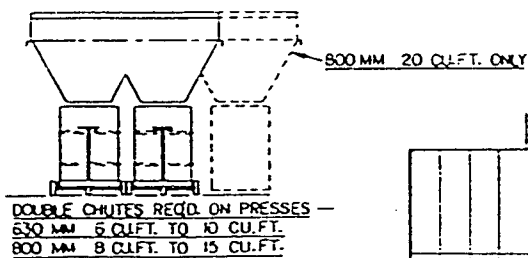
ITEM	QTY.	PART NO.	DESCRIPTION	MAT'L	WT. EA.
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A			ADDED VENT INSTR.		
SYM.			DESCRIPTION	E.C.N.	DATE



PRESS SIZE		DIM. A	DIM. B	DIM. C
30 MM	2 CU.FT.	57.75	113.75	90.50
30 MM	3 CU.FT.	64.75	140.75	90.50
30 MM	4 CU.FT.	71.50	147.50	90.50
30 MM	5 CU.FT.	80.50	156.50	90.50
30 MM	6 CU.FT.	87.25	163.25	90.50
30 MM	8 CU.FT.	103	179	90.50
30 MM	10 CU.FT.	116.50	192.50	90.50
20 MM	5 CU.FT.	76.75	152.75	97.50
20 MM	6 CU.FT.	81.25	157.25	97.50
20 MM	8 CU.FT.	90.25	166.25	97.50
20 MM	10 CU.FT.	99.25	175.25	97.50
20 MM	12 CU.FT.	108.25	184.25	97.50
20 MM	15 CU.FT.	121.75	197.75	97.50
20 MM	20 CU.FT.	144	220	97.50



OPTIONAL  
LEFT OR RIGHT  
HAND STAIRS

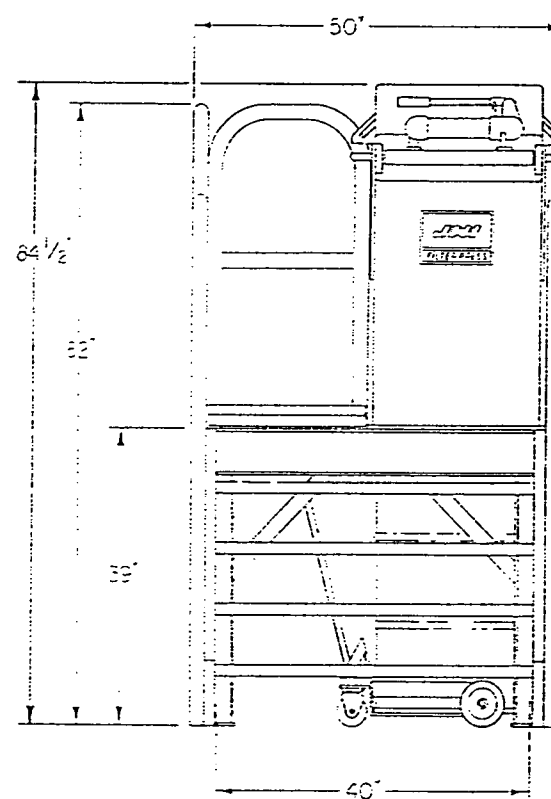
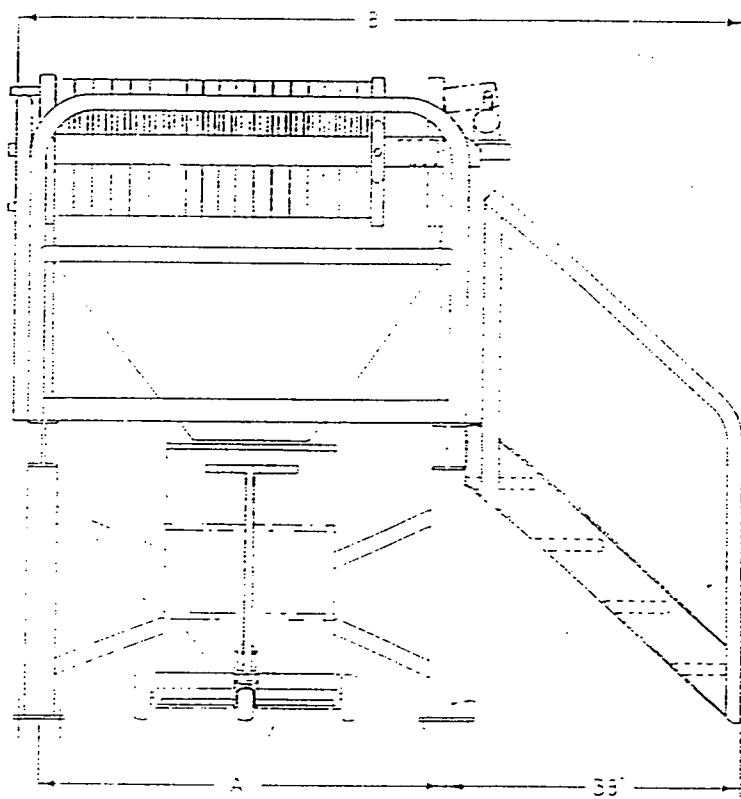


630 MM  
800 MM

JNI

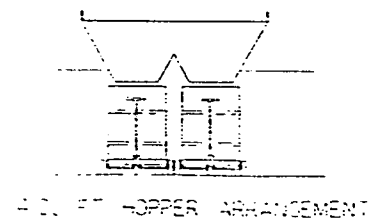
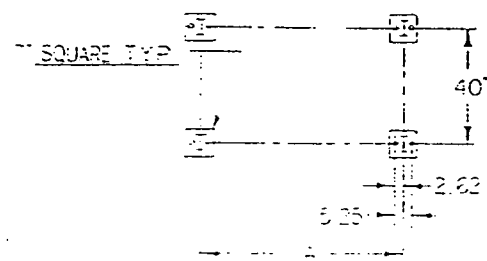
AUTO PUMP CONTROL SYSTEM

