Certification Report

Remedial System Installation
AOC #5 Soil and
AOC #16 Groundwater and Soil

Farrell Road Site
Town of Geddes
Onondaga County, New York

Prepared for:

Martin Marietta Corporation
Syracuse, New York

April 1995

QUALITY
INTEGRITY
CREATIVITY
RESPONSIVENESS

RUST ENVIRONMENT & INFRASTRUCTURE

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1.0 INTRODUCTION

This report summarizes remedial construction activities that were conducted at the Farrell Road Plant (FRP) from October - December 1994. The construction involved installation of a soil vapor extraction (SVE) system in a former solvent storage tank area (AOC #5) and installation of a SVE and groundwater recovery and treatment system at a former maintenance garage (AOC #16). Record drawings which show the completed installation are included in Appendix A. Project photographs are included as Appendix B.

1.1 PROJECT BACKGROUND AND HISTORY

The Farrell Road Plant (Site) is located on Farrell Road in the Town of Geddes, Onondaga County, New York (Figure 1). The Site consists of approximately 156 acres of which approximately 81 acres have been classified as a Class One wetland by the New York State Department of Environmental Conservation (NYSDEC). The property was developed in the early 1960s by General Electric Aerospace (GEA) as a manufacturing center, and was used as a design, manufacturing and assembly center for radar and sonar equipment. By December, 1992, GEA had moved all operations from the Site to other locations. Ownership was transferred to Martin Marietta Corporation (MMC) in April, 1993. In December, 1993, ownership was transferred to Syroco, Inc., which is an unrelated corporation who currently uses the buildings for storage and transfer of lawn furniture products manufactured at a local plant.

The 156 acre site includes four buildings: Building 1, Building 2, the Test Building, and the Maintenance Garage. The location of these buildings is shown on Figure 2. The four buildings are enclosed by a perimeter fence which is bordered by large paved parking areas on the east and west. The Site was listed by NYSDEC on the Registry of Inactive Hazardous Waste Disposal Sites (Site No. 734055). MMC entered into an Order on Consent ("Order") with NYSDEC (Index #A7-0308-93-10), dated 21 March, 1994, to conduct Interim Remedial Measures (IRMs) at the site.

Based on a Phase I Site Assessment Report prepared by ERM-Northeast, Inc. (ERM), sixteen areas of concern (AOC) were identified as needing further investigation. This Summary Report addresses construction activities for two IRMs which were conducted at AOC #5 and AOC #16. AOC #5 consists of the area associated with a former underground solvent storage tank area on the west side of Building No. 2. AOC #16 consists of the area associated with a former gasoline underground storage tank (T-68) near the former Maintenance Garage.

1.2 SCOPE OF WORK

An IRM Workplan was prepared in April and May 1994 by ERM for AOC #5 and AOC #16. Each Workplan provided a description of the following IRM activities:

- AOC site preparation,
- identification of the selected treatment technology,
- construction documents and design considerations,

- excavation activities,
- waste handling procedures (characterization, storage, transport and disposal),
- field implementation components,
- AOC specific sampling and monitoring program, and
- AOC site restoration.

A pilot test was performed by ERM in July, 1993 to determine the feasibility of employing the SVE technology in AOC #5 as well as to produce an approximate model of the effective radius of influence to determine the appropriate spacings for the proposed SVE wells. The results of the pilot test were summarized in the AOC #5 Workplan and were used for the design and location of the soil vapor extraction wells at AOC #5.

The Workplans also provided a design of the SVE system at AOC #5 and the SVE and groundwater recovery and treatment system at AOC #16. The design information included construction details such as record drawings, equipment lists, and pipe and equipment layout schematics. The basis for construction was provided on the drawings and equipment lists provided in the ERM Workplans for both areas.

2.0 IRM ACTIVITIES

2.1 BASIS FOR DESIGN

As detailed above, the design used for construction of the SVE system for AOC #5 and the SVE and groundwater recovery and treatment system for AOC #16 was developed by ERM and detailed in the IRM Workplans.

The contract document used for bidding the construction phase activities consisted of contract drawings, equipment lists, and pipe and equipment arrangement schematics produced by ERM in the AOC #5 and AOC #16 Workplans.

An addendum to the original bid document was prepared by ERM on August 26, 1994. The purpose of this addendum was to detail several items not included in the original document or items determined to be erroneous.

2.2 CONSTRUCTION ACTIVITIES

2.2.1 General

The construction contractor responsible for installation of the IRMs for AOC #5 and AOC #16 was R.E. Wright Associates (REW) of Middletown, Pennsylvania. REW performed construction activities including general labor, trench excavation, concrete saw-cutting, piping installation, forming and concrete work, and general equipment arrangement. Subcontractors used by REW included:

- Parratt Wolff, Inc. - drilling, well installation and development,
- Myriad Construction - electrical installation,
- Environmental Restoration Services (ERS) - equipment manufacture and installation,
- Rich and Gardner - treatment building installation, and
- Atlas Fence - fence installation.

RUST Environment & Infrastructure of New York (RUST) was responsible for performing engineering oversight during construction activities. RUST's responsibilities during construction included review of the contractor's installation to assure compliance with the design, review design modifications proposed by REW, maintain documentation of day to day activities, and report to MMC any discrepancies noted in application of health and safety or other standard working protocols. During construction, RUST maintained red-line copies of the construction drawings, coordinated project meetings, prepared daily and weekly reports and project meeting minutes, and documented all changes to the original design.

2.2.2 Site Preparation

REW and RUST mobilized equipment and personnel to the Site on October 3, 1994. A field office was set-up for RUST and REW within an abandoned guard building adjacent to Building 2. During the week of October 3, 1994, all site personnel attended MMC contractor health and safety training. All new personnel arriving on-site were required to show their updated MMC health and safety card, proof of OSHA 40 hour training and eight hour refresher, and sign in at the field office.

Prior to the start of work, REW personnel obtained the necessary building permits from the Town of Geddes. REW and RUST personnel marked out locations of the air injection, vapor recovery, monitoring and recovery wells at AOC #5 and AOC #16. ERM design drawings were used to scale off the locations. Where discrepancies were encountered or locations were altered based on physical restrictions within buildings, changes were verified with ERM design engineers and were noted on the red-line drawings.

Prior to initiating drilling or subsurface activities, a general meeting was held with Syroco representatives to review the construction schedule and activities to be performed within Building 2 and the garage. Priority was given to AOC #5 in order to minimize the time and storage space lost within the warehouse.

2.2.3 Well Drilling and Installation

Well drilling, installation, and development was performed by Parratt Wolff of Syracuse, New York. Other activities completed by Parratt Wolff included installation of protective well boxes and converting the AOC #5 pilot test (stick-up) well into a flush mount well adjacent to Building 2.

Prior to initiating any drilling or saw-cutting activities within Building 2, Parratt Wolff installed two exhaust venting holes through the wall of Building 2 to allow all gas-powered equipment to vent to the outside. REW personnel installed a third vent hole within Building 2 using a 4-inch diamond blade core saw. REW personnel cored through the concrete floor at well locations using a 6-inch diamond blade concrete corer. Well locations at AOC #5 and AOC #16 were varied slightly, typically less than 3 feet from design, to accommodate for the mast on the drill rig or to avoid active subgrade piping. Any well location changes were noted on the drawings.

During the initial boring and well drilling activities, ERM design hydrogeologists requested that the following well design change be implemented at the well locations where red till was encountered shallower than designed. The design change required that where red till was encountered shallower than 15 feet below grade, the well should be drilled 1 foot into the red till. The well would then be backfilled with 6-inches of bentonite and then 6-inches of sand, and would be completed as designed, reducing the length of PVC screen as necessary. The area in which the shallowest red till was encountered was in AOC #5, however, it was not necessary to install any wells with this new design criteria since the shallowest the red fill was encountered was approximately 13.5 to 14 feet below grade. These wells were completed as designed. According to Parratt Wolff, it was difficult to identify the exact depth of the red till because of the auger method used to advance the borings.

As discussed above, red till was encountered only at AOC #5 within wells VRW-206, 207, 208, 210, 211 and 212 and AIW-204, 206, 207, 208, 209 and 210. No red till was encountered to a depth of 15 feet within any wells at AOC #16. Groundwater in AOC #5 varied from approximately 10 feet below grade (VRW-211) to approximately 14 feet below grade (VRW-202). Groundwater in AOC #16 varied from approximately 6.5 feet below grade (RW-1) to approximately 12.5 feet below grade (RW-2).

Soil cuttings generated during drilling were screened with a Photovac MicroTIP Model HL200 photoionization detector (PID). PID readings varied at AOC #5 between below equipment detection (air injection well AIW-210 and vapor recovery wells VRW-205, 208, 209 and 210) to greater than 2,500 parts per million (ppm). PID readings varied at AOC #16 between below equipment detection (passive air injection well PV-1 and recovery wells RW-1 and RW-2) and approximately 500 ppm (vapor extraction well VE-7).

2.2.4 Soil Handling and Disposal

The procedures for handling soil, debris and other waste generated during construction activities were detailed in ERM's IRM Workplans for AOC #5 and AOC #16. The waste handling section described the handling, storage, sampling and disposal procedures for waste generated during excavation and trenching, drilling activities, monitoring well development and personal protection equipment (PPE) worn by personnel.

Soil generated during drilling of the wells, trenching for vapor piping and excavation of the two treatment building footings and pads was segregated into piles approximately 2 cubic yards in volume. Each pile was screened with a PID. Soil which was below 5 ppm was stockpiled on polyethylene sheeting on-site and covered with the same. Stockpile volumes ranged from approximately 5 cubic yards to approximately 20 cubic yards. Soil piles were stored at three separate locations. Soil generated from AOC #5 was temporarily stored across from Building 2 on the grassy area adjacent to the fence. Soil generated from AOC #16 was stored west of the garage and also on the pavement northeast of the garage building.

Soil screened with a PID which was greater than 5 ppm was stored in 17H 55-gallon steel drums provided by MMC. Drums were labeled appropriately with the date and proper classification.

Construction debris generated from concrete and pavement saw-cutting during trenching activities within Building 2 and the garage were similarly screened with a PID. All debris was screened with a PID and was determined to contain less than 5 ppm of VOCs. The debris was stockpiled on polyethylene sheeting and temporarily stored on the pavement northeast of the garage, adjacent to the soil stockpiles.

Parratt Wolff generated three 55-gallon drums of water during development of recovery wells RW-1, RW-2 and RW-3 as well as monitoring well (MW-N). Each drum was labeled appropriately with the contents and date of generation. A total of 76 drums of soil with PID readings greater than 5 ppm were generated during construction activities. One drum containing PPE was also generated.

Laidlaw was responsible for all waste characterization and removal of waste from the site and proper disposal. Laidlaw personnel collected analytical composite samples from drummed soil as well as stockpiled soil for disposal characterization and profiling. On November 15, 1994, 80 drums of waste soil, water and PPE were manifested, loaded and transported off-site for disposal by Laidlaw.

On November 30, 1994, approximately 140 tons of stockpiled soil and approximately 89 tons of concrete and asphalt debris were loaded and transported by Laidlaw for disposal at the Seneca Meadows Landfill in Seneca Falls, New York. All material being transported off-site was properly labelled and manifested.

2.2.5 Equipment Installation

Prior to installation of the SVE, groundwater treatment and electrical equipment, the treatment buildings were assembled on the concrete pads at both areas. Between November 28 and December 2, 1994, Rich and Gardner assembled the 12 foot by 12 foot by 8 foot high Butler brand metal treatment building at AOC #5. Upon completion of the frame assembly, ERS attached plywood to the south exterior wall to support the electrical distribution control panels, circuit boxes, autodialer, transformer and associated raceways. Myriad personnel ran wiring from Building 2 to the AOC #5 treatment building and installed control panels between December 8 and 17, 1994. ERS personnel installed the SVE equipment at AOC #5 between December 5 and 12, 1994. REW personnel installed the piping from the vapor extraction laterals through the treatment building and into the SVE equipment at AOC #5 during this week. Vacuum and pressure gauges, a differential pressure gauge control rack and sample ports were installed by REW personnel.

Between December 3 and 9, 1994, Rich and Gardner assembled the 15 foot by 15 foot by 8 foot high Butler brand metal treatment building on the concrete pad at AOC #16. Similar to AOC #5, plywood was attached to the east exterior wall of the treatment building to support the electrical distribution control panels. ERS and Myriad personnel installed the groundwater treatment and SVE control panels, circuit boxes, autodialer, transformer and associated raceways. On December 5 and 7, 1994, Myriad connected power from the electrical panel box located on the northwest garage wall and extended the conduit to the southwest corner where it exited the garage below grade to the treatment building. ERS wired the SVE and groundwater system equipment including all shut-off sensors and float controls into the appropriate control panels. REW ran the groundwater and SVE piping into the treatment building and connected to appropriate treatment equipment. REW similarly installed the chemical feed pump equipment and 55-gallon drum of approved sequestering agent for feeding into the groundwater treatment system. Vacuum and pressure gauges, sample ports and other associated appurtenances were also connected into the AOC #16 treatment system equipment.

An aluminum air discharge stack, approximately 35 feet in height was erected on the pavement, approximately 12 feet north of the AOC #16 treatment building. The 6-inch diameter PVC piping which exists from the air stripper tray through the roof of the treatment building was not connected to the emission stack, however, the stack does have a 6-inch diameter connection approximately 9 feet above grade for the stripper air exhaust piping. The 4-inch diameter SVE air discharge piping exits the AOC #16 treatment building and was capped approximately 6-inches out from the north exterior wall. The stack similarly contains a 4-inch diameter connection approximately 2-feet above grade for the future connection to the SVE system off-gas.

On December 29 and 30, 1994, ERS and REW personnel performed a system check of the SVE motors at AOC #5 and AOC #16. The dilution air valves were opened completely so that only atmospheric air would be drawn through the equipment. AOC #5 functioned normally and only required minor wiring adjustments. AOC #16 equipment required more involved rewiring which was performed on December 30, 1994.

2.2.6 Project Photographs

RUST personnel took photographs to document the construction activities. Appendix B includes photographs showing key activities throughout the project and the completed construction.

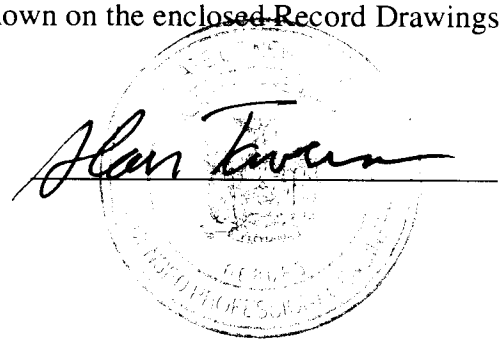
3.0 DESIGN MODIFICATIONS

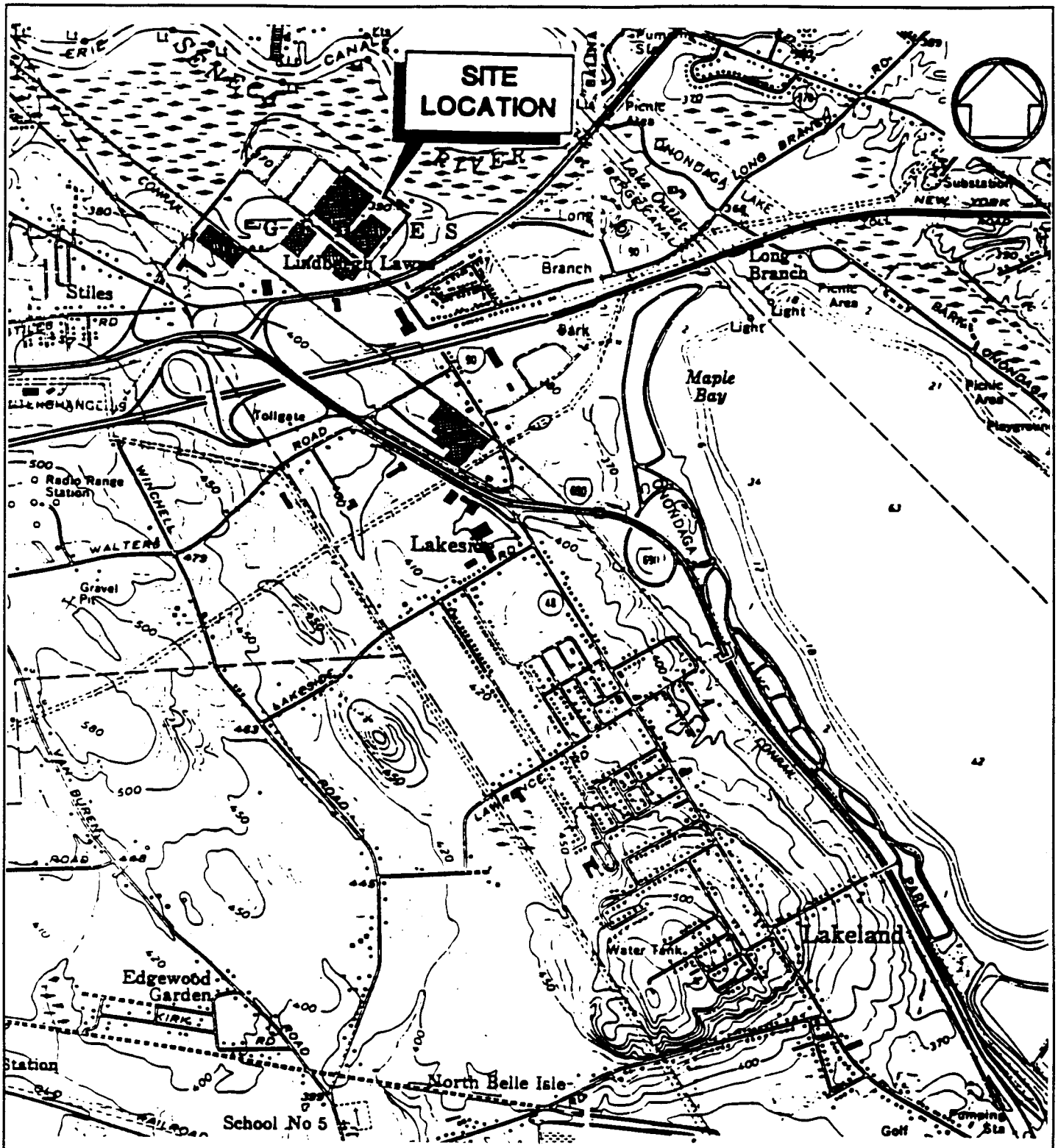
The engineering design which was the basis for the construction and system installation for this project was prepared by ERM. Throughout the project, REW and RUST reviewed specific design criteria to determine any problems relating to the installation and future performance as well as alternative ways to improve the design. The procedure followed for implementing any change to the ERM design was to contact MMC personnel and the appropriate ERM design engineers/hydrogeologists. Once the proposed improvement was agreed upon, the NYSDEC representatives were contacted for verbal approval.

RUST continually up-dated the ERM design drawings throughout the construction activities, noting changes in specific design schematics.

4.0 CERTIFICATION STATEMENT

I hereby certify, as a Professional Engineer licensed in the State of New York, that RUST E&I of New York monitored the construction of IRMs in AOC #5 and AOC #16 of the Farrell Road Plant Site as described in the above report and that the work was conducted in general accordance with the NYSDEC approved plans and specifications and as shown on the enclosed Record Drawings.