D-10098300

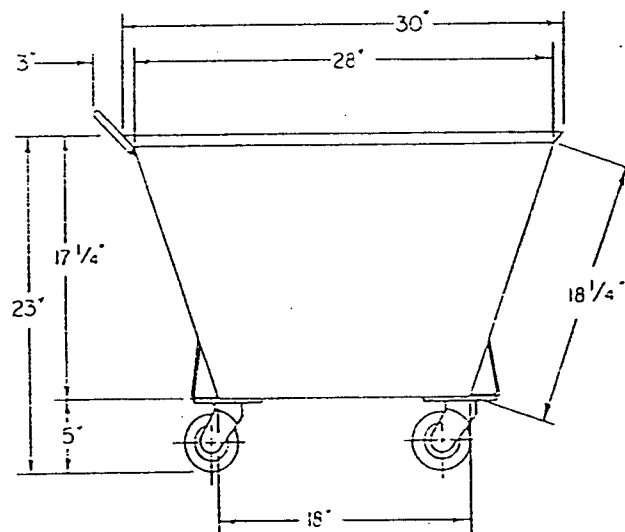
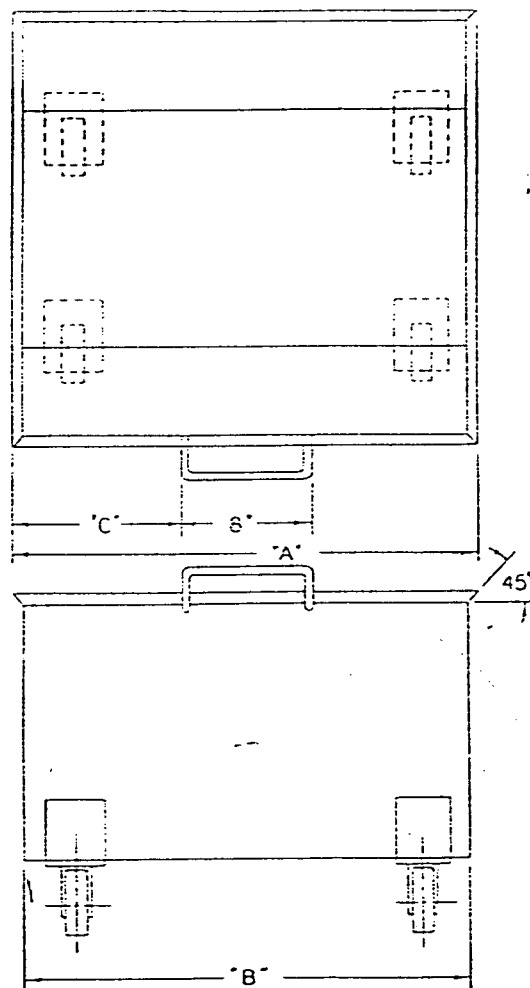


NOTE:  
REFER TO PRESS  
ASSEMBLY DRAWING  
FOR DETAILS ON  
PRESS.

PRESS SIZE	DIM A	DIM B
400W - 6CU FT	44"	58"
400W - 10CU FT	44"	58"
400W - 15CU FT	44"	58"
400W - 20CU FT	44"	58"
400W - 30CU FT	60 1/2"	58"
400W - 40CU FT	75 1/2"	58"



JWI INC. - CLEVELAND, OHIO
DRUM DISPOSAL SYSTEM
FOR 400W PRESS



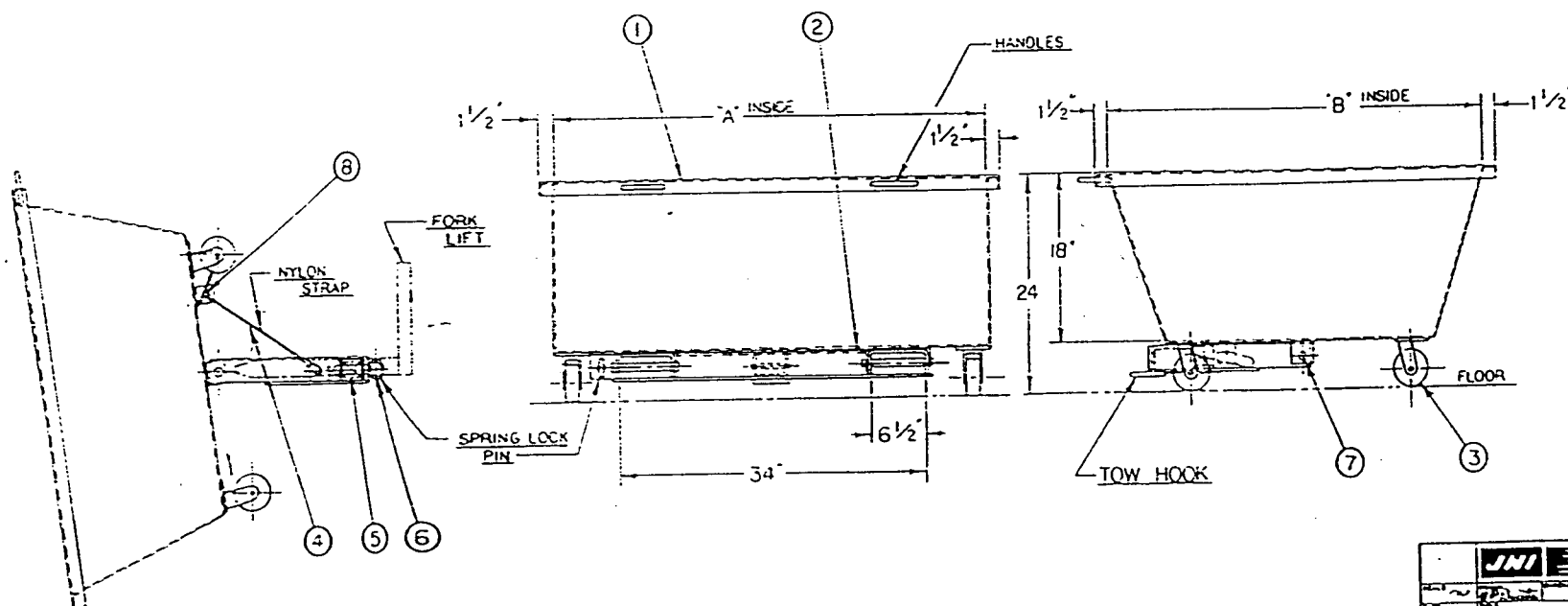
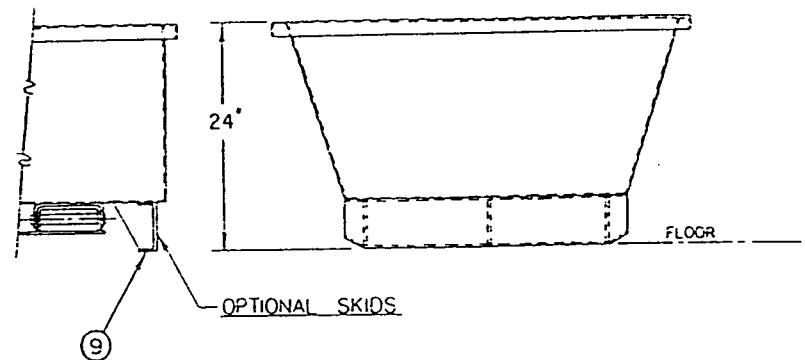
CUBIC FEET	DIM. "A"	DIM. "B"	DIM. "C"
.6	21	19 1/2	6 1/2
1	25	23 1/2	8 1/2
1.5	33	31 1/2	12 1/2
2	39	37 1/2	15 1/2
3	54	52 1/2	23
4	68	66 1/2	30