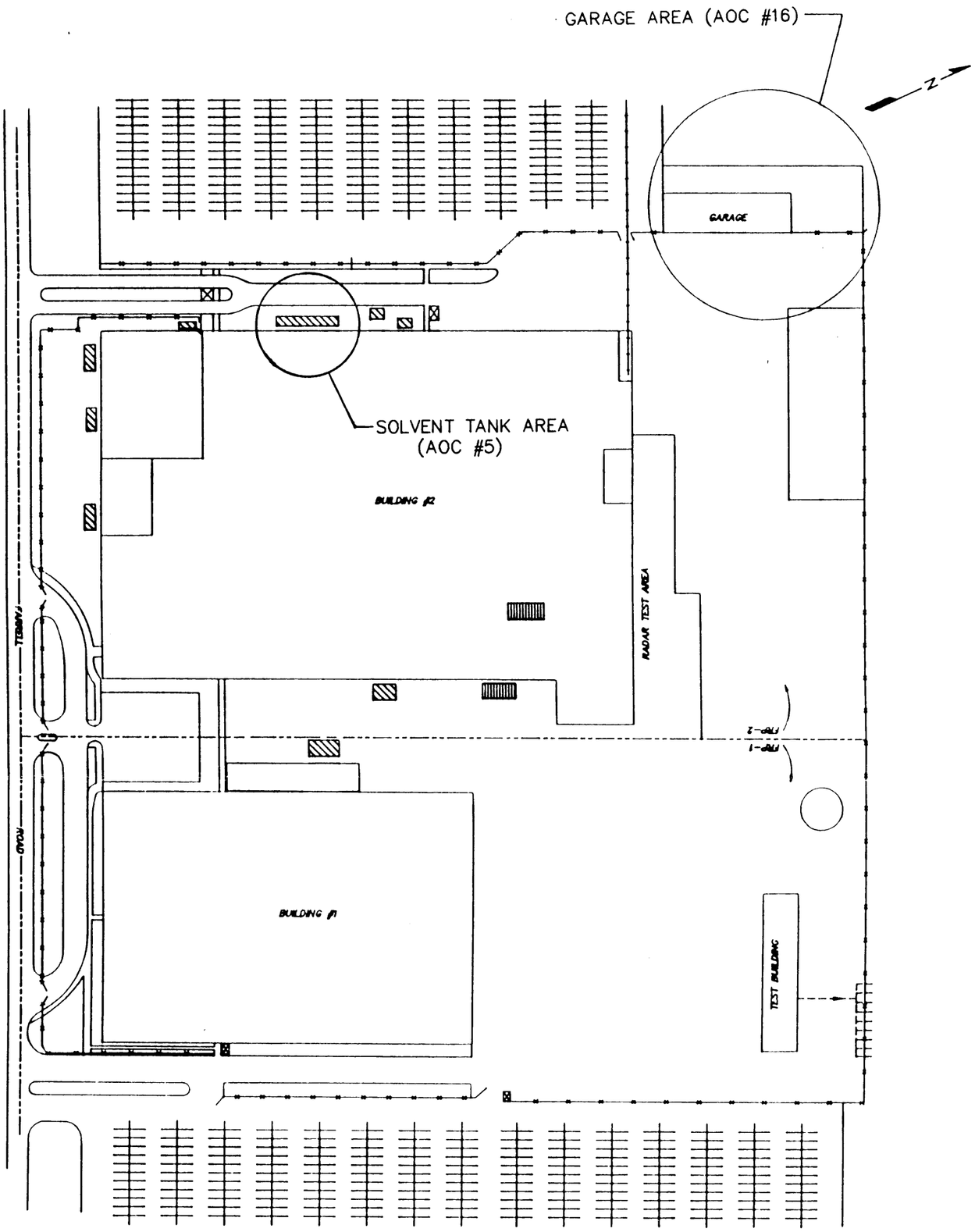
SOURCE: USGS 7.5 MINUTE QUADRANGLES CAMILLUS AND SYRACUSE WEST, NY

RUST ENVIRONMENT & INFRASTRUCTURE

SITE LOCATION MAP

MARTIN MARIETTA CORP.
FARRELL ROAD PLANT
TOWN OF GEDDES NEW YORK

PROJECT NO. 38564.110	DATE 1/95	DWG. NO. 38564-00	SCALE 1"=2,000'	FIGURE NO. 1



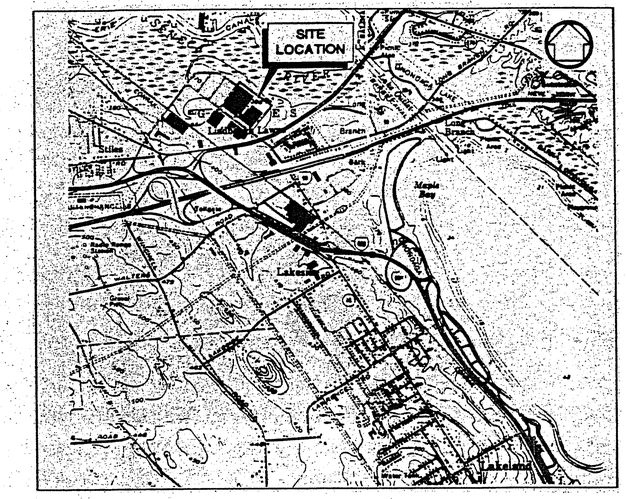
SITE PLAN
APPROX. SCALE 1"=150'

300 150 0 600 1200

GRAPHIC SCALE

RUST ENVIRONMENT & INFRASTRUCTURE		SITE MAP MARTIN MARIETTA CORP. FARRELL ROAD PLANT TOWN OF GEDDES NEW YORK		
PROJECT No. 38564.110	DATE 1/95	DWG. No. 38564-00	SCALE AS SHOWN	FIGURE No. 2

RECORD DRAWINGS
GROUND WATER AND SOIL REMEDIATION SYSTEMS
MARTIN MARIETTA CORPORATION
FARRELL ROAD PLANT - SOLVENT TANK AREA (AOC #5) AND GARAGE AREA (AOC #16)
TOWN OF GEDDES, NY



SITE LOCATION MAP

SCALE: 1"= 2000'

DRAWING LIST

DRAWING NUMBER	DRAWING TITLE
SHEET 1	COVER SHEET
SHEET 2	SYMBOLS & LEGEND, P & I DIAGRAM
	SOLVENT TANK AREA
SHEET 3	SITE PLAN AND PIPING PLAN
SHEET 4	SOLVENT TANK AREA & MISCALLANEOUS DETAILS
SHEET 5	SOIL VAPOR EXTRACTION AND PASSIVE AIR INJECTION WELLS, P & I DIAGRAM
SHEET 6	TREATMENT BUILDING AND CONCRETE FOUNDATION,
SHEET 7	GENERAL ELECTRICAL DETAILS

DRAWING NUMBER	DRAWING TITLE
	GARAGE AREA
SHEET 8	SITE PLAN AND MISCELLANEOUS DETAILS
SHEET 9	WELL DETAILS AND GENERAL MISCELLANEOUS DETAILS
SHEET 10	SOIL VAPOR FLOW SCHEMATIC
SHEET 11	GROUNDWATER RECOVERY AND TREATMENT P & I DIAGRAM
SHEET 12	TREATMENT BUILDING AND CIVIL DETAILS
SHEET 13	VAPOR DISCHARGE STACK (10" DIA. TAPERED) BASE & CONCRETE FOUNDATION DETAILS
SHEET 14	GENERAL ELECTRICAL DETAILS
SHEET 15	ELECTRICAL SCHEMATIC AND ONELINE DIAGRAM

RUST ENVIRONMENT & INFRASTRUCTURE

DWG # 38564-03

LEGEND

INSTRUMENTATION CALLOUTS

- LOCALLY MOUNTED INSTRUMENT
- MOUNTED ON LOCAL BOARD
- MOUNTED ON REMOTE BOARD
- MOUNTED ON BACK OF LOCAL BOARD
- MOUNTED ON BACK OF REMOTE BOARD
- (V) SUPPLIED BY VENDOR WITH ADJACENT PIECE OF EQUIPMENT

H O A — MOTOR CONTROL MODE SELECTOR (HAND SWITCH)

A= AUTOMATIC (AUTO STOP & START BY CONTROL DEVICES OR WITH AUTO RESTART)
J= JOG (MOMENTARY MANUAL OPERATION W/O ANY INTERLOCKS. SPRING LOADED SWITCH MUST BE HELD IN PLACE TO RUN).
H= MANUAL (LOCAL MANUAL STARTING WITH INTERLOCKS IN PLACE. NO AUTOMATIC RESTART).
O= OFF

- (M) ELECTRIC MOTOR (ARS = AUTOMATIC RESTART)
- DIAPHRAGM OPERATOR
- [S] SOLENOID OPERATOR
- [I] ELECTRIC INTERLOCK
- GROUNDING CONNECTION
- L [SS] STOP/START STATION (LOCAL)
- INDICATING / RUNNING LIGHT R=RED – G=GREEN – B=BLUE W=WHITE – A= AMBER
- PRESSURE RELIEF VALVE
- THERMOWELL
- FLOAT
- CHEMICAL SEAL
- [LI] GAUGE GLASS
- [T] ROTOMETER
- PRESSURE REGULATOR (MANUAL)
- (2) NOZZLE IDENTIFICATION
- FREE LIQUID SURFACE LEVEL
- [M] MOTOR OPERATED VALVE WITH MANUAL OVERRIDE
- DIELECTRIC ISOLATION

- SP SAMPLE PORT
- VACUUM RELIEF VALVE
- GATE VALVE
- GLOBE VALVE
- BALL VALVE
- PLUG VALVE
- DIAPHRAGM VALVE
- BUTTERFLY VALVE
- NEEDLE VALVE
- 3 WAY VALVE
- SLIDE GATE VALVE
- PINCH VALVE
- BLADDER VALVE
- BACK PRESS. CONTROL VALVE
- BACKFLOW PREVENTER
- CHECK VALVE S = SWING B = BALL L = LIFT W = WATER D = DUCKBILL VB = VACUUM BREAKER
- "Y" STRAINER
- LINE SIZE REDUCTION
- DRESSER TYPE COUPLING
- EXPANSION JOINT/FLEXIBLE JOINT
- HOSE (METAL OR RUBBER)
- PIPE CAP
- BLIND FLANGE
- HOSE CONNECTION W/CAP
- HOSE CONNECTION
- VENT WITH RAIN CAP
- [#US] UTILITY STATION
- FUNNEL
- BLADDER TYPE PRESSURE SENSOR
- HOSE BARB

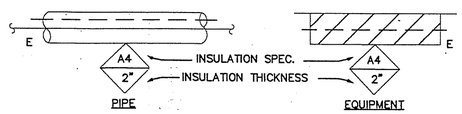
- VAPOR RECOVERY WELL
- PASSIVE AIR INJECTION WELL

INSTRUMENT IDENTIFICATION TABLE

ISA S5.1 – TABLE 1 (MODIFIED)

	FIRST LETTER		SUCCEDING LETTERS		
	MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM		
B	BURNER FLAME				
C	CONDUCTIVITY (ELECTRICAL)			CONTROL	
D	DENSITY (MASS) OR SPECIFIC GRAVITY	DIFFERENTIAL			
E	VOLTAGE (EMF)		PRIMARY ELEMENT		
F	FLOW RATE	RATIO (FRACTION)			
G	GAUGING (DIMENSIONAL)		GLASS		
H	HAND (MANUALLY INITIATED)				HIGH
I	CURRENT (ELECTRICAL)		INDICATE		
J	POWER	SCAN			
K	TIME OR TIME–SCHEDULE			CONTROL STATION	
L	LEVEL		LIGHT (PILOT)		LOW
M	MOISTURE OR HUMIDITY				MIDDLE OR INTERMEDIATE
N					
O	SYSTEM		ORIFICE (RESTRICTION)		
P	PRESSURE OR VACUUM		POINT (TEST CONNECTION)		
Q	QUANTITY OR EVENT	INTEGRATE OR TOTALIZE			
R	RADIOACTIVITY		RECORD OR PRINT	RECORD	
S	SPEED OR FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VISCOSITY			VALVE, DAMPER OR LOUVER	
W	WEIGHT OR FORCE		WELL		
X	LEAK DETECTION				
Y	SOLENOID			RELAY OR COMPUTE	
Z	POSITION			DRIVE, ACTUATE OR UNCLASSIFIED FINAL CONTROL ELEMENT	
Δ	DIFFERENTIAL				

INSULATION & TRACING DESIGNATION



A4 = MANVILLE MICRO – LOK AP–T W/0.016" THICK ALUMINUM JACKET AND POLYKRAFT MOISTURE BARRIER. MANVILLE ZESTON 2000 PVC FITTING COVERS OR APPROVED EQUAL.
PP = PERSONNEL PROTECTION (INSULATE UP TO 8'–0" ABOVE FLOOR, ETC.)

PIPELINE USE CODE IDENTIFICATION TABLE

FLOW MEDIUM	CODE	PIPE SPECIFICATION
EFFLUENT (AG)	EFF	PVC–4
EFFLUENT (UG) GRAVITY	EFF	PVC–6
EFFLUENT (UG) PRESSURE	EFF	PVC–7
EVACUATED VAPOR	EV	GAL–1
OUTSIDE AIR	OA	PVC–1
OUTSIDE AIR	OA	PVC–1
PROPANE (AG & UG)	PROP	CS–1
RECOVERED VAPOR (AG)	RV	PVC–2
SERIES FLOW	SF	PVC–4
SEPARATED VAPOR	SV	PVC–2
VAPOR CONDENSATE	VC	CU–3
VENT	VT	PVC–1
VENT	VT	PVC–5
PROPANE (TUBE)	PROP	CU–1

LINE NUMBER DESIGNATION

SIZE	USE CODE	LINE No.	SPEC.
3"	CWW –	301 –	DIR

LINE TYPE IDENTIFICATION

- PROCESS & SERVICE (EXIST)
- PROCESS & SERVICE (NEW PRIMARY ROUTE)
- PROCESS & SERVICE (NEW ALTERNATE ROUTE)
- ELECTRICAL
- P—P VENDOR PACKAGE UNIT LIMITS
- PLC INTERNAL COMMUNICATION/PROGRAMMING
- VENDOR SUPPLIED ELECTRICAL CONN.
- INSTRUMENT AIR (PNEUMATIC)

ABBREVIATIONS

N.O.	NORMALLY OPEN	A.T.C.	AIR TO CLOSE
N.C.	NORMALLY CLOSED	A.T.O.	AIR TO OPEN
F.O.	FAIL OPEN	S.C.	SAMPLE CONNECTION
F.C.	FAIL CLOSED	S.V.	SAMPLE VALVE
A.R.S.	AUTOMATIC RESTART	C.T.	CONTROL TRANSFORMER
C.S.O.	CAR SEAL OPEN	C.O.	CLEANOUT
C.S.C.	CAR SEAL CLOSED	CH.O.	CHAIN OPERATOR
P.I.V.	POST INDICATING VALVE	F.S.	FIRE SAFE
		V.S.M.	VARIABLE SPEED MOTOR

NOTES:

1. UNLESS OTHERWISE NOTED, ALL VALVES ARE LINE SIZE.
2. EXISTING LINES ARE INDICATED WITH A LIGHTER LINE DENSITY.

NO.	REVISIONS	MADE	CHK	DATE
2	RECORD DRAWINGS	DAM		2/21/95
1	ERM DWG PID–1(T)	ERM		7/18/94

NAMES	DATE
DRAWN:	
DESIGN: ERM	
PROJ. MGR.: AWT	
PROJ. ENG.: DDF	
CHECKED:	
SCALE: AS NOTED	

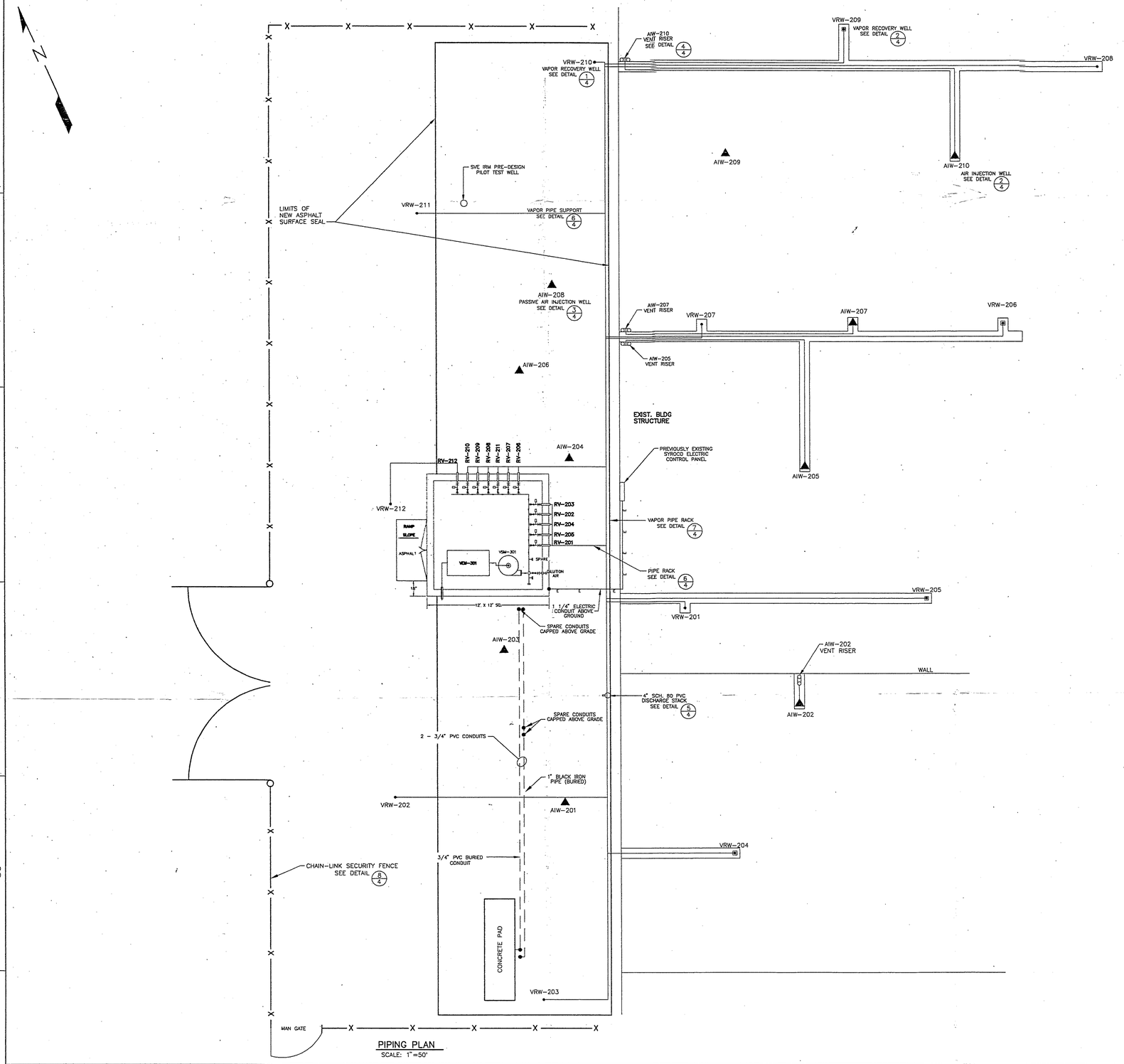
SYMBOLS AND LEGEND
P&I DIAGRAM

MARTIN MARIETTA
FARRELL ROAD PLANT
NEW YORK

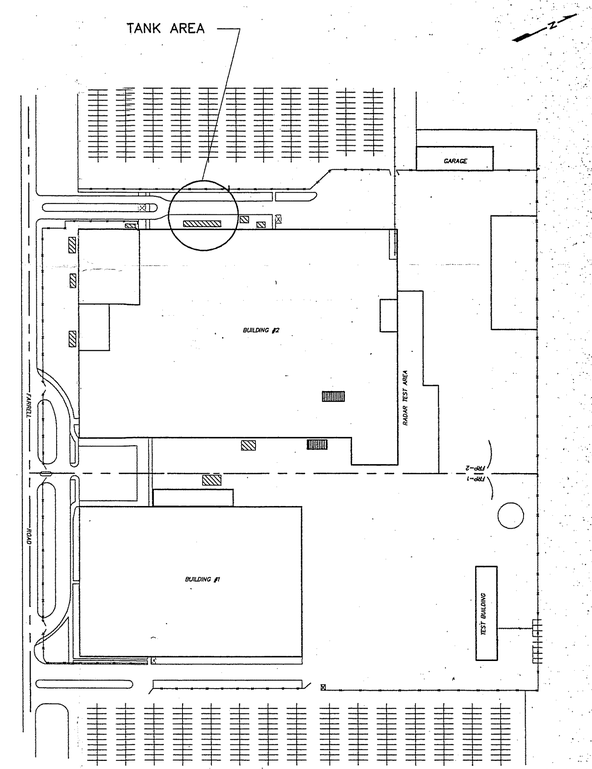
DUNN ENGINEERING COMPANY
DIVISION OF RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 38564.110	DATE 2/21/95
RUST DWG NUMBER 38564–14	REVISION NUMBER 0
CLIENT DWG NUMBER	SHEET NUMBER 2 OF 15

CAD FILE NAME:
PLOT DATE: 2/21/95



PIPING PLAN
SCALE: 1"=50'



SITE PLAN
APPROX. SCALE 1"=150'

300 150 0 600 1200
GRAPHIC SCALE

NOTES:

1. THE LOCATION OF THE INTAKE AND VAPOR EXTRACTION WELLS AND TREATMENT BUILDING WERE LOCATED BY ERM PERSONNEL. LOCATIONS WERE VARIED DURING INSTALLATION DUE TO ACTIVE PIPING, OVERHEAD OBSTRUCTIONS, AND EXISTING STRUCTURES.
2. EXCAVATED SOIL AND DEBRIS WAS HANDLED IN ACCORDANCE WITH THE APPROVED INTERIM REMEDIAL MEASURES WORK PLAN.

LEGEND

- VAPOR RECOVERY WELL
- PASSIVE AIR INJECTION WELL

NO.	REVISIONS	MADE	CHK	DATE
2	RECORD DRAWINGS	DAM		2/21/95
1	ERM DWGS C-1(T) AND EA-1(T)	ERM		7/18/94

STATE OF NEW YORK — DARIN W. JALBERT — 058083 — LICENSED PROFESSIONAL ENGINEER

NAMES		DATE
DRAWN:	DAM	1/27/95
DESIGN:	ERM	
PROJ. MGR.:	AWT	2/16/95
PROJ. ENG.:	DDF	2/16/95
CHECKED:		2/16/95
SCALE:	AS SHOWN	

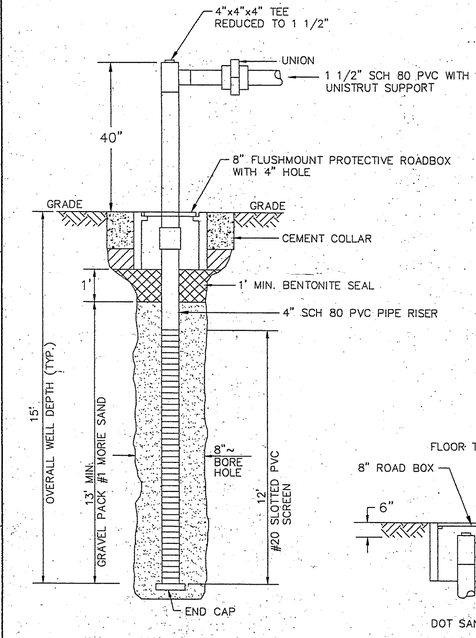
SOLVENT TANK AREA SITE PLAN AND PIPING PLAN

MARTIN MARIETTA
FARRELL ROAD PLANT
NEW YORK

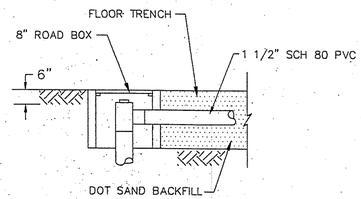
DUNN ENGINEERING COMPANY
DIVISION OF RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 38564.110	DATE 2/16/95
RUST DWG NUMBER 38564-13	REVISION NUMBER 0
CLIENT DWG NUMBER	SHEET NUMBER 3 OF 15

CAD FILE NAME:
PLOT DATE: 2/16/95



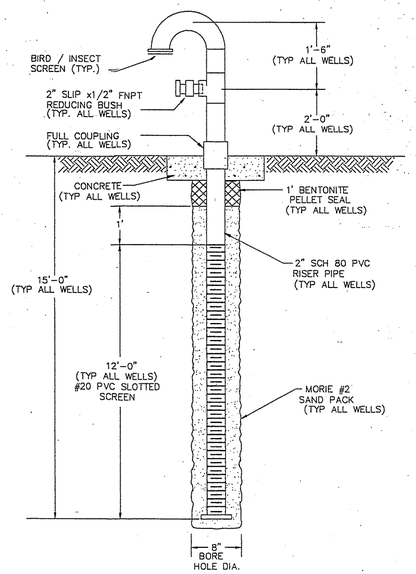
1/4 ABOVE GRADE HEAD VAPOR RECOVERY WELL (TYPICAL)
(NOT TO SCALE)
(VRW-202, 203, VRW-210 THRU VRW-212)



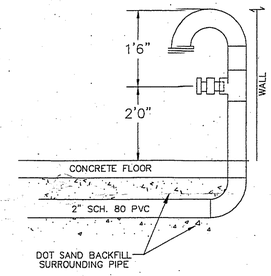
2/4 BELOW GRADE HEAD DETAIL (TYP)
(VRW-201, 204, 205, 206, 207, 208, 209)
(AIW - 202,205,207 & 210)

NOTE:
1. UNDERGROUND CONSTRUCTION IS FOR TYPICAL VAPOR RECOVERY AND AIR INJECTION WELLS

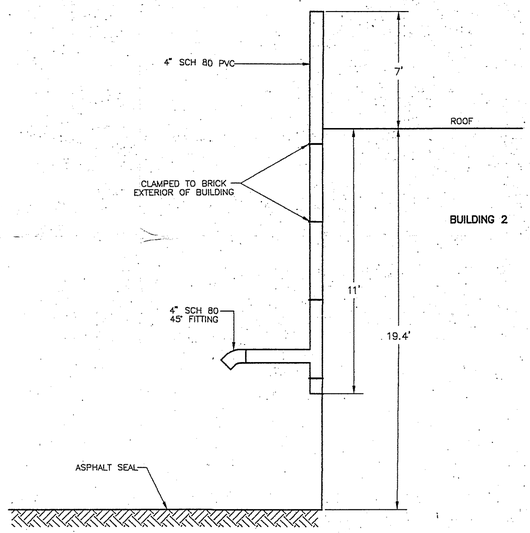
TYPICAL VAPOR RECOVERY WELL



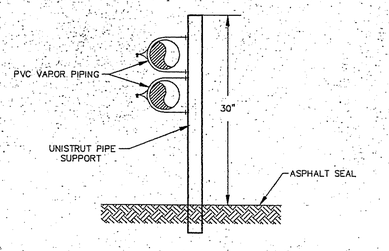
3/4 AIR INJECTION WELL DETAIL
(NOT TO SCALE)
(AIW-201,203,204,206,208 & 209 THRU AIW-210)



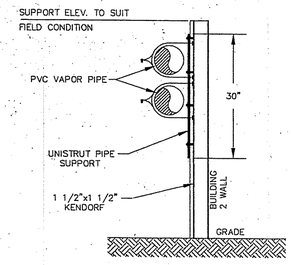
4/4 AIR INJECTION WELL RISER DETAIL
(NOT TO SCALE)
(AIW - 202,205,207 & 210)



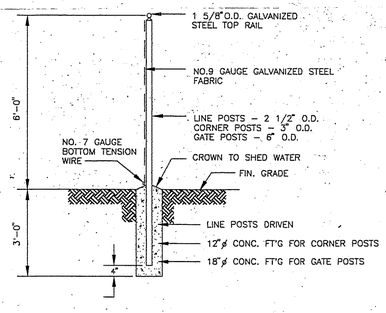
5/4 AIR EMISSION DISCHARGE STACK
NOT TO SCALE



6/4 VAPOR PIPE SUPPORT DETAIL
TYP. SUPPORT OUTSIDE BETWEEN TREATMENT BUILDING AND BUILDING 2
SCALE: NONE



7/4 VAPOR PIPE WALL SUPPORT DETAIL
TYP. SUPPORT TO BUILDING 2 WALL
SCALE: NONE



8/4 TYPICAL FENCE DETAIL
NO SCALE

NO.	REVISIONS	MADE	CHK	DATE

NO.	REVISIONS	MADE	CHK	DATE

NO.	REVISIONS	MADE	CHK	DATE
2	RECORD DRAWINGS	DAM		2/21/95
1	ERM DWGS PID-2(T) AND S-1(T)	ERM		7/18/94

STATE OF NEW YORK ALAN W. TAVARES 048083 LICENSED PROFESSIONAL ENGINEER 4-18-95

NAMES	DATE
DRAWN:	1/30/95
DESIGN: ERM	
PROJ. MGR.: AWT	1/30/95
PROJ. ENG.: DDF	1/30/95
CHECKED:	1/30/95
SCALE: AS SHOWN	

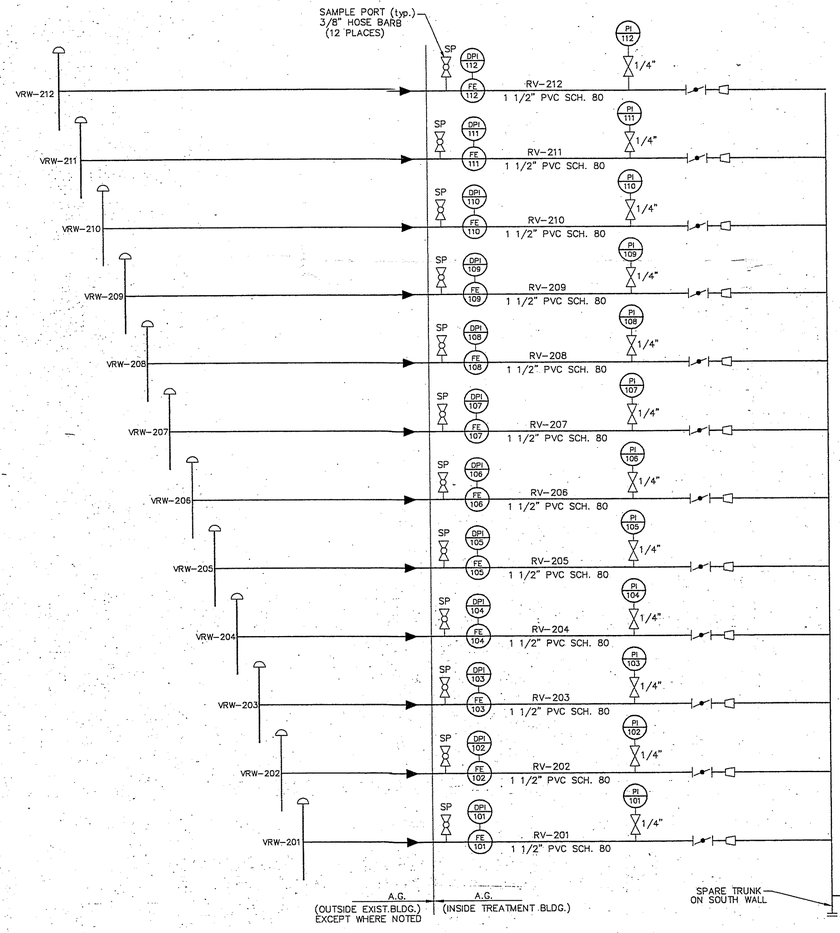
SOLVENT TANK AREA & MISCELLANEOUS DETAILS

MARTIN MARIETTA
FARRELL ROAD PLANT
NEW YORK

DUNN ENGINEERING COMPANY
DIVISION OF RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 38564.100	DATE 1/30/95
RUST DWG NUMBER 38564-17	REVISION NUMBER 0
CLIENT DWG NUMBER	SHEET NUMBER 4 OF 15

CAD FILE NAME:
PLOT DATE: 1/30/95



LEGEND

- TI 201 — TEMPERATURE INDICATOR GAUGE
- OA 3002 — AUTO DIALER
- LI 201 — MOISTURE SEPERATOR WATER LEVEL SITE TUBE
- PI 101 — PRESSURE/VACUUM INDICATOR GAUGE
- DPI 101 — DWYER MAGNEHELIC DIFFERENTIAL PRESSURE GAUGE
- FE 101 — FLOW ELEMENT SENSOR

INTERLOCKS

- LS 201 — (SPEC) HIGH LIQUID LEVEL SHUTS DOWN VEM (M-1)
- PS 201 — VACUUM SWITCH – 7" Hg
  KUNKLE VALVE CO.
  HIGH VACUUM OPENS TO RELEASE VACUUM
- TS 201 — TEMPERATURE SWITCH –
  UNITED ELECTRIC CONTROLS MODEL # 13121-120
  HIGH MOTOR TEMPERATURE SHUTS DOWN VEM (M-1)

EQUIPMENT

VSM-201 VAPOR/LIQUID SEPERATOR MODULE
40 GALLON – 200 CFM 12 GAUGE CARBON STEEL
ENAMEL FINISH OVER PRIMER COATING
POLYPROPYLENE COALESCING MEDIA
3/4" BOTTOM DRAIN WITH BALL VALVE
SIGHT TUBE ASSEMBLY & HAND PUMP

BL-201 VAPOR EXTRACTION MODULE
200 SCFM, 10" W.C., 7.5Hp, 230VAC, 3-ph
(SKID MOUNTED) MD PREUMATICS POSITIVE DISPLACEMENT BLOWER
MODEL NO. 3210-81L3, SER. NO. 9167 J94

NO.	REVISIONS	MADE	CHK	DATE
2	RECORD DRAWINGS	DAM		2/21/95
1	ERM DWGS PID-2(T) AND PID-3(T)	ERM		7/18/94

STATE OF NEW YORK — ALAN W. TAVERNIER — 048083 — LICENSED PROFESSIONAL ENGINEER

NAMES	DATE
DRAWN:	1/27/95
DESIGN:	
PROJ. MGR.: AWT	1/27/95
PROJ. ENG.: DDF	1/27/95
CHECKED:	1/27/95
SCALE: AS NOTED	

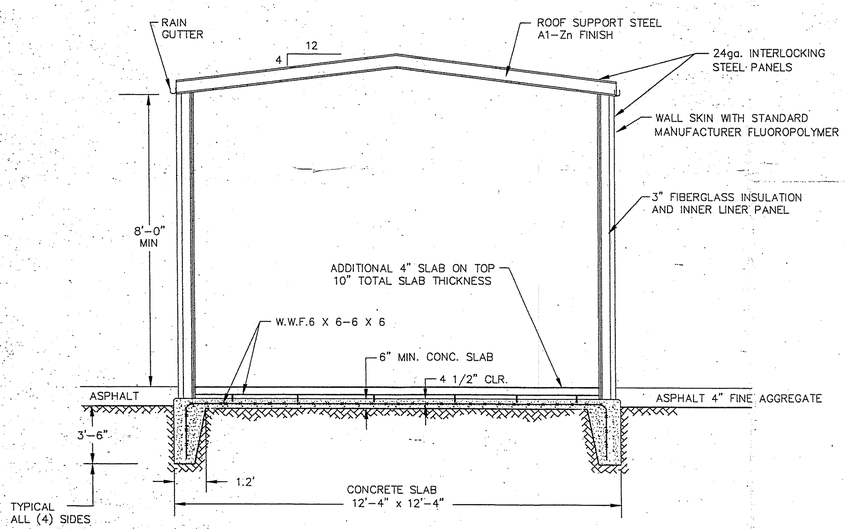
SOLVENT TANK AREA SOIL VAPOR EXTRACTION AND PASSIVE AIR INJECTION WELLS P&I DIAGRAM

MARTIN MARIETTA
FARRELL ROAD PLANT
NEW YORK

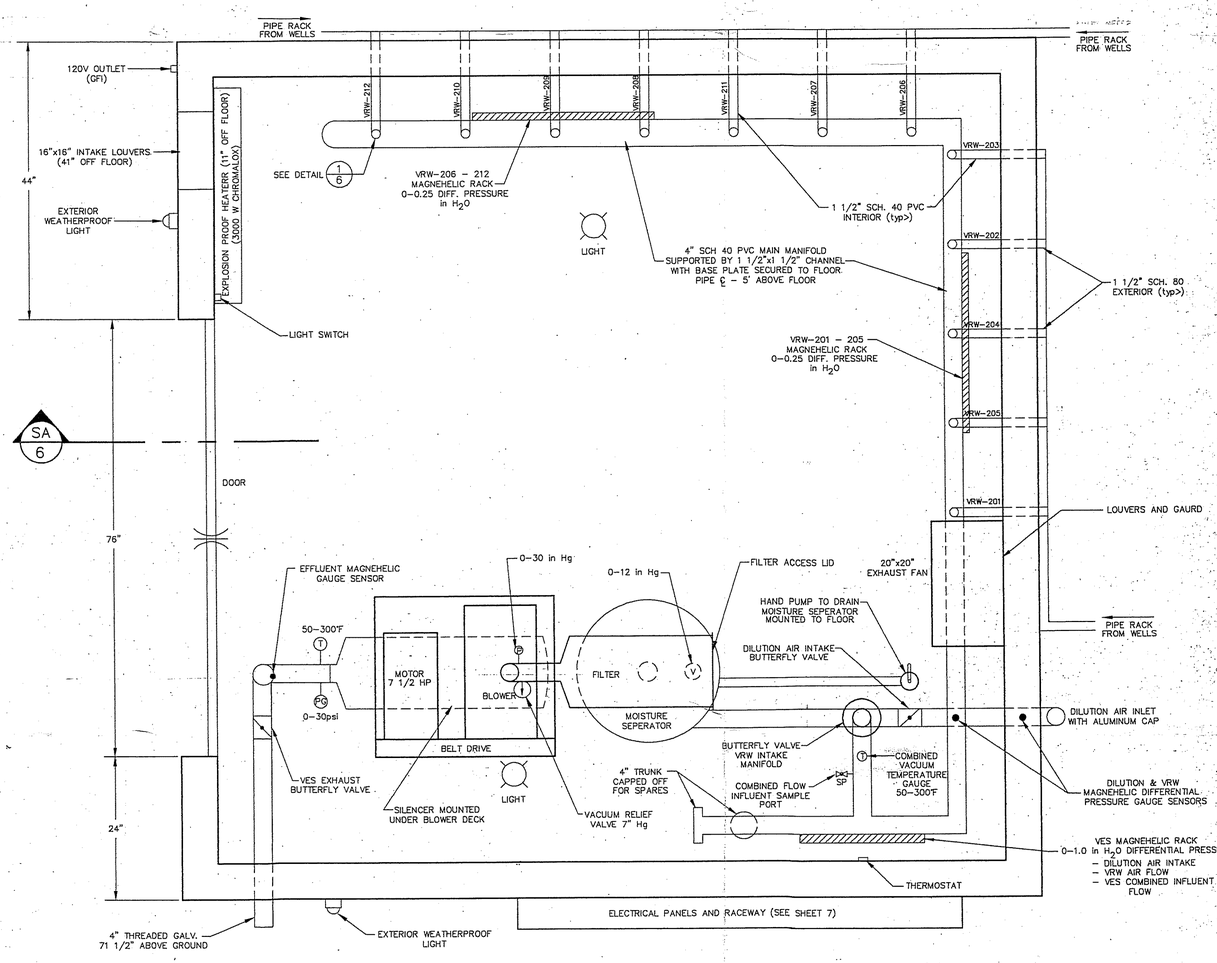
DUNN ENGINEERING COMPANY
DIVISION OF RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 38564.110	DATE 1/27/95
RUST DWG NUMBER 38564-15	REVISION NUMBER 0
CLIENT DWG NUMBER	SHEET NUMBER 5 OF 15