JWI INC. HOLLAND MICH.		
DATE: 6-14-55	DESIGNED BY: [Signature]	DRAWN BY: [Signature]
FILTER CAKE DUMPSTER		
FOR 470MM. PRESS		



WHEEL SIZE IN. FT.	SIZE "A" x "B"	NO. REQ'D
2	44 x 36	1
3	52 x 36	1
4	60 x 36	1
5	60 x 36	1
6	72 x 36	1
8	82 x 36	1
10	72 x 42	1
15	48 x 42	2
20	60 x 42	2
30	58 x 52	2
50	66 x 60	2

ITEM	QUAN	DESCRIPTION
1	1	DUMPSTER BIN
2	1	FORKLIFT RACK
3	4	CASTERS
4	1	NYLON STRAP
5	1	SPRING
6	1	LOCK PIN
7	2	PIVOT PIN
8	2	STRAP PIN
9	2	SKIDS



<b>JNI</b>	
DATE	1/1/80
BY	JNI
DESCRIPTION	FILTER CAKE DUMPSTER
REVISION	SELF DUMPING

## REMOVABLE DISTANCE PIECE

1. FOR FUTURE FILTER PRESS EXPANSION WITHOUT STRUCTURAL CHANGES.
2. REMOVAL OF DISTANCE PIECE ALLOWS INSTALLATION OF ADDITIONAL PLATES FOR MORE AREA AND CAPACITY.
3. SEE TABLE I FOR MAXIMUM SIZE OF DISTANCE PIECE.
4. DISTANCE PIECE CAN BE USED FOR SIZES LESS THAN MAXIMUMS IN TABLE I.
5. TABLE I ASSUMES STANDARD  $1\frac{1}{4}$ " CAKE THICKNESS.