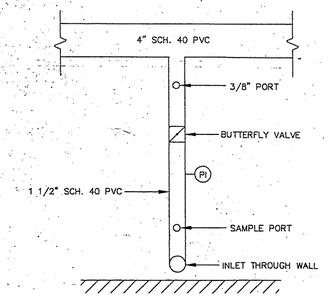
CAD FILE NAME:
PLOT DATE: 1/27/95



SA 6 SECTION
NOT TO SCALE



AOC #5 TREATMENT BUILDING INTERIOR PLAN VIEW
SCALE: 1" = 1'-0"



1/6 VRW RISER TO HEADER (TYPICAL)
NOT TO SCALE

AUTHORIZED PERSONNEL ONLY

2/6 WARNING SIGNS
NOT TO SCALE

NOTE: POSTED ON SECURITY FENCE

GENERAL NOTE

CONCRETE

1. THE CONCRETE CONTAINED MINIMUM COMPRESSIVE STRENGTH OF f'c = 4.,000 P.S.I AT 28 DAYS.
2. CHAMFERED ALL EXPOSED CONC. EDGES (ONE) 1" INCH
3. CONCRETE POURED ON DRY/THAWN GROUND.
4. CONCRETE MIX AT POINT OF PLACEMENT AT TEMPERATURE LESS THAN 85 F. CONCRETE MIX AT MINIMUM TEMPERATURE OF 50'F OR OVER.
5. POLYPROPYLENE FIBRILLATED FIBER (70,000 P.S.I.) ADDED TO CONCRETE MIX TO REDUCE PLASTIC CONC. SHRINKAGE. (FIBER REINFORCED, APPROXIMATELY 1.5lbs. OF FIBER/c.y. OF CONCRETE).

NO.	REVISIONS	MADE	CHK	DATE
2	RECORD DRAWINGS	DAM		2/21/95
1	ERM DWG S-1(T)	ERM		7/18/94

The drawings, specifications and other documents prepared by the Engineer for this project are instruments of the Engineer's service for use solely with respect to this project and, unless otherwise provided, the Engineer shall be deemed the author of these documents and shall retain all common law, statutory and other reserved rights, including the copyright.

STATE OF NEW YORK ALAN W. TAVERSON 069933 LICENSED PROFESSIONAL ENGINEER 4-14-95

NAMES	DATE
DRAWN:	1/31/95
DESIGN: ERM	
PROJ. MGR.: AWT	1/31/95
PROJ. ENG.: DDF	1/31/95
CHECKED:	1/31/95
SCALE: AS SHOWN	

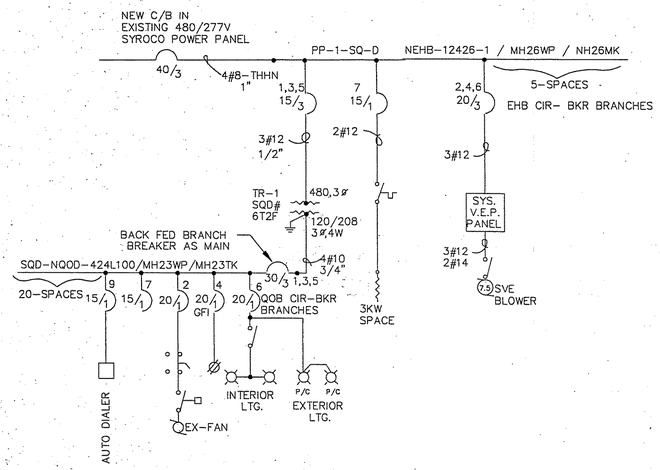
SOLVENT TANK AREA TREATMENT BUILDING AND CONCRETE FOUNDATION

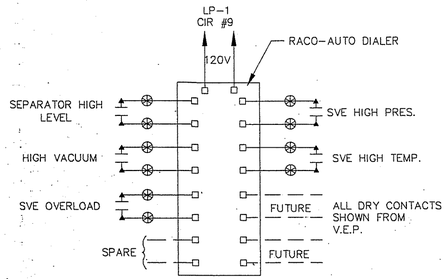
MARTIN MARIETTA
FARRELL ROAD PLANT
NEW YORK

DUNN ENGINEERING COMPANY
DIVISION OF RUST ENVIRONMENT & INFRASTRUCTURE

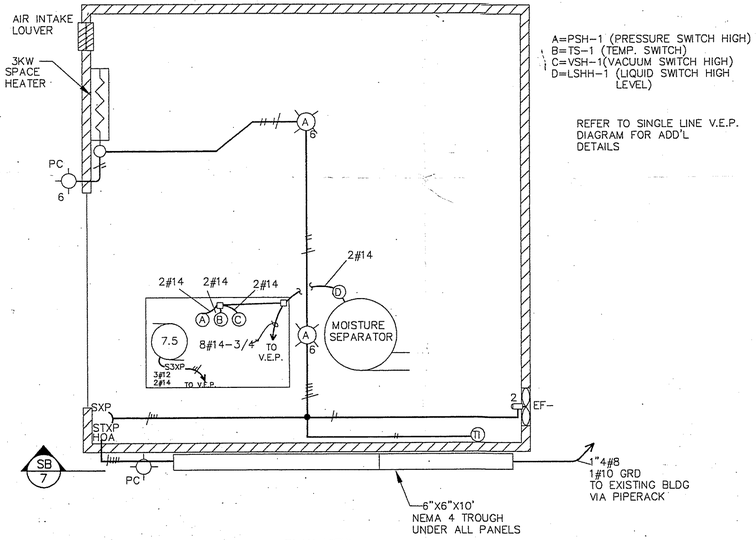
PROJECT NUMBER 38564.110	DATE 1/31/95
RUST DWG NUMBER 38564-18	REVISION NUMBER 0
CLIENT DWG NUMBER	SHEET NUMBER 6 OF 15

CAD FILE NAME:
PLOT DATE: 1/31/95





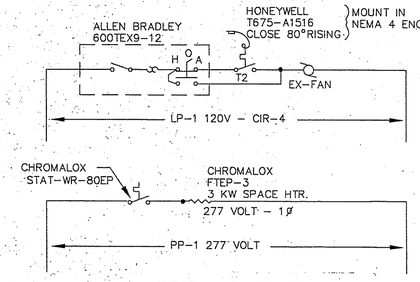
SYSTEM SCHEMATIC DIAGRAM
AUTODIALER



A=PSH-1 (PRESSURE SWITCH HIGH)
B=TS-1 (TEMP. SWITCH)
C=VSH-1(VACUUM SWITCH HIGH)
D=LSHH-1 (LIQUID SWITCH HIGH LEVEL)

REFER TO SINGLE LINE V.E.P. DIAGRAM FOR ADD'L DETAILS

PLAN VIEW
SCALE: 1/2" = 1'-0"



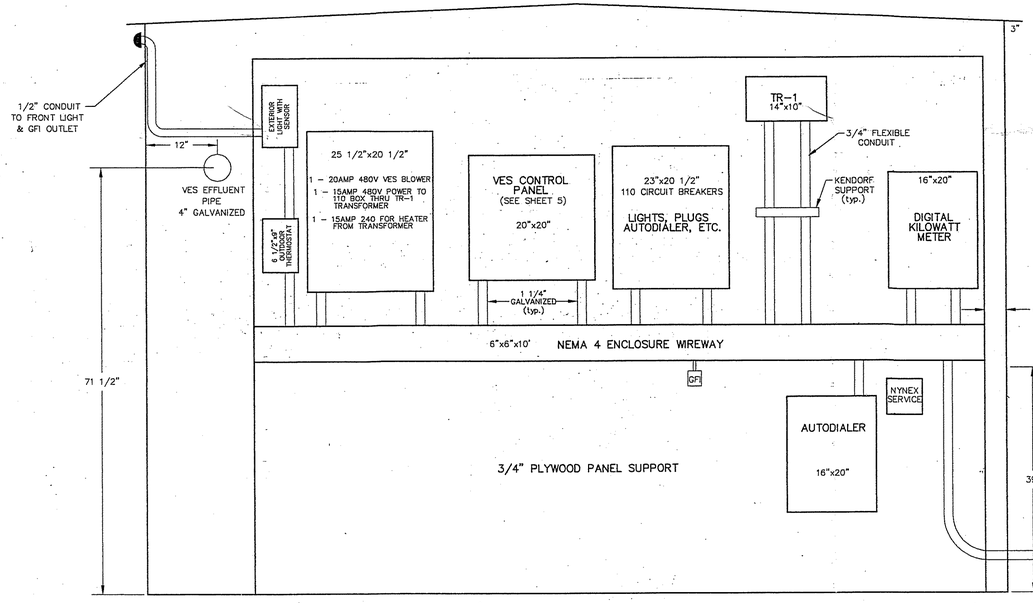
SYSTEM MISC. DETAILS

NOTES

1. INTERIOR AREA OF BUILDING CLASSIFIED CLASS #1 – DIVISION 2. WIRING INSTALLED IN ACCORDANCE WITH ARTICLE 500 OF THE NATIONAL ELECTRIC CODE.
2. ALL INTERIOR LINE VOLTAGE WIRING CONTAINED IN RIGID THREADED HEAVY WALL GALVANIZED OR ALUMINUM CONDUIT.
3. FLEXIBLE TERMINATIONS WHERE REQUIRED FOR MOVEMENT OR SERVICING ON ALL SWITCHING OR SPARK PRODUCING DEVICES OR EQUIPMENT MADE USING EXPLOSION PROOF BRAID FLEX.
4. ALL CONDUCTORS STRANDED, COPPER, TYPE THHN/THWN, #14 MINIMUM FOR CONTROL, #12 MIN. FOR POWER.
5. ALL RACEWAYS SEALED USING TYPE EYS SEAL FITTINGS AT ALL POINTS AS FOLLOWS:
   A- WHEN ENTERING OR LEAVING THE CLASSIFIED AREA
   B- WHEN ENTERING OR LEAVING ANY SWITCHING OR SPARK PRODUCING DEVICE OR EQUIPMENT.
6. ALL RACEWAYS CONTAIN A CIRCUIT SIZE GROUND CONDUCTOR.
7. ALL CONTROL PANELS AND CIRCUIT BOXES ARE WEATHERPROOF TYPE.

LEGENDS

⊛	VAPOR EXTRACTION CONTROL PANEL TERMINAL POINT
□	RACO AUTO DIALER
┼	CONDUCTOR CONNECTION
┼	NO CONDUCTOR CONNECTION
A	APPLETON #AP-1550 LIGHT FIXTURE WITH CPU 20-50 BOX
P/C	HUBBELL NRG-301-PC WITH NRG-33 BACK BOX
S3XP	CROUSEHINDS EDSCM-21 WITH DSD 917
SXP	APPLETON EDSC-175-F1-1POLE FACTORY SEALED SWITCH
STXP HOA	ALLEN BRADLEY 600 TEX 9-12
T1	CHROMALOX WR-80 EP-STAT
T2	HONEYWELL T675-A1561 ^{a} - MOUNT IN HOFFMAN 4-806 CHNF ENCL. DIRECT CAPILLARY THROUGH SEAL & LIQUID TITE SLEEVE INTO BLDG.
≈≈≈	CHROMALOX 3KW-240 VOLT, 1~, EXPLOSION PROOF HEATER-FTEP-3
E/F	EXHAUST FAN (XP) HORIZONTALLY LOCATED-DAYTON 12" 1/4Hp
▨	AIR INTAKE LOUVER-GRAINGER PART #4C560 W/WEATHERPROOF COVER



SB 7 SOUTH WALL ELEVATION
SCALE: 1" = 1'-0"

V.E.P., VAPOR EXTRACTION CONTROL PANEL

NEMA 4 ENCLOSURE W/ 7-1/2 HP, STARTER, WIRED FOR 480 VOLT SERVICE HOA, ON/OFF SELECTOR, RUN LIGHT CONTACTS AND FAULT LIGHTS AND MANUAL RESET BUTTON FOR: LIQUID HIGH LEVEL, HIGH VACUUM, HIGH PRESSURE, HIGH TEMPERATURE, MOTOR THERMALS AND AUTO DIALER-DRY CONTACTS.

NO.	REVISIONS	MADE	CHK	DATE
2	RECORD DRAWINGS	DAM		2/21/95
1	ERM DWG E-1(T)	ERM		7/18/94

NAMES	DATE
DRAWN:	1/31/95
DESIGN: ERM	
PROJ. MGR.: AWT	1/31/95
PROJ. ENG.: DDF	1/31/95
CHECKED:	1/31/95
SCALE: AS SHOWN	

SOLVENT TANK AREA
GENERAL ELECTRICAL DETAILS

MARTIN MARIETTA
FARRELL ROAD PLANT
NEW YORK

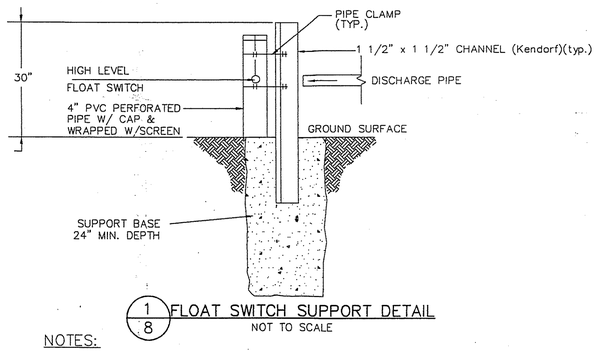
DUNN ENGINEERING COMPANY
DIVISION OF RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 38564.110	DATE 1/31/95
RUST DWG NUMBER 38564-19	REVISION NUMBER 0
CLIENT DWG NUMBER	SHEET NUMBER 7 OF 15

CAD FILE NAME:
PLOT DATE: 1/31/95

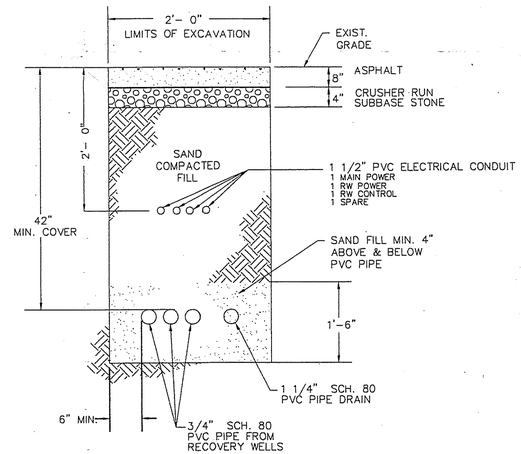
NOTES:

1. OUTFALL TRENCH BACKFILLED WITH NATIVE SOIL PREVIOUSLY SCREENED WITH A PID AND CONTAINING LESS THAN 5 PARTS PER MILLION (ppm). VERBAL APPROVAL RECEIVED FROM NYSDEC PRIOR TO BACKFILLING.
2. CONCRETE SLAB CONSTRUCTED MEASURING 10'-0" LONG BY 3'-0" WIDE BY 6" THICK, FOR THE FUTURE STORAGE OF PROPANE CYLINDERS IF REQUIRED.
3. 6'-0" HIGH VINYL COATED CYCLONE TYPE CHAIN-LINK FENCE INSTALLED AROUND NEW TREATMENT FACILITY AND ABOVE GROUND PIPING.
4. CONTRACTOR RESTORED ALL AREAS DISTURBED BY CONSTRUCTION ACTIVITIES TO AN "AS GOOD" CONDITION EXCEPT ASPHALT AREAS, SEE SECTION THIS SHEET.
5. ELECTRICAL CONDUITS NOT SHOWN ON PLAN VIEW.
6. VAPOR EXTRACTION PIPING OUTSIDE GARAGE SUPPORTED BY TYPICAL UNISTRUT PIPE SUPPORT.
7. ALL ABOVE GROUND WATER LINES INSIDE GARAGE AND THOSE EXPOSED PRIOR TO ENTERING TREATMENT BUILDING ARE HEAT TRACED AND INSULATED.
8. LENGTH OF OUTFALL PIPE TRENCH IS APPROXIMATELY 166 FEET LONG.

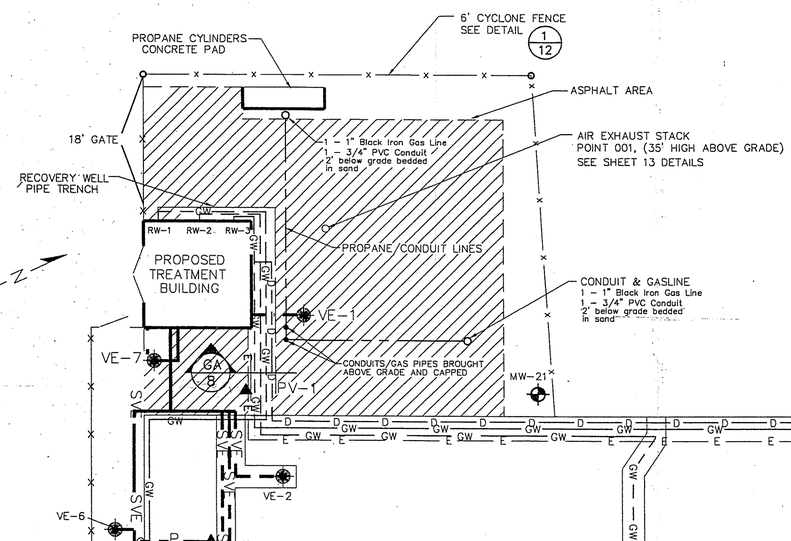


1/8 FLOAT SWITCH SUPPORT DETAIL
NOT TO SCALE

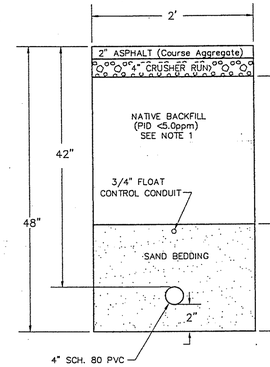
NOTES:
1. FLOAT SWITCH INSTALLED ADJACENT TO OUTLET OF DISCHARGE PIPE.
2. ELEVATION OF FLOAT SWITCH SENSOR SHUT-OFF AT CROWN OF DISCHARGE PIPE.