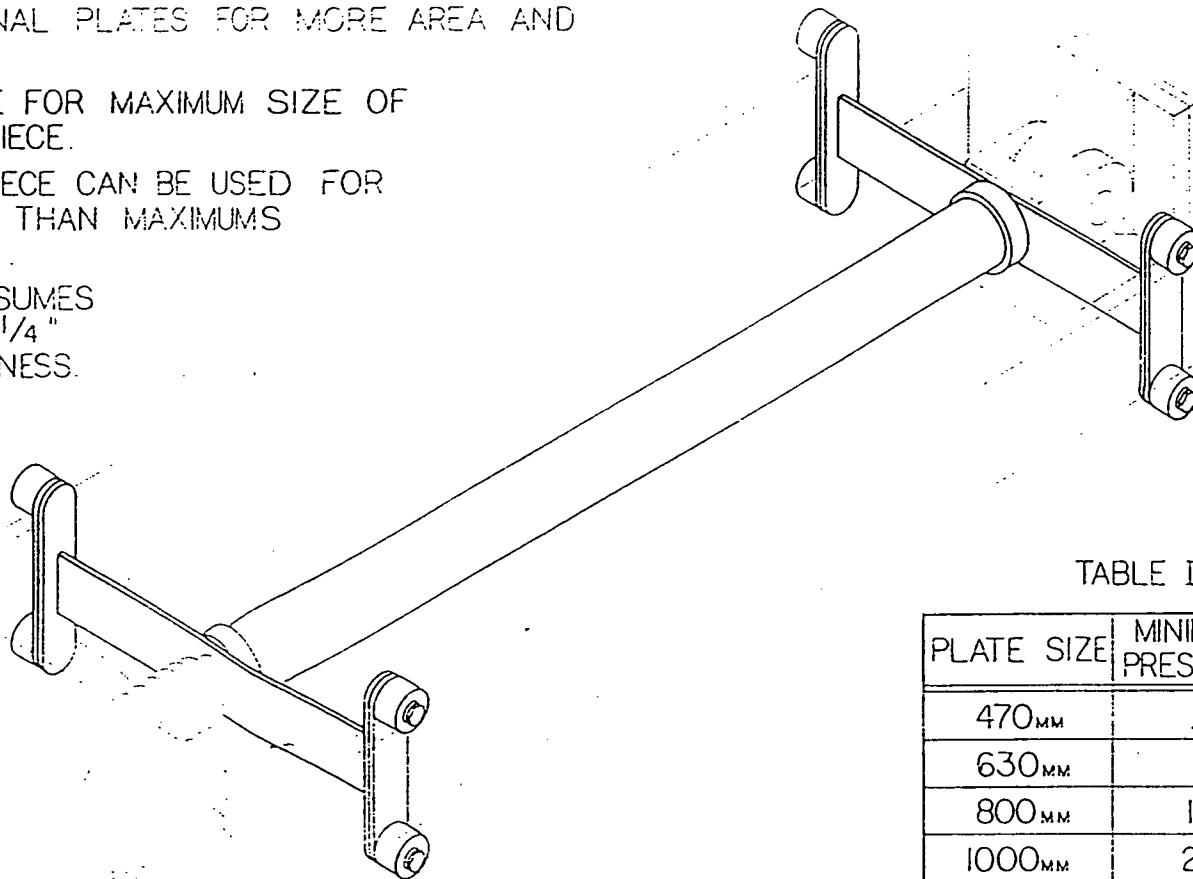


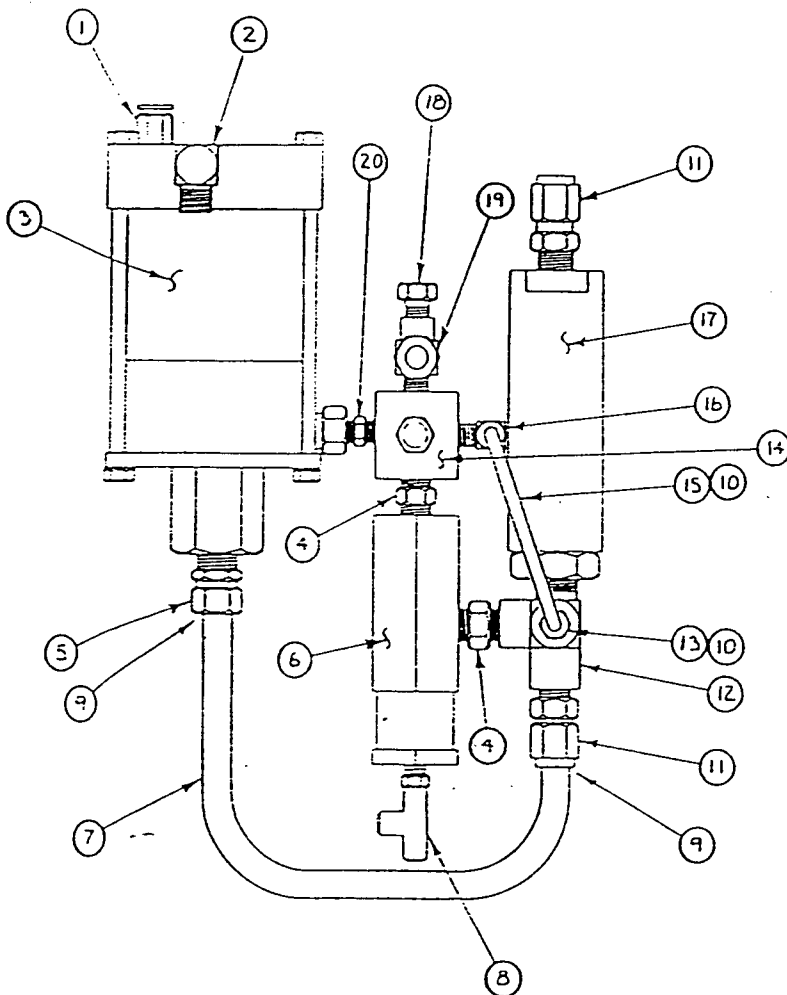
TABLE I

PLATE SIZE	MINIMUM PRESS SIZE	MAXIMUM PRESS SIZE
470MM	.6 FT <sup>3</sup>	4 FT <sup>3</sup>
630MM	2 FT <sup>3</sup>	10 FT <sup>3</sup>
800MM	10 FT <sup>3</sup>	20 FT <sup>3</sup>
1000MM	25 FT <sup>3</sup>	40 FT <sup>3</sup>
1200MM	40 FT <sup>3</sup>	70 FT <sup>3</sup>

JWI INC. HOLLAND MICH.

REMOVABLE DISTANCE PIECE

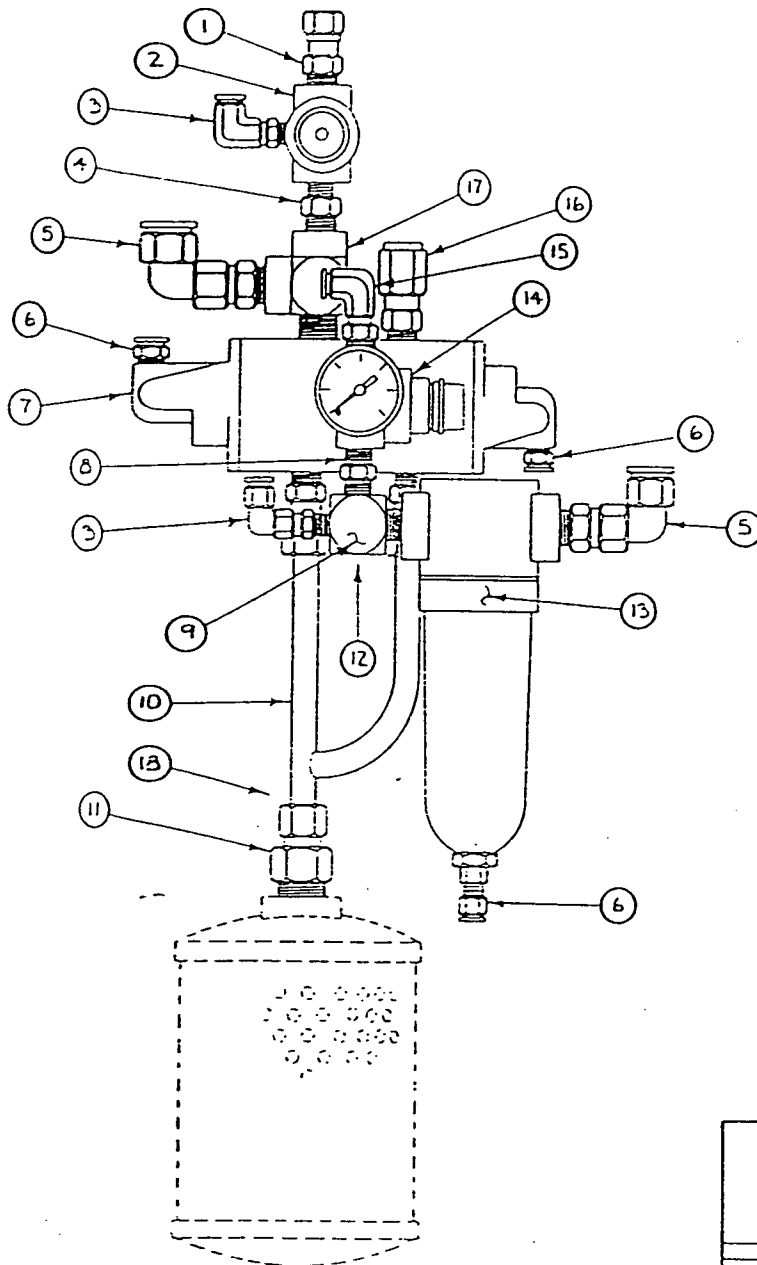
C-10017100



20	1	10015101	PIPE NIPPLE		
19	1	10042300	MALE ELBOW, PORTED 1/4 NPT		
18	1	10020900	MALE PIPE ADAPTER		
17	1	10021000	HYDRAULIC IN-LINE FILTER		
16	1	10017501	MALE ELBOW		
15	1	10057200	1/4 O.D. x .055 WALL x 8 SS TUB		
14	1	10057600	RELIEF VALVE		
13	1	10017400	MALE CONNECTOR		
12	1	10084000	STREET TEE PORTED 1/4 NPT		
11	2	10017402	MALE CONNECTOR		
10	2	10018800	TUBE SLEEVE 1/4		
9	2	10018901	TUBE SLEEVE 1/2		
8	1	10017900	MALE BRANCH TEE SWIVEL		
7	1	10057305	1/4 O.D. x .049 WALL x 8 SS TUB		
6	1	10047101	RELEASE VALVE		
5	1	10017401	MALE CONNECTOR		
4	2	10018100	PIPE NIPPLE		
3	1	10042600	HYDRAULIC PUMP		
2	1	10018300	MALE PIPE ELBOW		
1	1	10017401	MALE CONNECTOR		
ITEM	QTY.	PART NO.	DESCRIPTION	MAT'L	WT. LB.