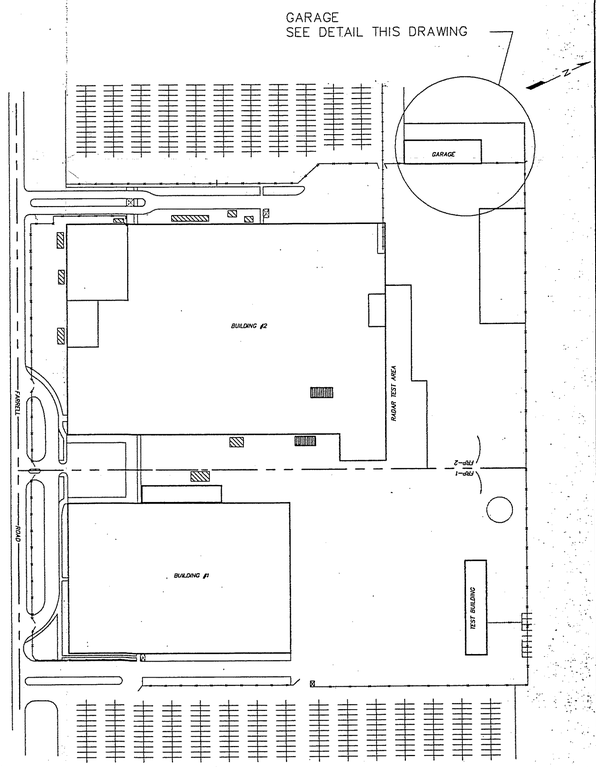
GA/8 TRENCH DETAIL FOR GROUND WATER RECOVERY PIPING IN NEW ASPHALT AREA
NOT TO SCALE



SITE PLAN
APPROX. SCALE: 1"=10'
GRAPHIC SCALE 20 10 0 20 40



GB/8 OUTFALL TRENCH SECTION
NOT TO SCALE



LOCATION MAP
APPROX. SCALE 1"=150'
GRAPHIC SCALE 300 150 0 600 1200

LEGEND

- MONITORING WELL
- PASSIVE AIR INJECTION WELL
- GROUND WATER RECOVERY WELL
- SVE EXTRACTION WELL
- P — UNDERGROUND PASSIVE AIR INJECTION PIPING
- GW — UNDERGROUND WATER RECOVERY PIPING
- GW — ABOVE GROUND WATER RECOVERY PIPING
- SVE — UNDERGROUND VAPOR EXTRACTION PIPING
- SVE — ABOVE GROUND VAPOR EXTRACTION PIPING
- E — ELECTRIC SERVICE
- D — UNDERGROUND WATER DISCHARGE PIPING
- D — ABOVE GROUND WATER DISCHARGE PIPING
- FENCE
- ASPHALT AREA

NO.	REVISIONS	MADE	CHK	DATE
2	RECORD DRAWINGS	DAM		2/21/95
1	ERM DWG C-1(G)	ERM		7/18/94

NAMES	DATE
DRAWN:	1/26/95
DESIGN: ERM	
PROJ. MGR.: AWT	1/27/95
PROJ. ENG.: DDF	1/27/95
CHECKED:	1/27/95
SCALE: AS NOTED	

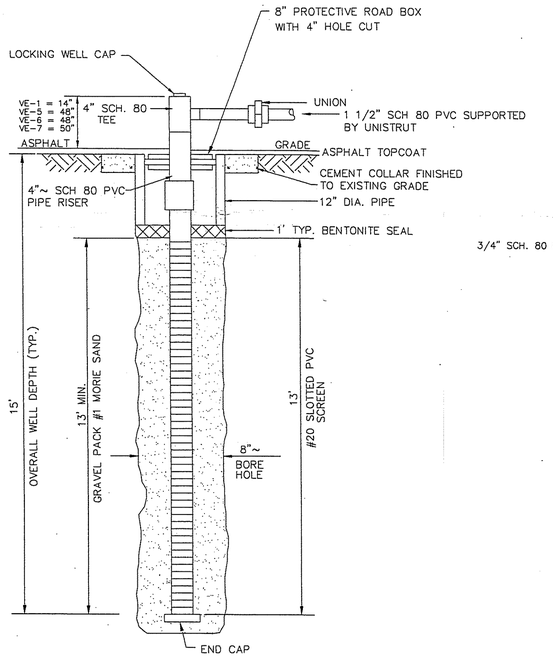
GARAGE AREA
SITE PLAN AND MISCELLANEOUS DETAILS

MARTIN MARIETTA
FARRELL ROAD PLANT
NEW YORK

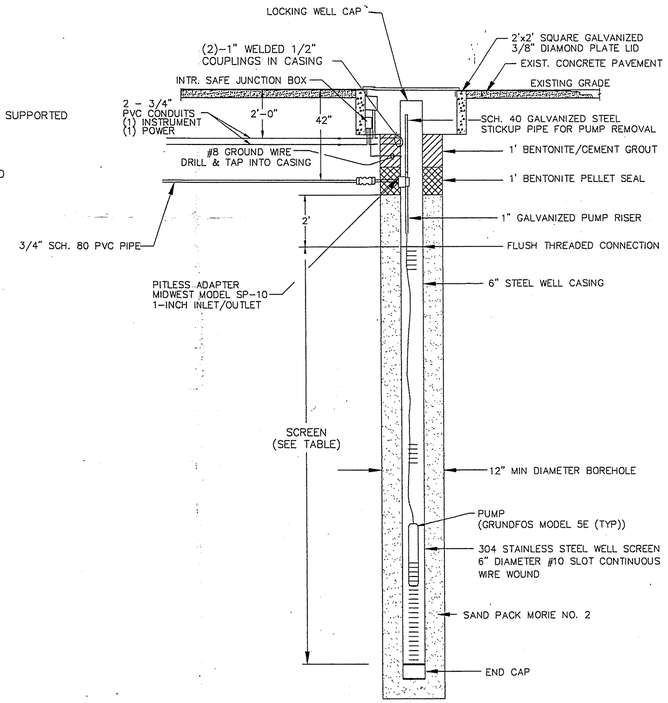
DUNN ENGINEERING COMPANY
DIVISION OF RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 38564.110	DATE 1/26/95
RUST DWG NUMBER 38564-04	REVISION NUMBER 0
CLIENT DWG NUMBER	SHEET NUMBER 8 OF 15

CAD FILE NAME:
PLOT DATE: 1/26/95

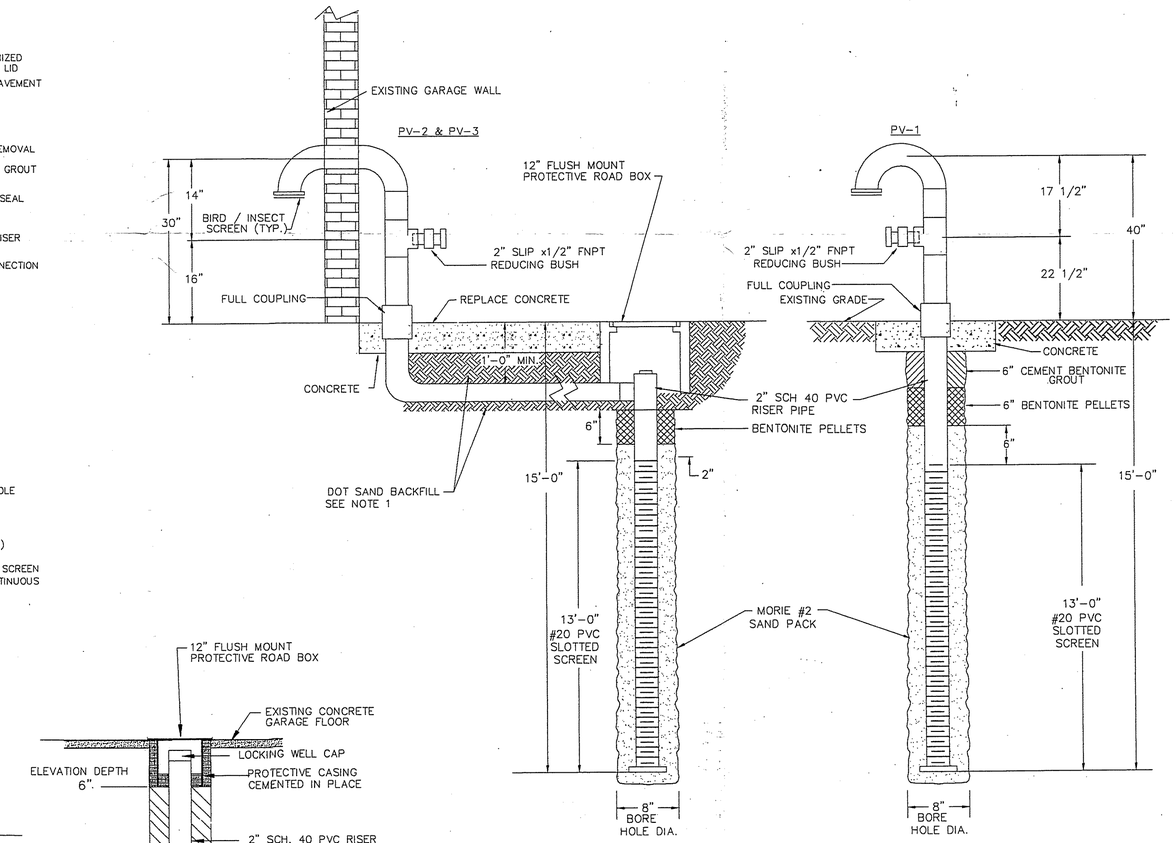


VAPOR RECOVERY WELL
1/9 ABOVE GRADE HEAD DETAIL (TYP)
(NOT TO SCALE)
(VE-1,VE-5, VE-6, VE-7)



RECOVERY WELL	RW-1	RW-2	RW-3
SCREEN LENGTH (FEET)	15	15	10

3/9 GROUNDWATER RECOVERY WELL CONSTRUCTION DETAIL
(NOT TO SCALE)

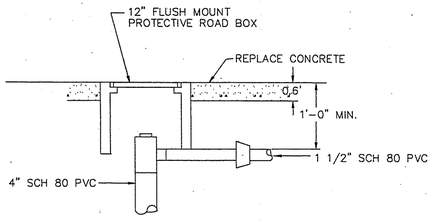


6/9 PASSIVE AIR INJECTION WELL DETAIL
(NOT TO SCALE)
(PV-2 & PV-3)

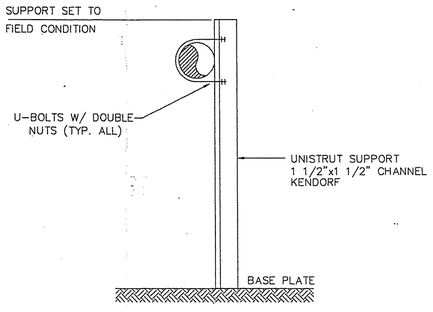
7/9 PASSIVE AIR INJECTION WELL DETAIL
(NOT TO SCALE)
(PV-1)

NOTE:

1. DOT COARSE SAND USED AS BACKFILL ABOVE AND BELOW AIR INJECTION AND VAPOR RECOVERY PIPE LATERALS.

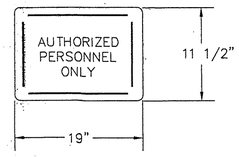


VAPOR RECOVERY WELL
2/9 BELOW GRADE HEAD DETAIL (TYP)
(NOT TO SCALE)
(VE-2, VE-3, VE-4)



4/9 SVE PIPE SUPPORT DETAIL
(NOT TO SCALE)
NOTE: OUTSIDE SUPPORT
WHERE WALL MOUNTED SUPPORT CAN NOT BE USED

5/9 MONITORING WELL (MW-1) CONSTRUCTION DETAIL
(NOT TO SCALE)



8/9 WARNING SIGN
SECURED TO CHAIN-LINK FENCE
(NOT TO SCALE)

NO.	REVISIONS	MADE	CHK	DATE
2	RECORD DRAWINGS	DAM		2/21/95
1	ERM DWGC-2(G)	ERM		7/18/94

NAMES	DATE
DRAWN:	1/26/95
DESIGN: ERM	
PROJ. MGR.: AWT	1/27/95
PROJ. ENG.: DDF	1/27/95
CHECKED:	1/27/95
SCALE: AS SHOWN	

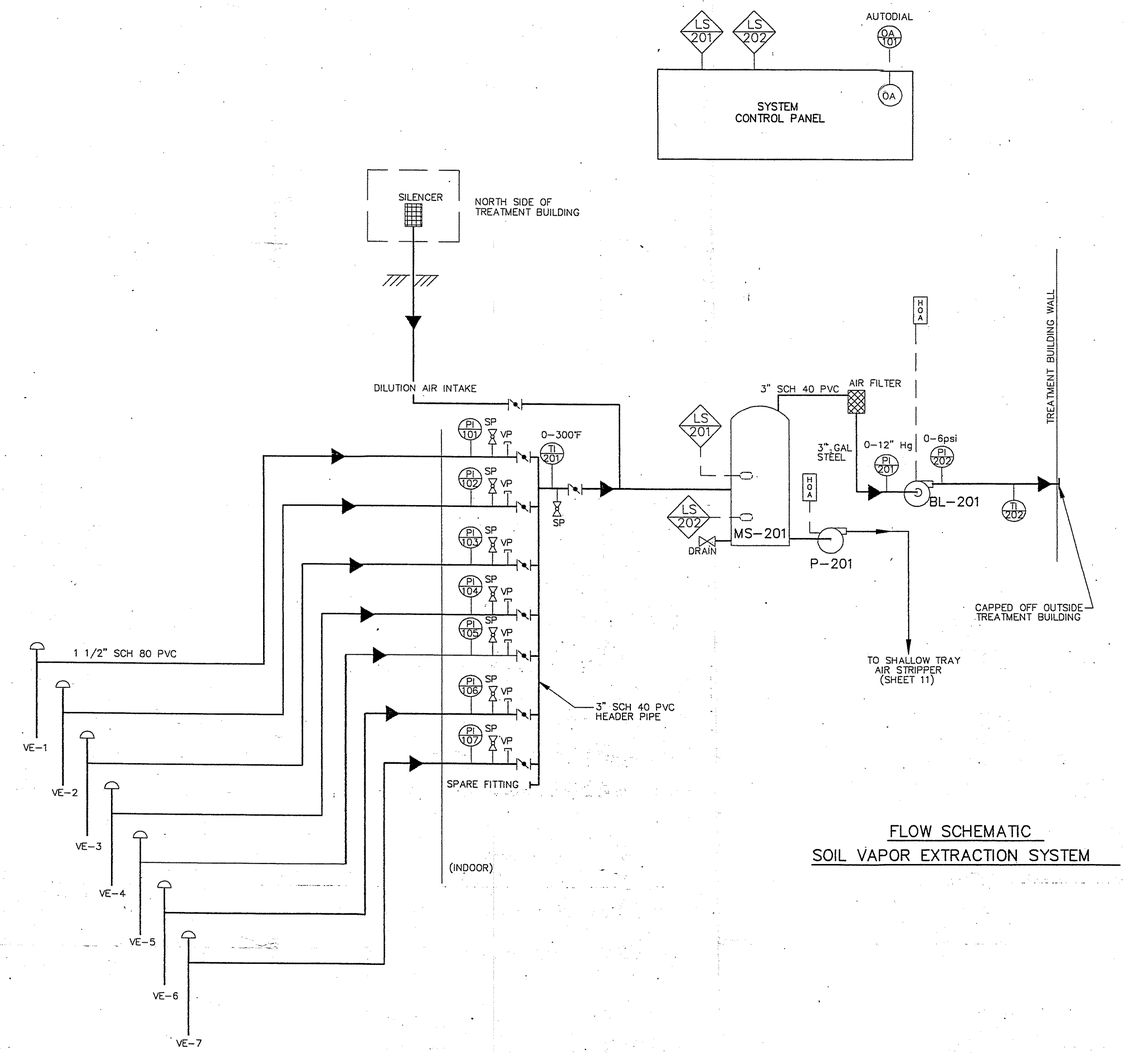
GARAGE AREA
WELL DETAILS
AND GENERAL MISCELLANEOUS DETAILS

MARTIN MARIETTA
FARRELL ROAD PLANT
NEW YORK

DUNN ENGINEERING COMPANY
DIVISION OF RUST ENVIRONMENT & INFRASTRUCTURE

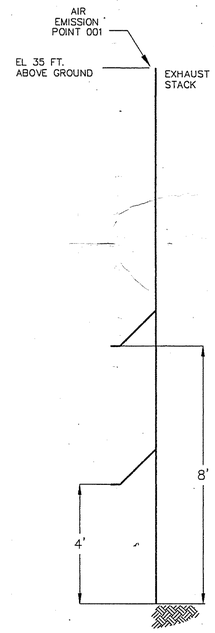
PROJECT NUMBER 38564.110 | DATE 1/26/95
RUST DWG NUMBER 38564-05 | REVISION NUMBER
CLIENT DWG NUMBER | SHEET NUMBER 9 OF 15

CAD FILE NAME:
PLOT DATE: 1/26/95



VAPOR EXTRACTION WELLS

FLOW SCHEMATIC
SOIL VAPOR EXTRACTION SYSTEM



1/10 EXHAUST STACK
(SEE SHEET 13 FOR STACK DETAILS)

LEGEND

- OA — SYSTEM ALARM AUTODIALER
- BUTTERFLY VALVE
- SP — SAMPLE PORT
- GATE VALVE
- H O A — HAND-OFF-AUTO SWITCH
- VP — VELOCITY MEASUREMENT PORT
- PI 101 — PRESSURE OR VACUUM GAUGE
- TI 201 — TEMPERATURE INDICATOR

INTERLOCK SCHEDULE

- LS 201 — HIGH SEPERATOR WATER LEVEL SHUTS DOWN SYSTEM
- LS 202 — HIGH-ON/LOW-OFF LIQUID LEVEL SWITCH PUMP OPERATOR (P-1) WITH MANUAL OVERRIDE SWITCH

EQUIPMENT

MS-201	MOISTURE SEPERATOR
P-201	CONDENSATE TRANSFER PUMP OBERDORFER CLOSE COUPLED ROTARY GEAR PUMP MODEL 991
BL-201	REGENERATIVE BLOWER 5Hp ROTRON MODEL 7073-XP

NOTES:

1. VACUUM GAUGES (PI-101 THROUGH PI-107) INSTALLED WITH 0-12 INCHES Hg AND 0-160 INCHES WATER.
2. VAPOR EXTRACTION LATERALS INSTALLED AS 2 INCH SCH. 40 BELOW GRADE AND 1 1/2" SCH. 80 OUTSIDE GARAGE (ABOVE GRADE).
3. EFFLUENT PIPE FROM SOIL VAPOR EXTRACTION NOT CONNECTED TO DISCHARGE STACK.