150MM 500MM 1000MM		JMI	
SCALE	DATE	REV.	REV.
DATE	DATE	DATE	DATE
FIRST ISSUE		HYDRAULIC MODULE	
C-10017100		C-10017100	

C-10017200



18	1	10018601	TUBE SLEEVE S.S.		
17	1	10018601	STREET TEE		
16	1	10017401	MALE CONNECTOR		
15	1	10019601	MALE ELBOW SWIVEL 90°		
14	1	10024702	REGULATOR w/GUAGE		
13	1	10042500	FILTER - AIR		
12	1	10019301	MALE PIPE ELBOW		
11	1	10024500	FEMALE CONNECTOR BRASS		
10	1	10042000	Y-TUBE EXHAUST BRACKET		
9	1	10042200	STREET ELBOW PORTED 1/2" x 1/2"		
8	1	10013101	PIPE NIPPLE		
7	1	10042400	SPOOL VALVE		
6	3	10019401	MALE CONNECTOR		
5	2	10019600	MALE ELBOW SWIVEL 90°		
4	1	10018001	REDUCING PIPE NIPPLE		
3	2	10019602	MALE ELBOW SWIVEL 90°		
2	1	10024703	REGULATOR		
1	1	10020900	MALE PIPE ADAPTOR		

630 MM 500 MM 1000 MM		JMI	
SCALE	DATE	CHECKED	BY
2-19-55			
FIRST ISSUE		AIR MODULE	
C-10017200		DR	





JWI, Inc. 2155 112th Avenue / Holland, Michigan 49424 U.S.A. / 616-772-9011 / TELEX 5101008013

J - P R E S S    4 7 0    M M

S P A R E    P A R T S    P R I C E    L I S T

DESCRIPTION	UNIT PRICE	QUANTITY RECOMMENDED	TOTAL PRICE
Filter Cloths (Gasketed & Non-Gasketed)	\$ 34.00	5 Int. 1 Head, 1 Tail	\$
Gasket Material (Sold in 100' Lengths)	\$ 95.00 per 100'	100'	\$
Plates - Non-Gasketed	\$ 425.00		\$
Plates - Gasketed	\$ 450.00	1-#1, 1-#3	\$
Back-Up Plate	\$ 375.00		\$
Dumpster	\$ 670.00		\$
Dumpster Replacement Strap	\$ 45.00		\$
Sludge Pump (Air Diaphragm)	\$ 895.00		\$
Bellows	N/A		
Drum Cart	\$ 150.00		\$
Automatic Pump Control System	\$2,350.00		\$
Hydraulic Jack & Ram	\$ 575.00		\$
Cleaning Spatulas (14")	\$ 22.00		\$

TOTAL SPARE PARTS PACKAGE: \$ \_\_\_\_\_

SEND THIS ORDER TO:  
JWI, INC.  
2155 112th Avenue  
Holland, MI 49424

SHIP TO: \_\_\_\_\_

ATTN: Sales/Service Manager

PURCHASE ORDER #: \_\_\_\_\_

\_\_\_\_\_  
Authorized Signature



JWI, Inc. 2155 112th Avenue / Holland, Michigan 49424 U.S.A. / 616-772-9011 / FAX (616) 772-4516

J - P R E S S      6 3 0      M M

S P A R E      P A R T S      P R I C E      L I S T

DESCRIPTION	UNIT PRICE	QUANTITY RECOMMENDED	TOTAL PRICE
Filter Cloths (Gasketed & Non-Gasketed)	\$ 40.00		\$
Gasket Material (Sold in 100' Lengths)	\$ 95.00 per 100'		\$
Plates - Non-Gasketed	\$ 540.00		\$
Plates - Gasketed	\$ 610.00		\$
Back-Up Plate	\$ 450.00		\$
Dumpster	\$ 990.00		\$
Dumpster Replacement Strap	\$ 45.00		\$
Sludge Pump (Air Diaphragm)	\$1,150.00		\$
Bellows	\$ 55.00		\$
Drum Cart	\$ 150.00		\$
Automatic Pump Control System	\$2,350.00		\$
Complete Hydraulic Module	\$ 975.00		\$
Complete Air Module	\$ 675.00		\$
Cleaning Spatulas (14")	\$ 22.00		\$

TOTAL SPARE PARTS PACKAGE: \$ \_\_\_\_\_

SEND THIS ORDER TO:  
JWI, INC.

2155 112th Avenue  
Holland, MI 49424

SHIP TO: \_\_\_\_\_

ATTN: Sales/Service Manager

PURCHASE ORDER #: \_\_\_\_\_

\_\_\_\_\_  
Authorized Signature



JWI, Inc. 2155 112th Avenue / Holland, Michigan 49424 U.S.A. / 616-772-9011 / FAX (616) 772-4516

J - P R E S S    8 0 0    M M

S P A R E    P A R T S    P R I C E    L I S T

DESCRIPTION	UNIT PRICE	QUANTITY RECOMMENDED	TOTAL PRICE
Filter Cloths (Gasketed & Non-Gasketed)	\$ 48.00		\$
Gasket Material (Sold in 100' Lengths)	\$ 95.00 per 100'		\$
Plates - Non-Gasketed	\$ 735.00		\$
Plates - Gasketed	\$ 875.00		\$
Back-Up Plate	\$ 575.00		\$
Dumpster	\$1,075.00		\$
Dumpster Replacement Strap	\$ 45.00		\$
Sludge Pump (Air Diaphragm)	\$1,225.00		\$
Bellows	\$ 70.00		\$
Drum Cart	\$ 150.00		\$
Automatic Pump Control System	\$2,350.00		\$
Complete Hydraulic Module	\$ 975.00		\$
Complete Air Module	\$ 675.00		\$
Cleaning Spatulas (40")	\$ 30.00		\$

TOTAL SPARE PARTS PACKAGE: \$ \_\_\_\_\_

SEND THIS ORDER TO:  
JWI, INC.  
2155 112th Avenue  
Holland, MI 49424

SHIP TO: \_\_\_\_\_

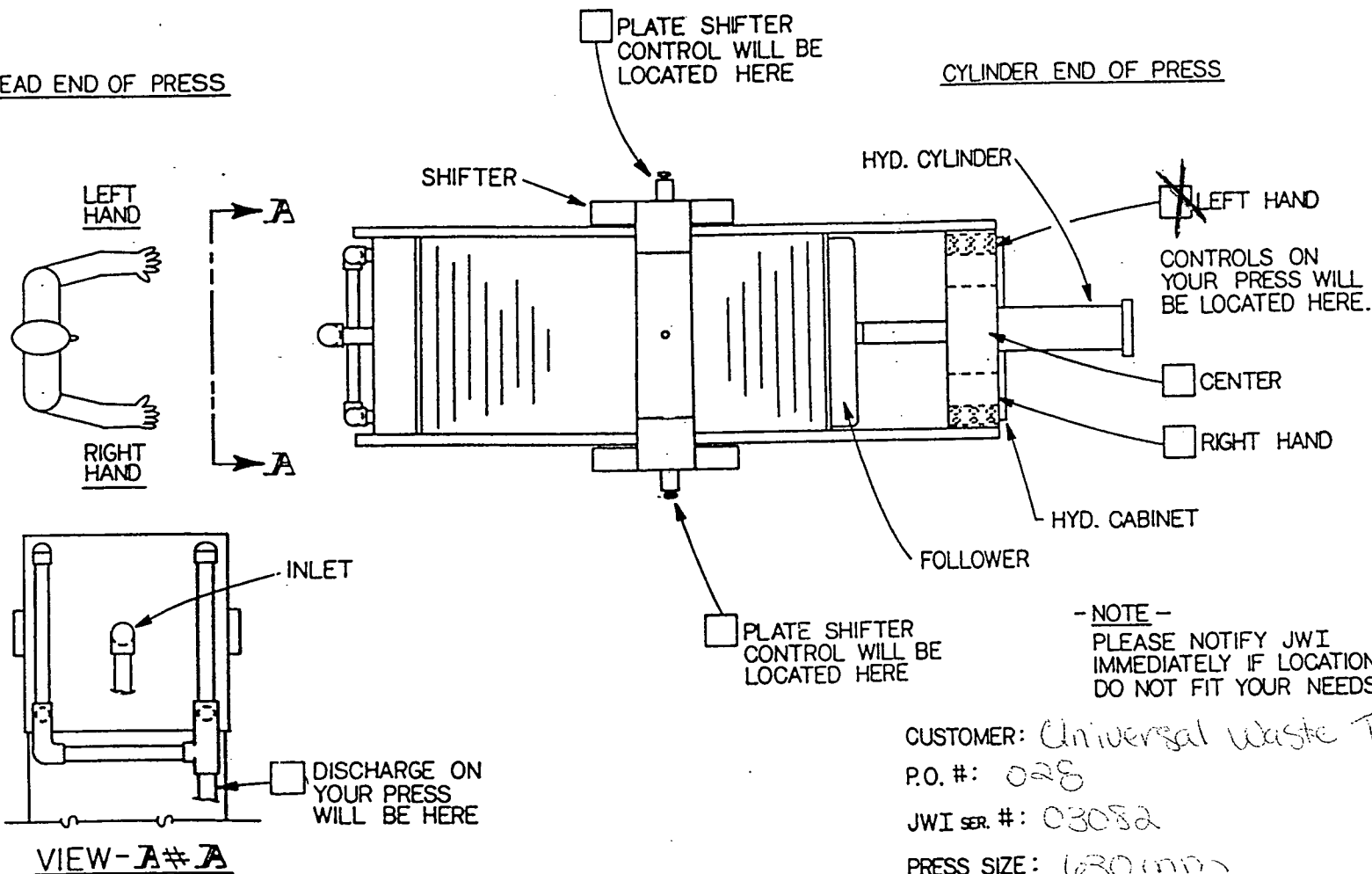
ATTN: Sales/Service Manager

PURCHASE ORDER #: \_\_\_\_\_

\_\_\_\_\_  
Authorized Signature

HEAD END OF PRESS

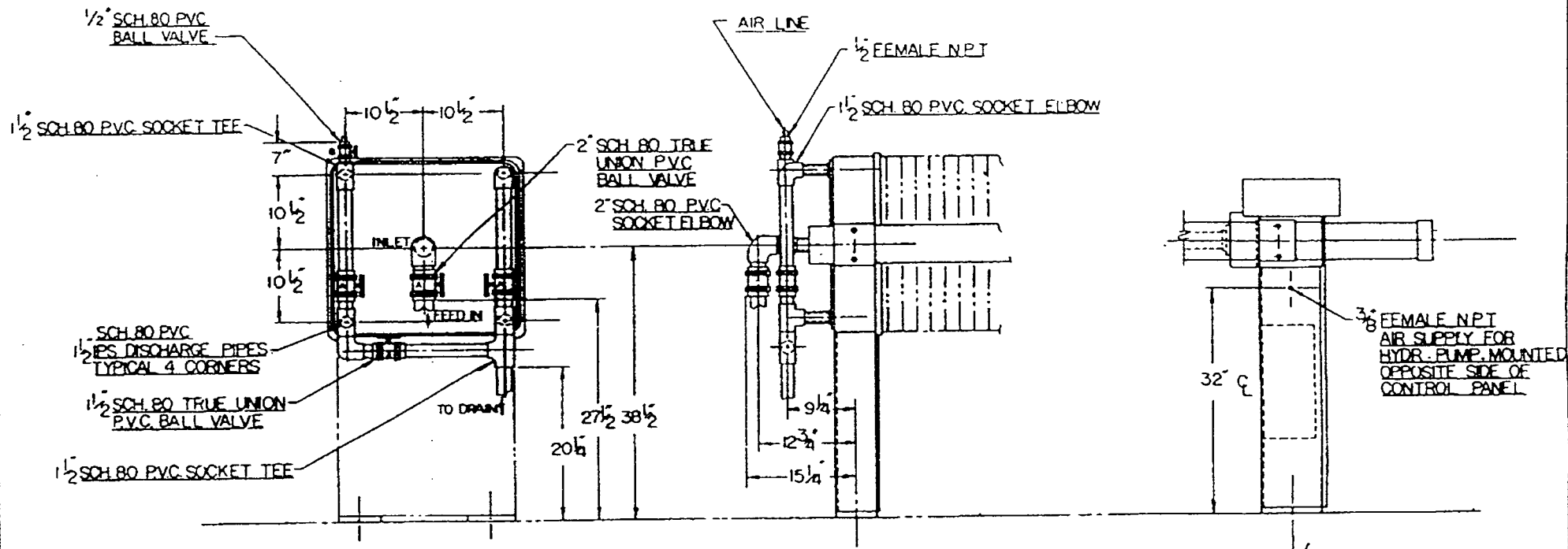
CYLINDER END OF PRESS



CUSTOMER: Universal Waste Transit  
P.O. #: 028  
JWI SER. #: 03082  
PRESS SIZE: 630mm

ITEM	QTY.	PART NO.	DESCRIPTION	MAT'L	WT. EA.
<div style="display: flex; justify-content: space-between;"> <div> <p>SCALE: <u>1/4"</u></p> <p>DATE: 4-27-83</p> <p>SUPP'D BY: <u>JWI</u></p> </div> <div> <p>DRAWN: <u>VVH</u></p> <p>CHECKED: <u>REV.</u></p> <p>TITLE: <b>FILTER PRESS CHECK LIST</b></p> <p>DWG. NO.: <b>C10060000</b></p> </div> <div> <p>SHT. <u>OF</u></p> </div> </div>					
CHK BY	CHG. BY	SYM.	DESCRIPTION	E.C.N.	DATE