NO.	REVISIONS	MADE	CHK	DATE
2	RECORD DRAWINGS	DAM		2/21/95
1	ERM DWG PID-1(G)	ERM		7/18/94

STATE OF NEW YORK — ALAN N. TAVERNIER — 065053 — LICENSED PROFESSIONAL ENGINEER

NAMES	DATE
DRAWN:	1/27/95
DESIGN: ERM	
PROJ. MGR.: AWT	1/27/95
PROJ. ENG.: DDF	1/27/95
CHECKED:	1/27/95
SCALE: NOT TO SCALE	

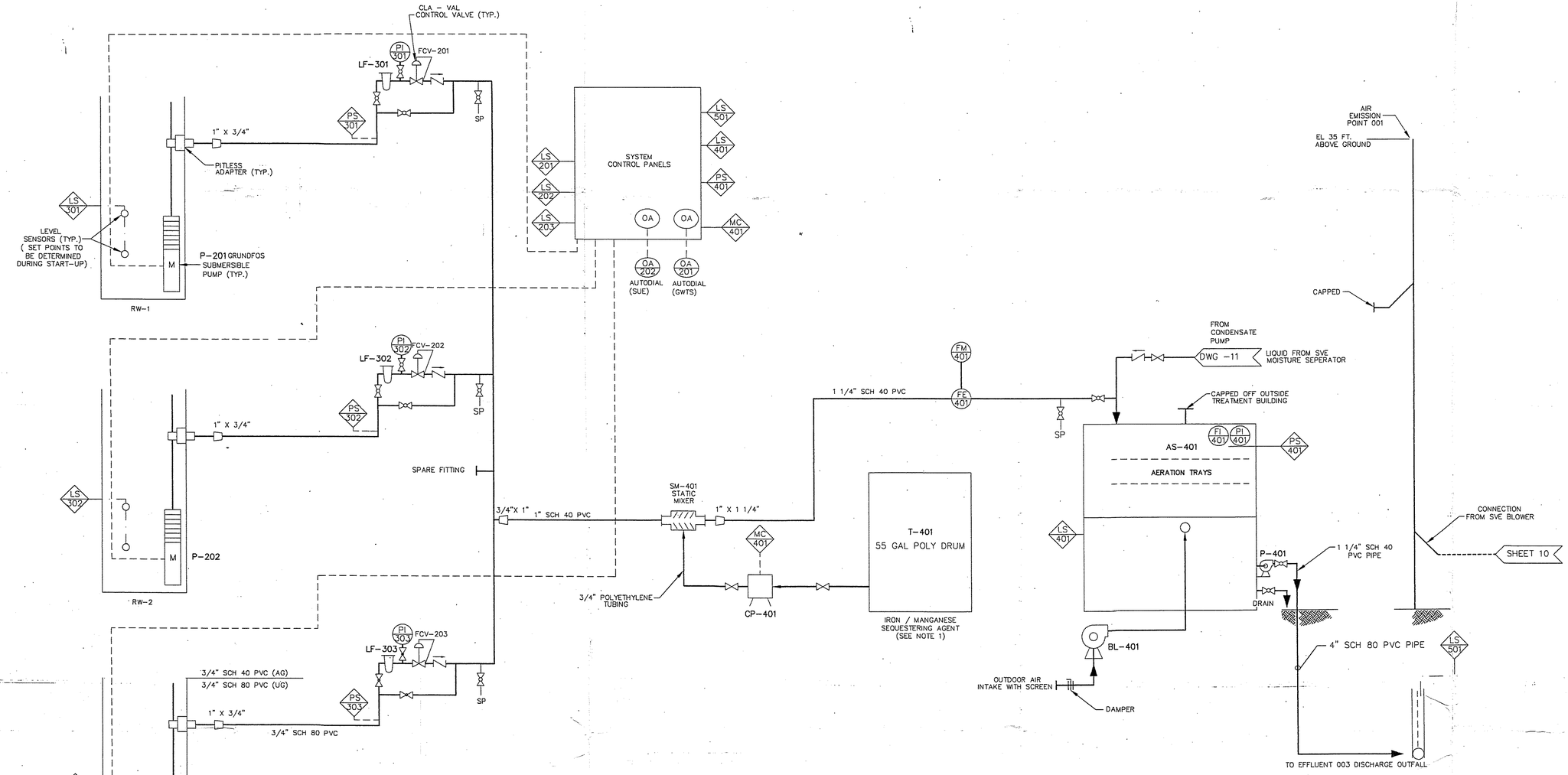
GARAGE AREA
SOIL VAPOR FLOW SCHEMATIC

MARTIN MARIETTA
FARRELL ROAD PLANT
NEW YORK

DUNN ENGINEERING COMPANY
DIVISION OF RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 38564.110	DATE 1/27/95
RUST DWG NUMBER 38564-06	REVISION NUMBER 0
CLIENT DWG NUMBER	SHEET NUMBER 10 OF 15

CAD FILE NAME:
PLOT DATE: 1/27/95



LEGEND

- PI 301 — PRESSURE INDICATOR GAUGE
- FM 401 — FLOW METER (INDICATOR AND TOTALIZER)
- FE 401 — FLOW ELEMENT
- FI 401 — FLOW INDICATOR
- FLOW CONTROL VALVE
- H O A — HAND–OFF–AUTO SWITCH
- SP — SAMPLE PORT
- GATE VALVE
- BALL VALVE
- CHECK VALVE

INTERLOCK SCHEDULE

LS 301, LS 302, LS 303	LEVEL SENSOR – WELL PUMP OPERATOR, TRANSDUCER/RELAY
PS 301, PS 302, PS 303	HIGH PRESSURE SHUT–OFF – SHUTS DOWN PUMP UPON HIGH PRESSURE IN PUMP DISCHARGE LINE, MERCOID SWITCH
LS 401	3–POINT LEVEL SWITCHING– LOW LEVEL SHUTS DOWN P–401, HIGH LIQUID LEVEL ACTIVATES P–401 HIGH–HIGH LEVEL IN AIR STRIPPER SUMP SHUTS DOWN RECOVERY WELLS TWO MERCURY FLOAT SWITCHES
PS 401	LOW AIR PRESSURE IN STRIPPER (L.T. 0.3"W.C.) SHUTS DOWN SYSTEM DWYER 1950–1 EXPLOSION PROOF
MC 401	MOTOR CONTROL – SHUT DOWN CHEMICAL FEED PUMP WHEN ALL THREE SUBMERSIBLE PUMPS ARE OFF
LS 501	SHUT DOWN ALL SUBMERSIBLE PUMPS ON OUTFALL HIGH LEVEL

EQUIPMENT

P–201, P–202, P–203	GRUNDFOS REDI–FLO 4, 5gpm SUBMERSIBLE PUMP MODEL 5E, 1/3Hp, 240 VAC, 1ph
LF–201, LF–202, LF–203	LIQUID FILTER – BAG FILTER, 20gpm ROSEDALE MODEL 4–12
CP–401	CHEMICAL PUMP – LMI MODEL P14 0.1 – 1.0gph
BL–401	BLOWER – AMERICAN FAN COMPANY 3Hp 240VAC, 3–ph, EXPL. SER. #AF15–1106–7 300 CFM min AT 14" W.C.
P–401	PUMP – DUNHAM BUSH 1Hp TRANSFER PUMP MODEL R5– 1 INCH DISCHARGE, 3 7/8" IMPELLOR 240VAC, 3–ph, EXPL. 15gpm AT 50' TDH
AS–401	AIR STRIPPER – SHALLOW TRAY 8gpm 3–TRAY 304 L SS WITH WELDED STEEL FRAME

NOTES:

1. SEQUESTERING AGENT CONSISTS OF POLYCHEMICAL PRODUCTS ULTRATREAT C722S, APPROVED BY NYSDEC.

NO.	REVISIONS	MADE	CHK	DATE
2	RECORD DRAWINGS	DAM		2/21/95
1	ERM DWG EA–1(G)	ERM		7/18/94

NAMES	DATE
DRAWN:	1/27/95
DESIGN: ERM	
PROJ. MGR.: AWT	1/27/95
PROJ. ENG.: DDF	1/27/95
CHECKED:	1/27/95
SCALE: NOT TO SCALE	

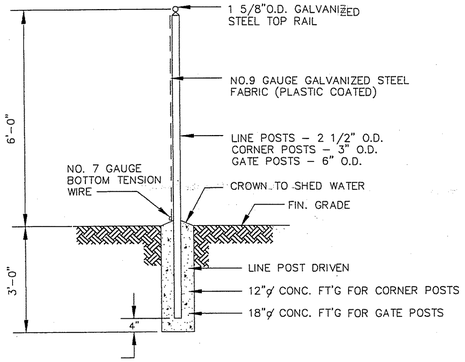
GARAGE AREA
GROUNDWATER RECOVERY AND TREATMENT
P&I DIAGRAM

MARTIN MARIETTA
FARRELL ROAD PLANT
NEW YORK

DUNN ENGINEERING COMPANY
DIVISION OF RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 38564.110	DATE 1/27/95
RUST DWG NUMBER 38564–07	REVISION NUMBER 0
CLIENT DWG NUMBER	SHEET NUMBER 11 OF 15

CAD FILE NAME:
PLOT DATE: 1/27/95

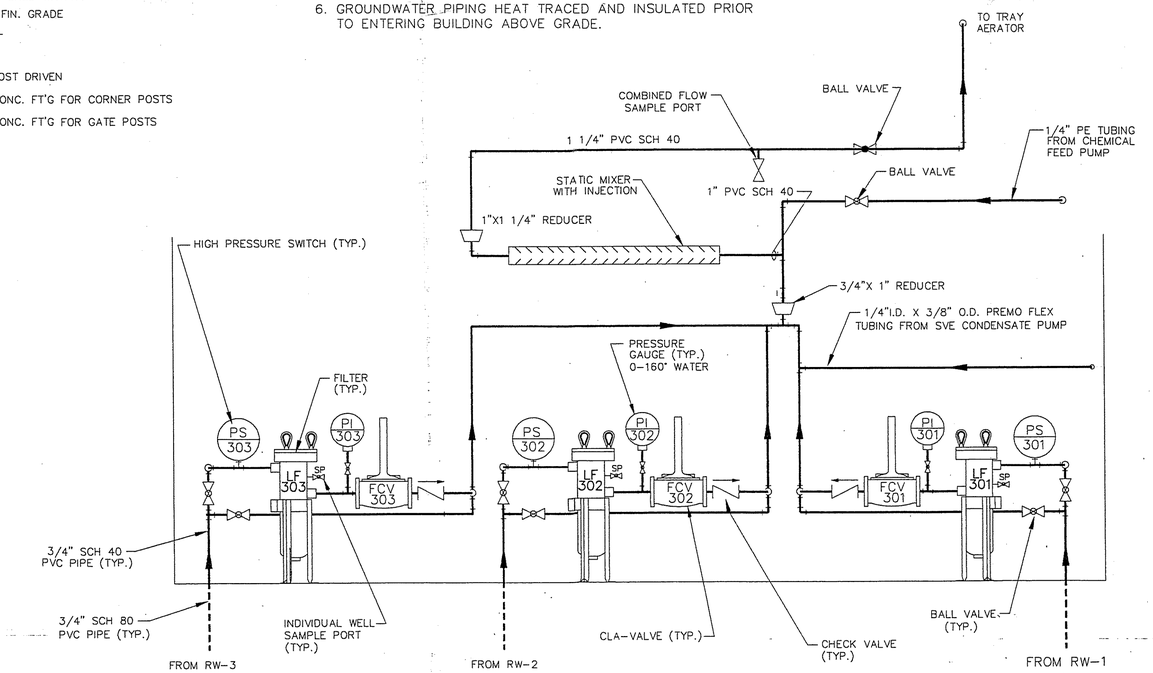


1/12 TYPICAL FENCE DETAIL

NO SCALE

NOTES:

1. PIPE SUPPORTS MOUNTED TO UNISTRUT PIPE SUPPORTS BOLTED TO FLOOR
2. PIPELINE EQUIPMENT SUCH AS FILTERS AND CONTROL VALVES FASTENED TO FLOOR OR SUPPORTED BY UNISTRUT.
3. VALVES, REDUCERS, PLUGS NOT TO SCALE.
4. ALL EQUIPMENT LOCATED INSIDE TREATMENT BUILDING IS EXPLOSION PROOF OR INTRINSICALLY SAFE RATED FOR OPERATION IN CLASS 1, DIV. 2 ATMOSPHERE.
5. ALL CONTROL PANELS MOUNTED ON EAST EXTERIOR BUILDING WALL.
6. GROUNDWATER PIPING HEAT TRACED AND INSULATED PRIOR TO ENTERING BUILDING ABOVE GRADE.

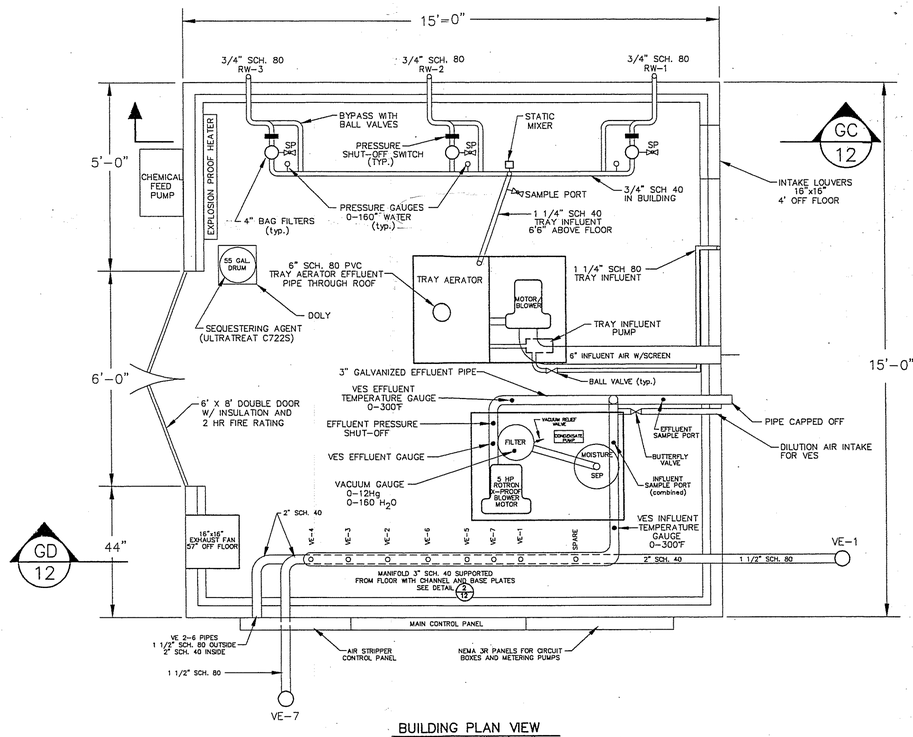


GC/12 SECTION

SCALE: 1"=1'-0"

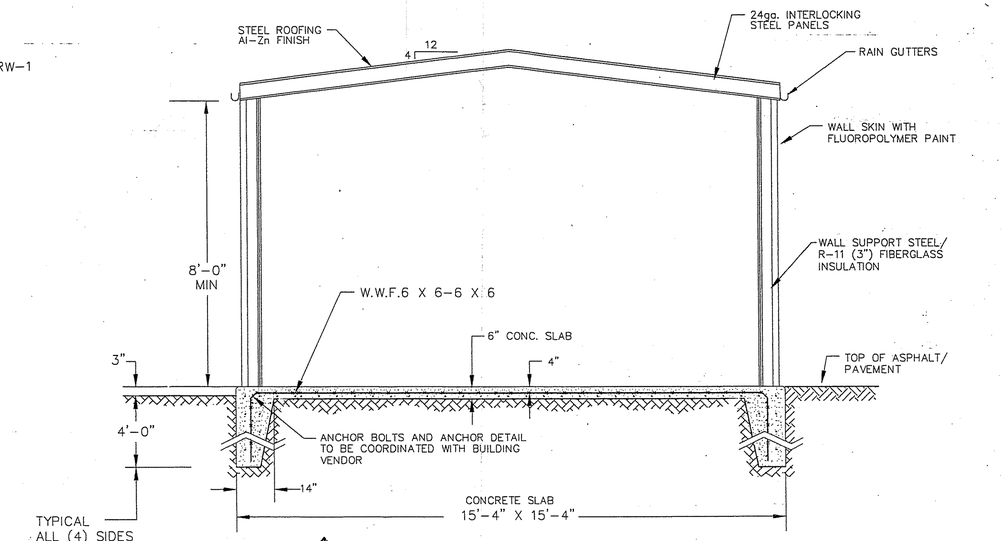
2/12 TYPICAL VAPOR EXTRACTION PIPE CONNECTION TO MANIFOLD

NO SCALE



BUILDING PLAN VIEW

SCALE: 1/2"=1'-0"



GD/12 SECTION C-C S-1

SCALE: 1/2"=1'-0"

GENERAL NOTE

CONCRETE

1. THE CONCRETE USED OBTAINED MINIMUM COMPRESSIVE STRENGTH OF f'c = 4.,000 P.S.I AT 28 DAYS.
2. CHAMFERED ALL EXPOSED CONC. EDGES (ONE) 1" INCH
3. CONCRETE NOT POURED ON MUDDY OR FROZEN GROUND.
4. CONCRETE MIX AT POINT OF PLACEMENT WAS AT TEMPERATURE LESS THAN 85°F. CONCRETE MIX MINIMUM TEMPERATURE OF 50 F. OR OVER
5. POLYPROPYLENE FIBRILLATED FIBER (70,000 P.S.I.) ADDED INTO CONC. MIX TO REDUCE PLASTIC CONC. SHRINKAGE. (APPROXIMATELY 1.5 LBS. OF FIBER/C.Y. OF CONCRETE)

SOIL:

6. THE ENTIRE SOIL AREA UNDER CONC. PAD UNIFORMLY COMPACTED USING PLATE TAMPER. MINIMUM ALLOWABLE SOIL BEARING = 2,500 P.S.F. (or greater).

METAL BUILDING

7. THE DESIGN LOADING OF METAL STRUCTURE SHALL BE IN ACCORDANCE WITH OFFICIAL COMPILATION OF CODES, RULES AND REGULATIONS OF THE STATE OF NEW YORK.