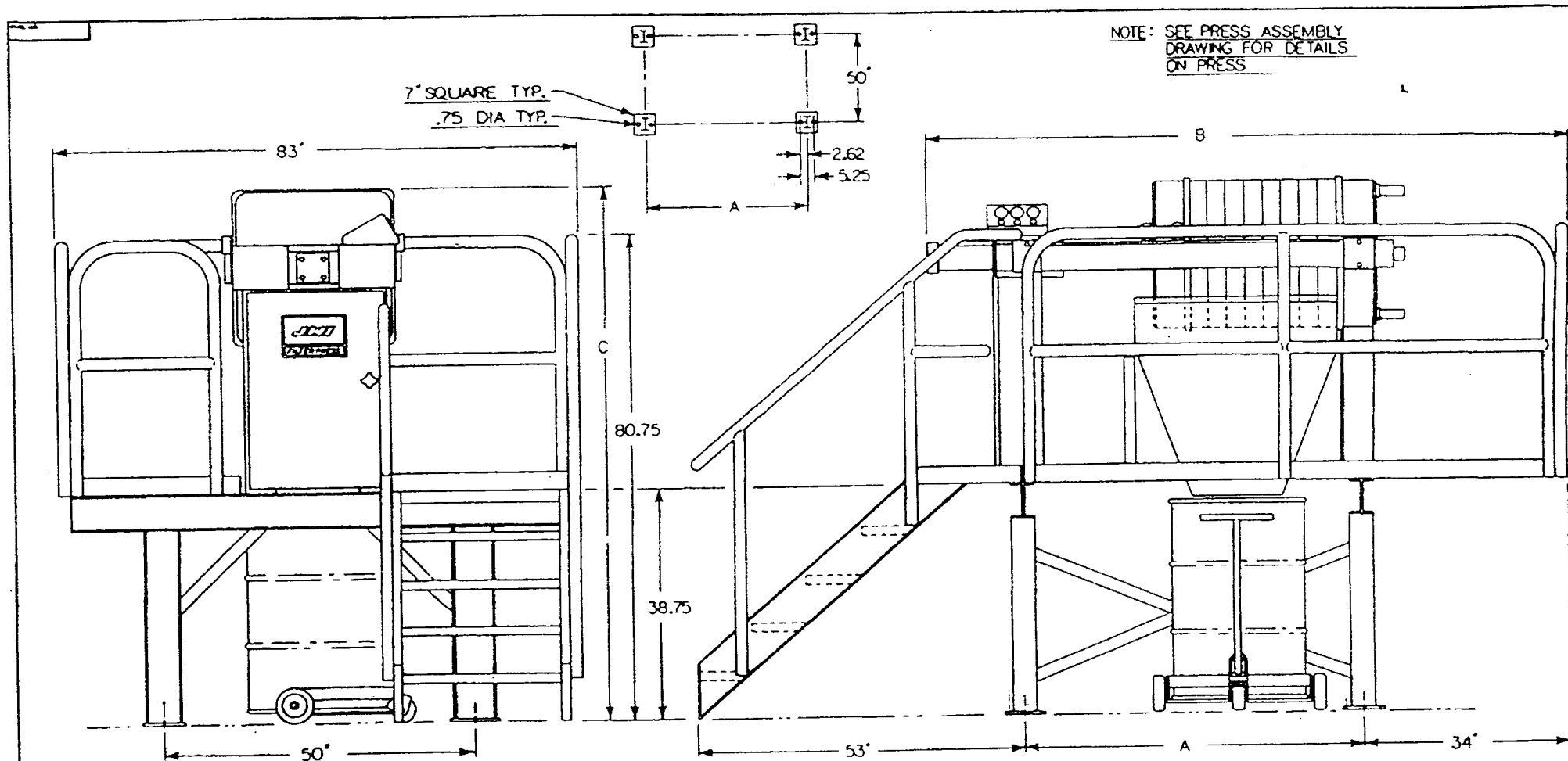


- A VALVES - OPEN DURING FEED  
CLOSED DURING AIR BLOW DOWN
- B VALVE - CLOSED DURING FEED  
OPEN DURING AIR BLOW DOWN

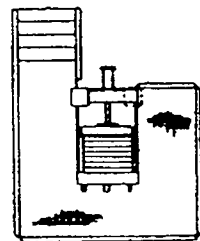
NOTE: AT END OF AIR BLOW DOWN, A VALVES (EXCEPT INLET FEED) SHOULD BE OPENED FOR A FEW MINUTES TO DRAIN THE PLATES PRIOR TO OPENING THE PRESS.

AIR BLOW DOWN MANIFOLD  
CENTER FEED-FOUR CORNER DISCHARGE  
POLYPROPYLENE PLATES

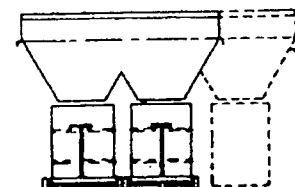
J.W.I. INC.	J-PRESS		CUSTOMER		
	PLATE SIZE	630 MM	DATE	DRWN	CHKD
CODE	FEET	WALLS	NO. OF CHARGES		
HOLLAND NICH.	4000				



PRESS SIZE	DIM. A	DIM. B	DIM. C
630 MM 2 CUFT.	57.75	110.25	90.25
630 MM 3 CUFT.	64.75	117.25	90.25
630 MM 4 CUFT.	71.50	124	90.25
630 MM 5 CUFT.	80.50	133	90.25
630 MM 6 CUFT.	87.25	139.75	90.25
630 MM 8 CUFT.	103.00	155.50	90.25
800 MM 10 CUFT.	99.25	158.75	97.25
800 MM 12 CUFT.	108.25	167.75	97.25
800 MM 15 CUFT.	121.75	181.25	97.25
800 MM 20 CUFT.	144.00	203.50	97.25



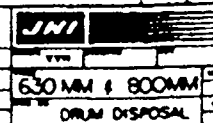
OPTIONAL  
LEFT OR RIGHT  
HAND STAIRS

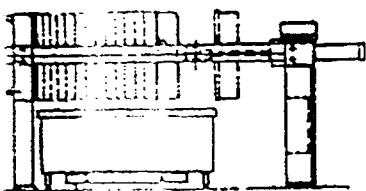


DOUBLE CHUTES REQ'D ON PRESSES -  
630 MM 6 CUFT. TO 10 CUFT.  
800 MM 8 CUFT. TO 15 CUFT.