NO.	REVISIONS	MADE	CHK	DATE
2	RECORD DRAWINGS	DAM		2/21/95
1	ERM DWG S-1(G)	ERM		7/18/94

NAMES	DATE
DRAWN:	1/27/95
DESIGN: ERM	
PROJ. MGR.: AWT	1/27/95
PROJ. ENG.: DDF	1/27/95
CHECKED:	1/27/95
SCALE: AS NOTED	

GARAGE AREA TREATMENT BUILDING AND CIVIL DETAILS

MARTIN MARIETTA FARRELL ROAD PLANT NEW YORK

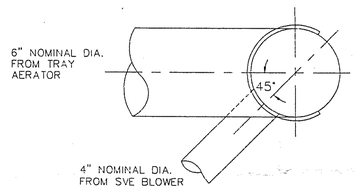
DUNN ENGINEERING COMPANY

DIVISION OF RUST ENVIRONMENT & INFRASTRUCTURE

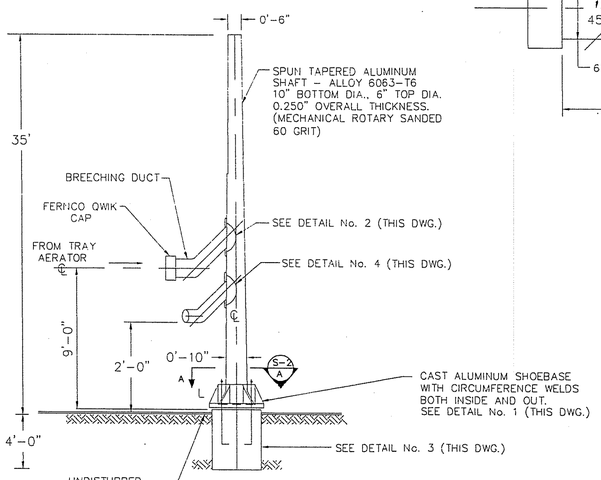
PROJECT NUMBER 38564.110	DATE 1/27/95
RUST DWG NUMBER 38564-09	REVISION NUMBER 0
CLIENT DWG NUMBER	SHEET NUMBER 12 OF 15

CAD FILE NAME:

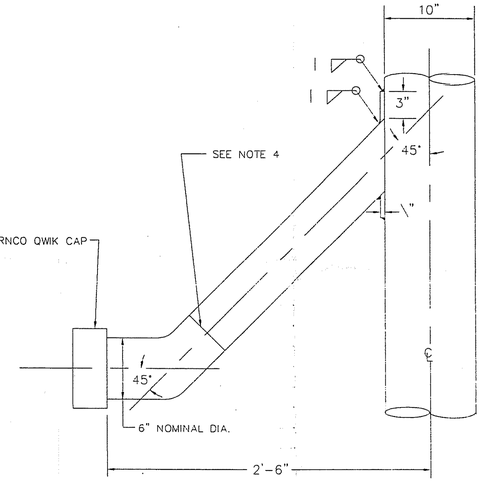
PLOT DATE: 1/27/95



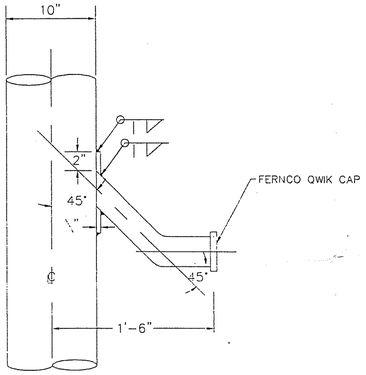
DETAIL No. 5
BREECHING DUCT ORIENTATION
SCALE: NONE



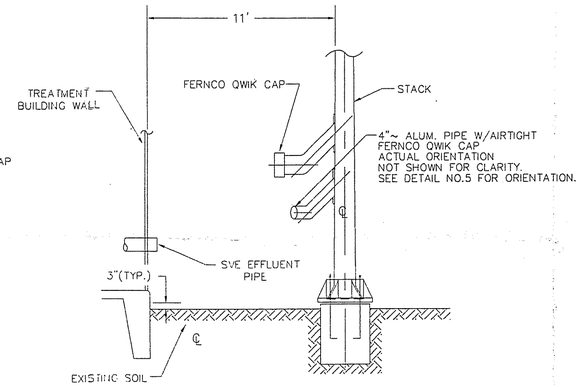
STACK ELEVATION (1/13)
SCALE: NONE



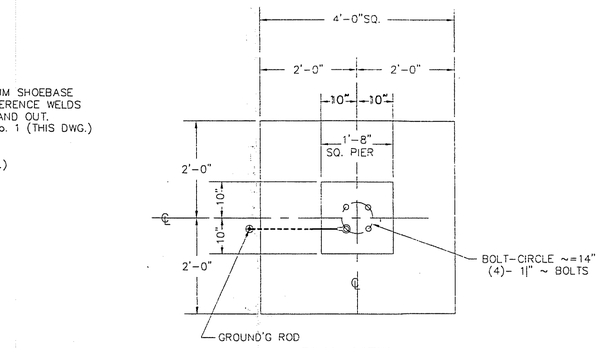
DETAIL No. 2
BREECHING DUCT
SCALE: NONE



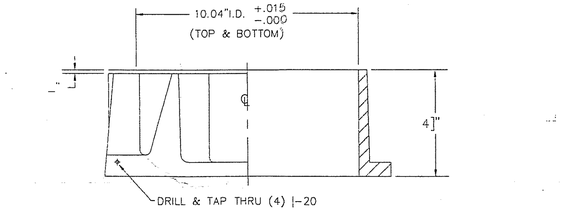
DETAIL No. 4
ROTATED 135°
ALUMINUM PIPE
SCALE: 1\"=1'-0"

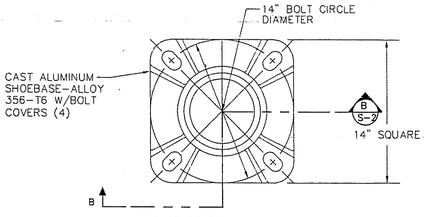


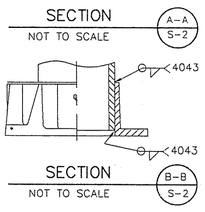
SUPPORT DETAILS
SCALE: NONE

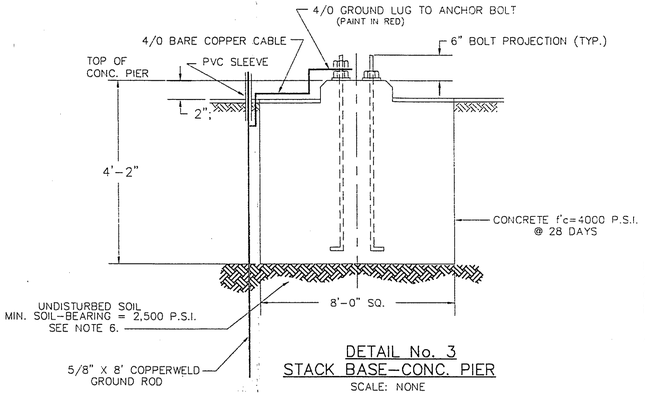


PLAN VIEW

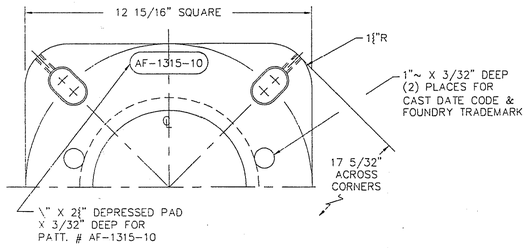






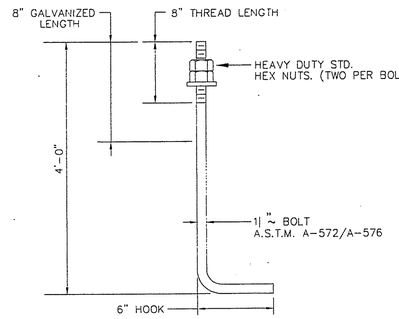


DETAIL No. 3
STACK BASE-CONC. PIER
SCALE: NONE



NOTE:
2" O.D. FLATWASHER TO BE USED ON 13" B.C. ONLY. STANDARD 2[" O.D. FLATWASHER TO BE USED ON 15" B.C. & BOTTOM ANCHOR ADJUSTMENT.

DETAIL No.1
SHOE BASE
SCALE: NONE



TYPICAL ANCHOR BOLT
SCALE: NONE
(4) REQ'D

NOTES:

1. ALL WELDING CONNECTIONS AIRTIGHT.
2. EMISSION STACK 4-INCH (SVE) AND 6-INCH (AIR STRIPPER) CONNECTIONS NOT CONNECTED.
3. STACK TO BE SUPPORTED WITH GUIDE WIRE CONNECTION TO GARAGE PRIOR TO SYSTEM START-UP.
4. BREECHING DUCT BENDED OR WELDED.
5. STACK BASE CONSTRUCTED BY EXCAVATING A 8'-0" SQUARE HOLE, 8'-0" DEEP, SET BOLTS & FILL WITH CONCRETE AGAINST VERTICAL SOIL CUTS. (NO FORMS). VERTICAL SOIL CUTS VIRGIN UNDISTURBED SOIL, NOT COMPACTED.

NO.	REVISIONS	MADE	CHK	DATE
2	RECORD DRAWINGS	DAM		2/21/95
1	ERM DWG S-2(G)	ERM		7/18/94

NAMES	DATE
DRAWN:	1/27/95
DESIGN: ERM	
PROJ. MGR.: AWT	1/27/95
PROJ. ENG.: DDF	1/27/95
CHECKED:	1/27/95
SCALE: AS SHOWN	

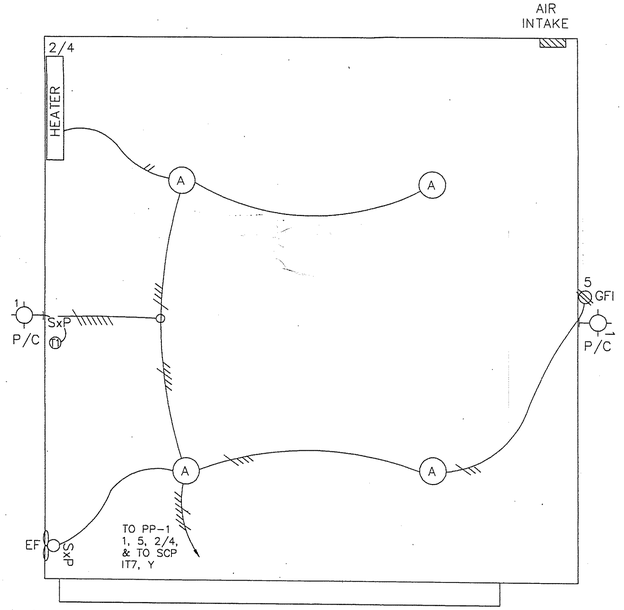
GARAGE AREA
VAPOR DISCHARGE STACK (10" DIA. TAPERED)
BASE AND CONCRETE FOUNDATION DETAILS

MARTIN MARIETTA
FARRELL ROAD PLANT
NEW YORK

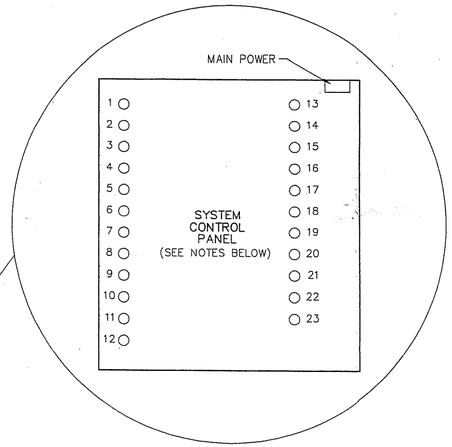
DUNN ENGINEERING COMPANY
DIVISION OF RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 38564	DATE 1/27/95
RUST DWG NUMBER 38564-10	REVISION NUMBER 0
CLIENT DWG NUMBER	SHEET NUMBER 13 OF 15

CAD FILE NAME:
PLOT DATE: 1/27/95

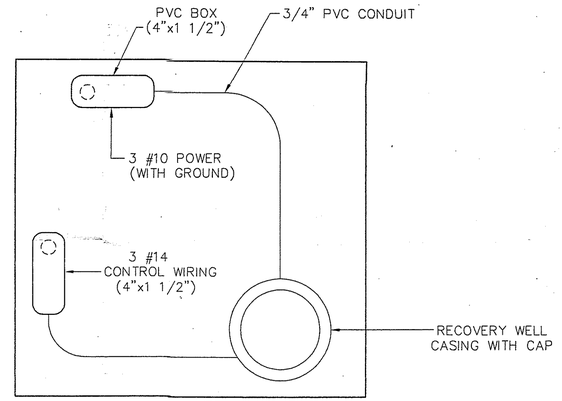


PLAN VIEW LIGHTING
NOT TO SCALE



PANEL SWITCH LABELING

1 SVE BLOWER SWITCH
2 SEPERATOR DISCHARGE PUMP SWITCH
3 RW-1 PUMP SWITCH
4 RW-2 PUMP SWITCH
5 RW-3 PUMP SWITCH
6 SEPERATOR HIGH LEVEL
7 BLOWER HIGH TEMP
8 AIR STRIPPER FAULT
9 PUMP 1 OVERLOAD
10 PUMP 2 OVERLOAD
11 PUMP 3 OVERLOAD
12 EXHAUST FAN SWITCH
13 SVES BLOWER ON
14 SEPERATOR DISCHARGE PUMP ON
15 RW-1 ON
16 RW-2 ON
17 RW-3 ON
18 RW-1 HIGH PRESSURE
19 RW-2 HIGH PRESSURE
20 RW-3 HIGH PRESSURE
21
22 RECHARGE HIGH LEVEL
23 RESET

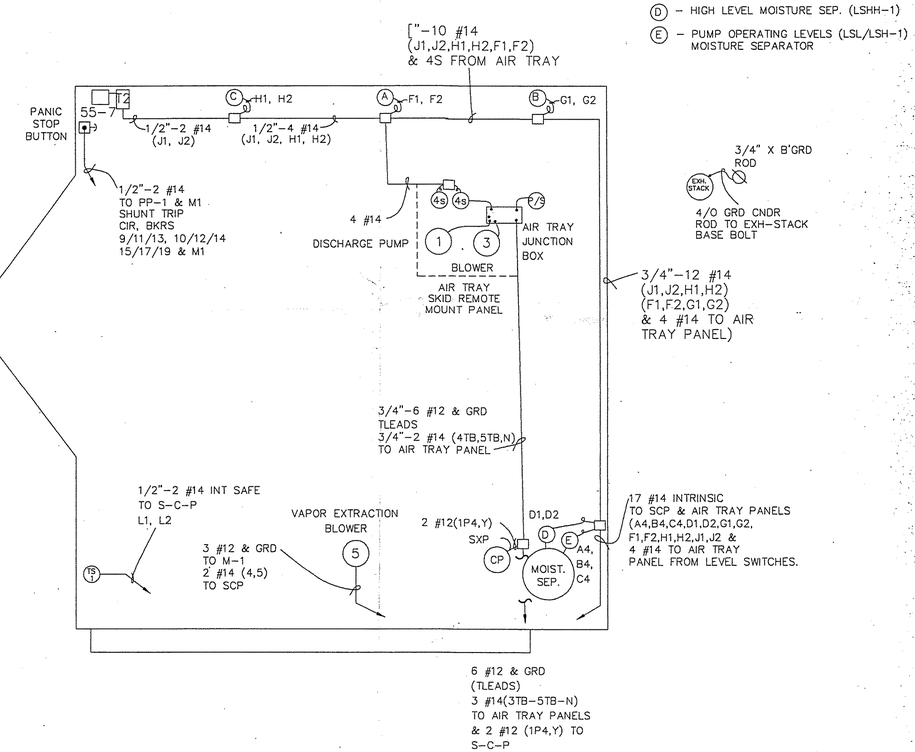


RECOVERY WELL BOX PLAN (TYPICAL)
NOT TO SCALE

NOTE:
ALL CONTROL BOXES ARE WEATHER-PROOF

14 GE ELECTRICAL DISTRIBUTION & CONTROL ELEVATION
SCALE: 1"=20'

Ⓐ – HIGH PRESSURE SW. RW-1
Ⓑ – HIGH PRESSURE SW. RW-2
Ⓒ – HIGH PRESSURE SW. RW-3
Ⓓ – HIGH LEVEL MOISTURE SEP. (LSHH-1)
Ⓔ – PUMP OPERATING LEVELS (LSL/LSH-1) MOISTURE SEPARATOR



PLAN VIEW POWER
SCALE: NONE

NO.	REVISIONS	MADE	CHK	DATE
2	RECORD DRAWINGS	DAM		2/21/95
1	ERM DWG E-1(G)	ERM		7/18/94

NAMES	DATE
DRAWN:	1/27/95
DESIGN: ERM	
PROJ. MGR.: AWT	1/27/95
PROJ. ENG.: DDF	1/27/95
CHECKED:	1/27/95
SCALE: AS NOTED	

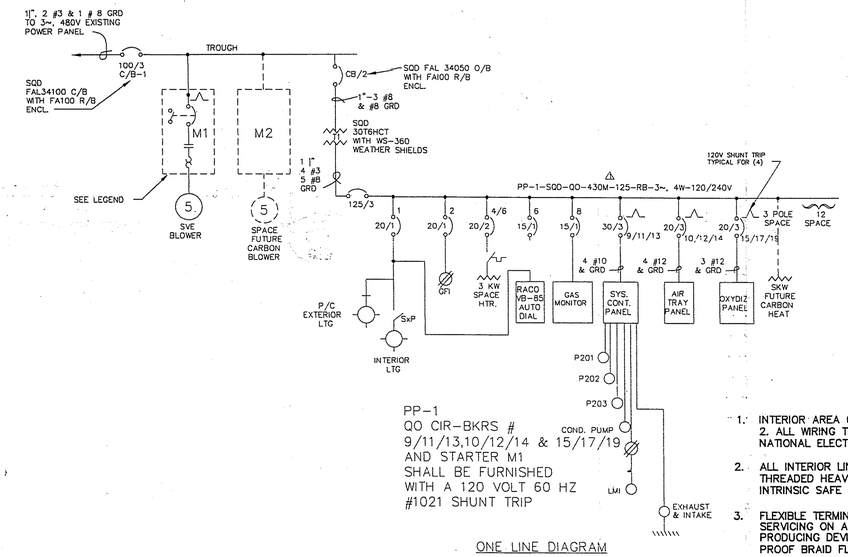
GARAGE AREA
GENERAL ELECTRICAL DETAILS

MARTIN MARIETTA
FARRELL ROAD PLANT
NEW YORK

DUNN ENGINEERING COMPANY
DIVISION OF RUST ENVIRONMENT & INFRASTRUCTURE

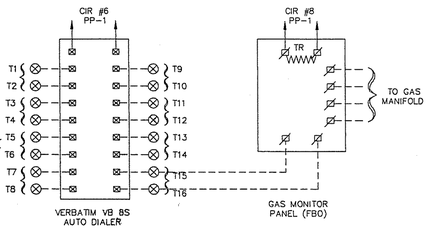
PROJECT NUMBER 38564.110	DATE 1/27/95
RUST DWG NUMBER 38564-12	REVISION NUMBER 0
CLIENT DWG NUMBER	SHEET NUMBER 14 OF 15