800 MM 20 CUFT. ONLY

PRESS SIZE	DIM. A	DIM. B	DIM. C
630 MM 2 CUFT.	57.75	110.25	90.25
630 MM 3 CUFT.	64.75	117.25	90.25
630 MM 4 CUFT.	71.50	124	90.25
630 MM 5 CUFT.	80.50	133	90.25
630 MM 6 CUFT.	87.25	139.75	90.25
630 MM 8 CUFT.	103.00	155.50	90.25
800 MM 10 CUFT.	99.25	158.75	97.25
800 MM 12 CUFT.	108.25	167.75	97.25
800 MM 15 CUFT.	121.75	181.25	97.25
800 MM 20 CUFT.	144.00	203.50	97.25

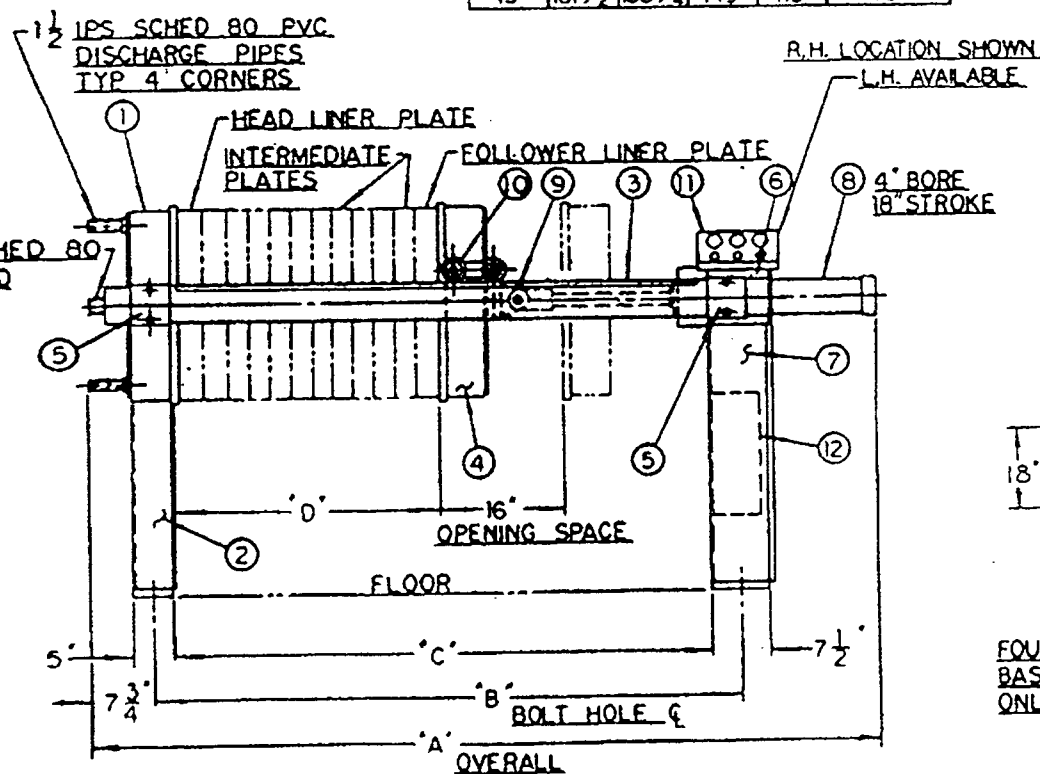
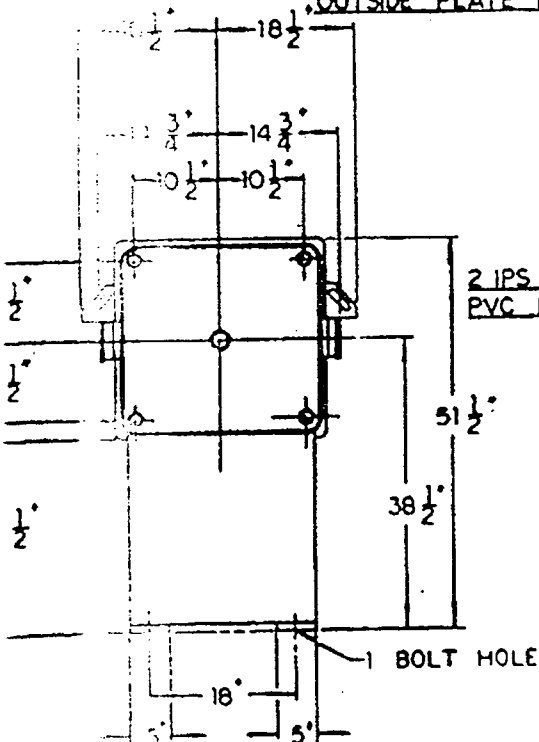




PLATES TO BE CENTER FEED 4 CORNER  
DISCHARGE. PLATES OF POLYPROPYLENE  
GASKETED CONSTRUCTION WITH  
RECESSES FOR  $1\frac{1}{4}$ " THICK CAKES

FILTER CAKE DUMPSTER  
(SELF DUMPING) OPTIONAL

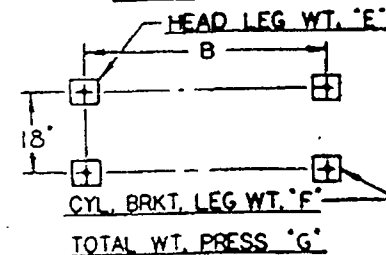
OUTSIDE PLATE HANDLES



24' SIZE (630 MM) FILTER PRESS					
CUBIC FEET	A	B	C	D	NO OF CHAMBERS
1	75 1/2	49 1/4	43	9	3
1.5	80 3/4	54 1/2	48 1/4	14 1/4	5
2	84	57 3/4	51 1/2	17 1/2	7
3	91	64 3/4	58 1/2	24 1/2	10
4	97 3/4	71 1/2	65 1/4	31 1/4	13
5	106 3/4	80 1/2	74 1/4	40 1/4	17
6	113 1/2	87 1/4	81	47	20
8	129 1/4	103	96 3/4	62 3/4	27
10	142 3/4	116 1/2	110 1/4	76 1/4	33
12	159 1/4	133	126 3/4	92 3/4	40
13	170	143 3/4	137 1/2	103 1/2	43
15	181 1/2	155 1/4	149	115	50

ITEM NO.	QUAN.	DESCRIPTION
1	1	HEAD
2	1	HEAD LEG
3	2	SIDE BAR
4	1	FOLLOWER
5	4	JOGGLE PLATE
6	1	CYLINDER BRACKET
7	1	CYLINDER BRACKET LEG
8	1	CYLINDER
9	2	SS SIDE BAR CAPS
10	3	FOLLOWER ROLLER
11	1	CONTROL CENTER
12	1	HYDRAULIC PUMPING UNIT

WEIGHT IN POUNDS			
CUBIC FEET	E	F	G
1	1208	806	2014
1.5	1274	849	2123
2	1336	891	2227
3	1445	963	2408
4	1553	1036	2589
5	1681	1121	2802
6	1789	1193	2982
8	2026	1350	3376
10	2242	1495	3737
12	2480	1653	4133
13	2595	1730	4325
15	2824	1883	4707



FOUNDATION DIMENSIONS ARE FOR  
BASIC LAYOUT ONLY. GROUT BOLTS  
ONLY AFTER INSTALLATION OF PRESS

JUNI	
630mm (24")	
FILTER PRESS	