CAD FILE NAME:
PLOT DATE: 1/27/95



PP-1
QO CIR-BKRS # 9/11/13,10/12/14 & 15/17/19 AND STARTER M1 SHALL BE FURNISHED WITH A 120 VOLT 60 HZ #1021 SHUNT TRIP

ONE LINE DIAGRAM



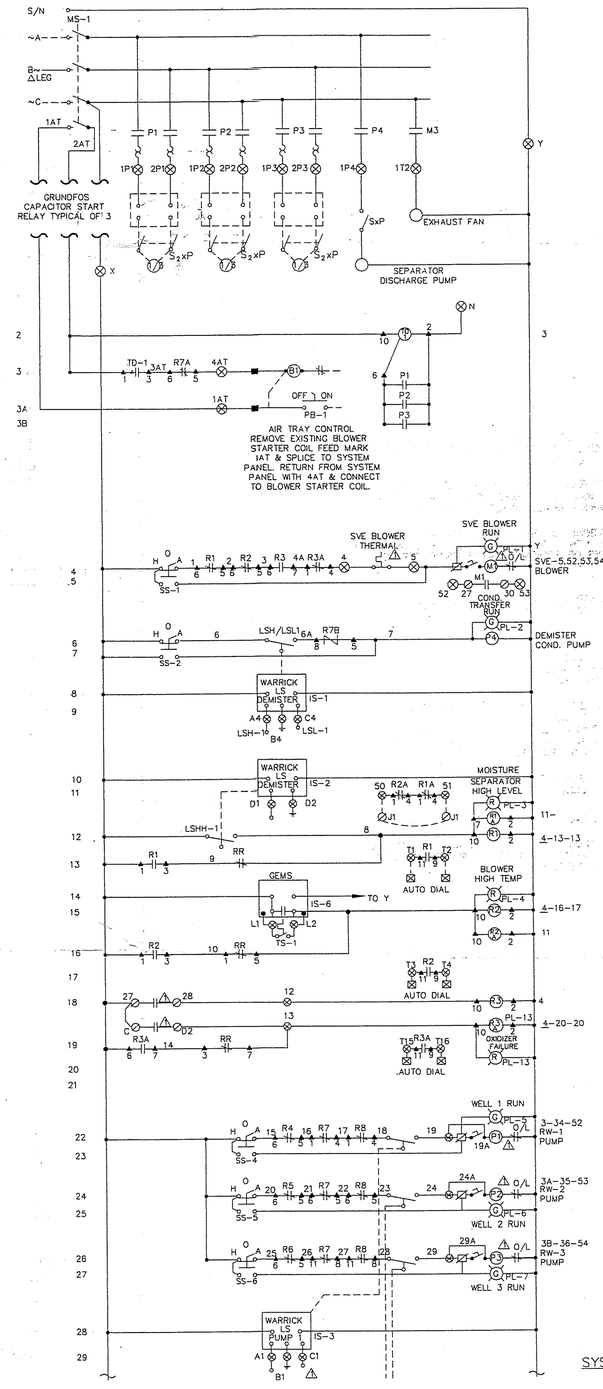
NOTES

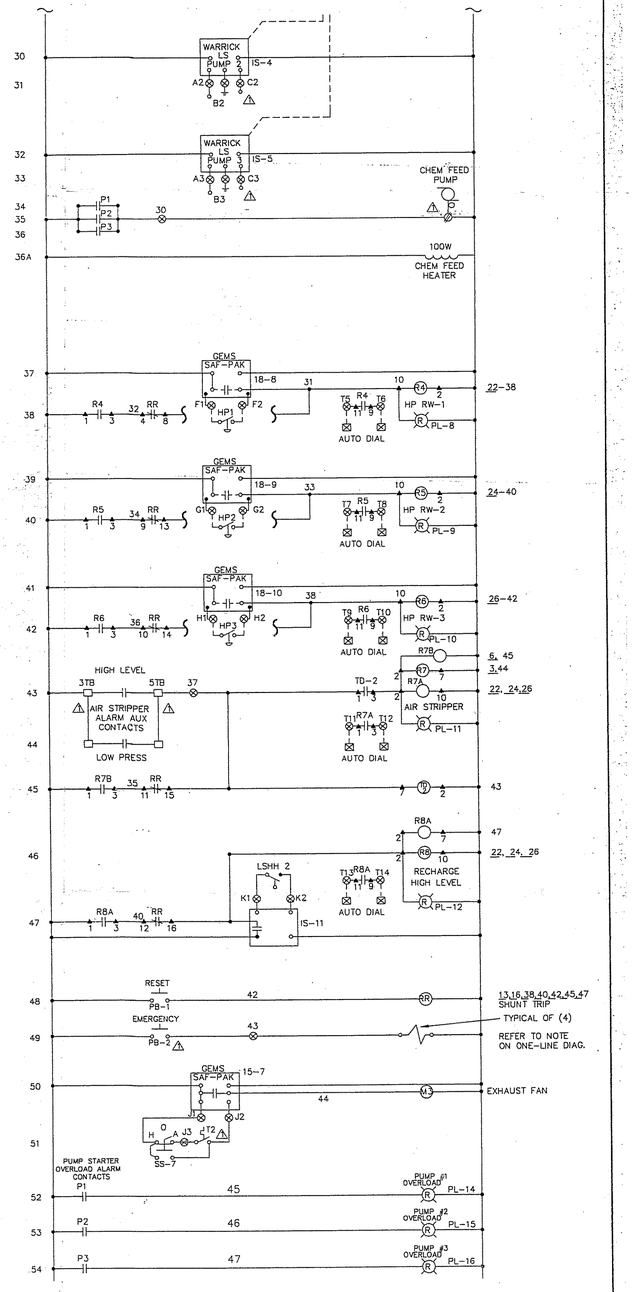
1. INTERIOR AREA OF BUILDING CLASSIFIED CLASS #1 DIVISION 2. ALL WIRING THEREIN CONFORMS TO ARTICLE 500 OF THE NATIONAL ELECTRIC CODE.
2. ALL INTERIOR LINE VOLTAGE WIRING CONTAINED IN RIGID THREADED HEAVY WALL GALVANIZED OR ALUMINUM CONDUIT. INTRINSIC SAFE WIRING SHALL UTILIZE EMT CONDUIT.
3. FLEXIBLE TERMINATIONS WHERE REQUIRED FOR MOVEMENT OR SERVICING ON ALL NON INTRINSIC SAFE, SWITCHING OR SPARK PRODUCING DEVICES OR EQUIPMENT MADE USING EXPLOSION PROOF BRAID FLEX. INTRINSIC SAFE WIRING SHALL UTILIZE LIQUIDTITE FLEX.
4. ALL CONDUCTORS STRANDED, COPPER, TYPE THHN/THWN, #14 MINIMUM FOR CONTROL, #12 MIN. FOR POWER.
5. JUNCTION BOXES AND FITTINGS INSTALLED AS REQUIRED AND SHALL BE APPROVED FOR THE AREA CLASSIFICATION IN WHICH THEY ARE INSTALLED. JUNCTION BOXES FOR INTRINSIC SAFE WIRING WILL BE PRESSED STEEL, SCREW COVER UNLESS OTHERWISE NOTED.
6. ALL RACEWAYS SEALED USING TYPE EYS SEAL FITTINGS AT ALL POINTS AS FOLLOWS:
   A- WHEN ENTERING OR LEAVING THE CLASSIFIED AREA
   B- WHEN ENTERING OR LEAVING ANY NON INTRINSIC SAFE SWITCHING OR SPARK PRODUCING DEVICE OR EQUIPMENT.
7. INSTALLATION CONFORMS WITH ALL NATIONAL, STATE, LOCAL AND UTILITY CODES AND SPECIFICATIONS.
8. ALL RACEWAYS CONTAIN A CIRCUIT SIZE GROUND CONDUCTOR.
9. ALL POWER & CONTROL WIRING TO WELLS AND OUTFALL LEVEL SWITCH INSTALLED WITHOUT SPLICES EXCEPT AT CONNECTION TO THE PUMPS AND DEVICES.

LEGEND

- △ DENOTES DEVICE OR EQUIP. REMOTE FROM CONTROL PANEL & DIST'R. AREA
- M1 ALLEN BRADLEY 513-BOBD-6-40 WITH 1-N/O AUX CONTACT & 120 VOLT 60 HZ SHUNT TRIP ON CIR BKR & AUX ALARM CONTACT ON O/L
- P4 & M3 ALLEN BRADLEY - 700HG45A1
- P1, P2 & P3 ALLEN BRADLEY - 509-AOXD WITH 2 N/O AUX CONTACTS & AUX ALARM CONTACT ON O/L
- R1 TO R8 OMRON MK3P-S-120V-3P-DT
- R2A, R7A, R8A & AR OMRON MK2P-S-120V-3P-DT
- RR ALLEN BRADLEY - 700N-800A1
- SS-1,2,4,5,6 & 7 ALLEN BRADLEY - 800HJR2A - "HAND-OFF-AUTO"
- PB-1 ALLEN BRADLEY - 800HR1A4 - RESET
- MS-1 GE THC-3100AFC WITH GE # 343L296G2 AUX. SW
- (HP) HIGH PRESSURE SWITCH - MERCOID DA-31-153-8 F-B-O (PUMPS)
- (TS) HIGH TEMP. SWITCH - MERCOID - DAH-35-153-5 F-B-O (SVE BLOWER)
- IS-1 TO IS-5 WARRICK INT. SAFE LEVEL CONTROLS & PROBES F-B-O
- AUX. CONTACT ON DISCONNECT OF COMBINATION MAGNETIC MOTOR STARTER
- IS-6,7,8,9,10 & 16 GEMS #A-144800 INT. SAFE RELAYS
- PL-1 TO PL-16 ALLEN BRADLEY-800H-PR16-LENS COLOR AND LEGENDS AS INDICATED
- TD-1 ATC #407A-500-F-3-X OFF DELAY TIMER
- TD-2 ATC #339A-200-Q-2-X ON DELAY TIMER

- PB-2 A/B-800H-1HX7P-Y4-EMERGENCY STOP BUTTON
- (T1) WW GRAINGER #2E158 HEATING MOUNT 60"
- (T2) WW GRAINGER-2E158-STAT-COOLING (MOUNT 60")
- ⊗ SYSTEM CONTROL PANEL TERMINAL POINT
- ⌀ GAS MONITOR TERMINAL
- □ AIR STRIPPER TERMINAL
- ⊠ AUTO DIALER TERMINAL
- ⊘ OXIDIZER TERMINAL
- ▲ RELAY BASE TERMINAL POINT
- CONDUCTOR CONNECTION
- NO CONDUCTOR CONNECTION
- P/C HUBBELL NRG-301-PC WITH NRG-33 BOX (MOUNT 9')
- APPLETON AP-1550 WITH CPU-20-50 BOX
- SxP APPLETON EDSC-175-F1 1 POLE EXP-PRF SWITCH (MOUNT 42")
- S_2xP APPLETON EDSC-175-F2-2 POLE EXP-PRF SWITCH
- GFI HUBBELL GF-5362 IN FS BOX WITH LIFT COVER (MOUNT ;42")
- HUBBELL 5362 IN FS BOX WITH LIFT COVER (MOUNT ;42")
- EXPLOSION PROOF SEALING FITTING





SYSTEM SCHEMATIC DIAGRAM

NO.	REVISIONS	MADE	CHK	DATE
2	RECORD DRAWINGS	DAM		2/21/95
1	ERM DWG E-2(G)	ERM		7/18/94

NAMES	DATE
DRAWN:	1/27/95
DESIGN: ERM	
PROJ. MGR.: AWT	1/27/95
PROJ. ENG.: DDF	1/27/95
CHECKED:	1/27/95
SCALE: AS NOTED	

GARAGE AREA
ELECTRICAL SCHEMATIC AND ONE LINE DIAGRAM

MARTIN MARIETTA
FARRELL ROAD PLANT
NEW YORK

DUNN ENGINEERING COMPANY
DIVISION OF RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 38564.110	DATE 2/21/95
RUST DWG NUMBER 38564-11	REVISION NUMBER 0
CLIENT DWG NUMBER	SHEET NUMBER 15 OF 15

CAD FILE NAME:
PLOT DATE: 1/27/95

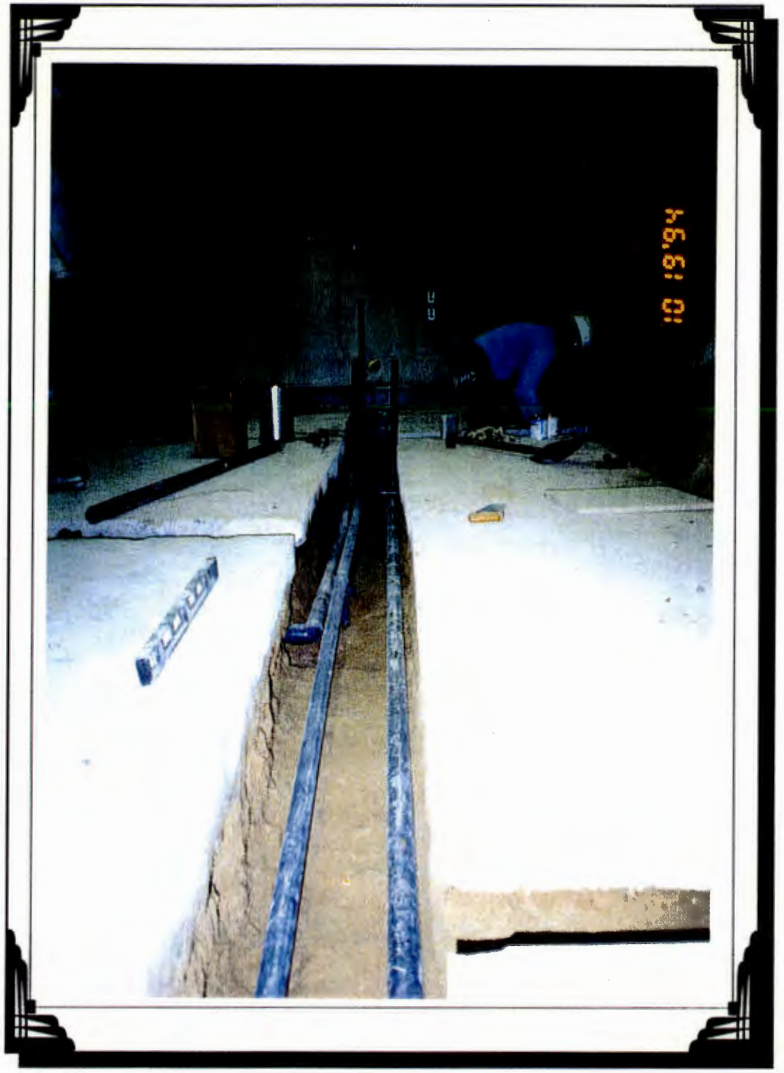
P-1 Excavated soil and debris (<5 ppm) stored on polyethylene sheeting east of the garage (AOC #16).

P-2 Loading of stockpiled soil (<5 ppm) onto trucks for off-site disposal.

P-3 Excavation of groundwater discharge trench (AOC #16).

P-4 Groundwater discharge pipe with highter high water float sensor (southern view).

P-5 **Equipment used for excavation of AOC #5 treatment building footings and pad as well as asphalt seal.**

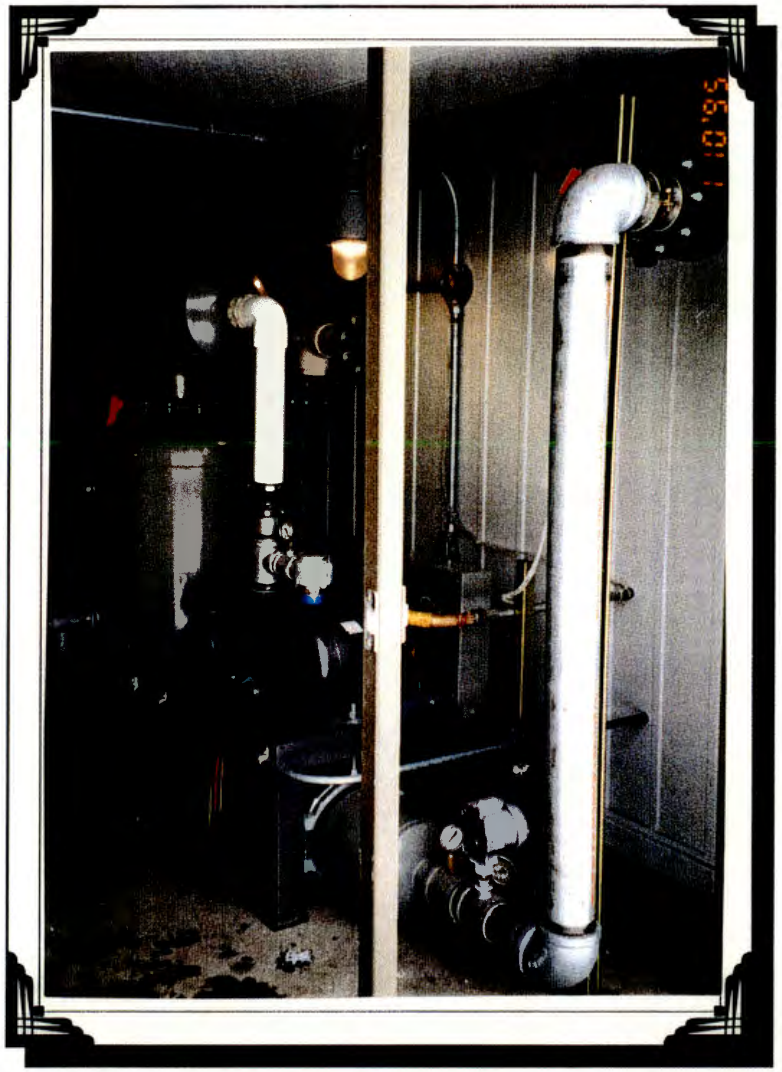


P-6 **Installation of vapor recovery and air injection piping within trench in previous polysulfide room (AOC #5).**

P-7 Vapor recovery piping supported along Building 2. Building 2. Also view of treatment building.

P-8 Treatment building with view of control and circuit panels. Also air emission discharge stack supported to Building 2 (AOC #5).

P-9 Vapor extraction piping connecting to PVC manifold within AOC #5 treatment building. Includes view of sample ports, pressure gauges, and magnehelic sensors and gauges.

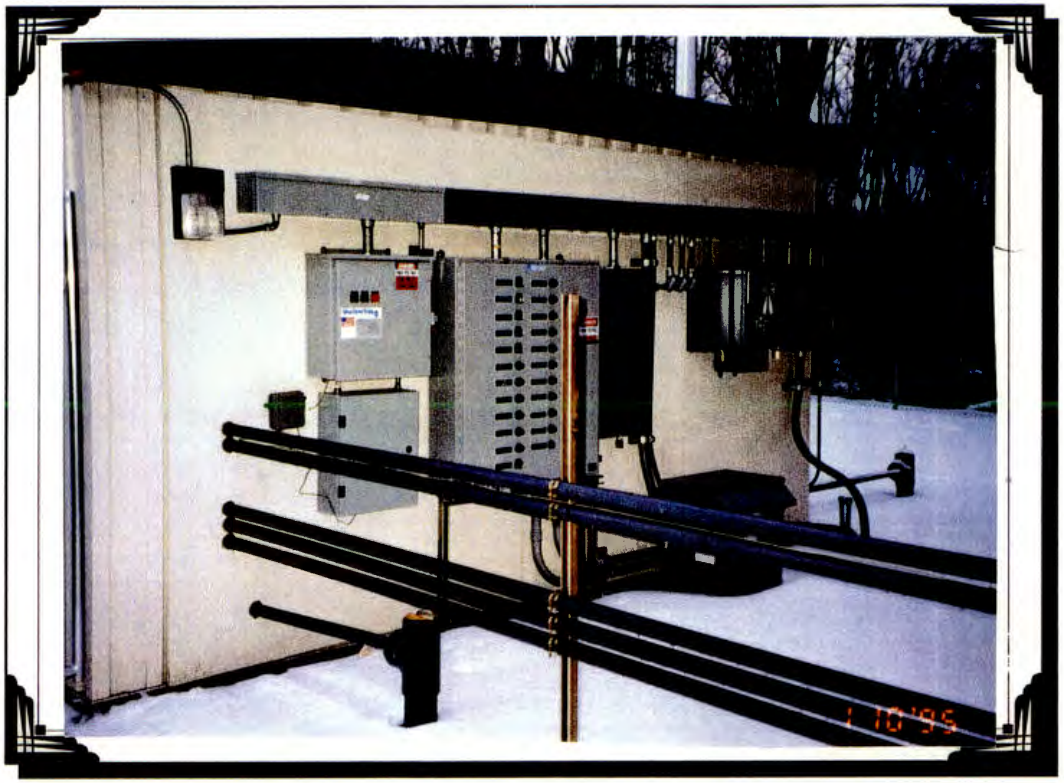


P-10 Soil vapor extraction equipment within AOC #5 treatment building. Effluent discharge pipe exiting building can be seen in foreground.

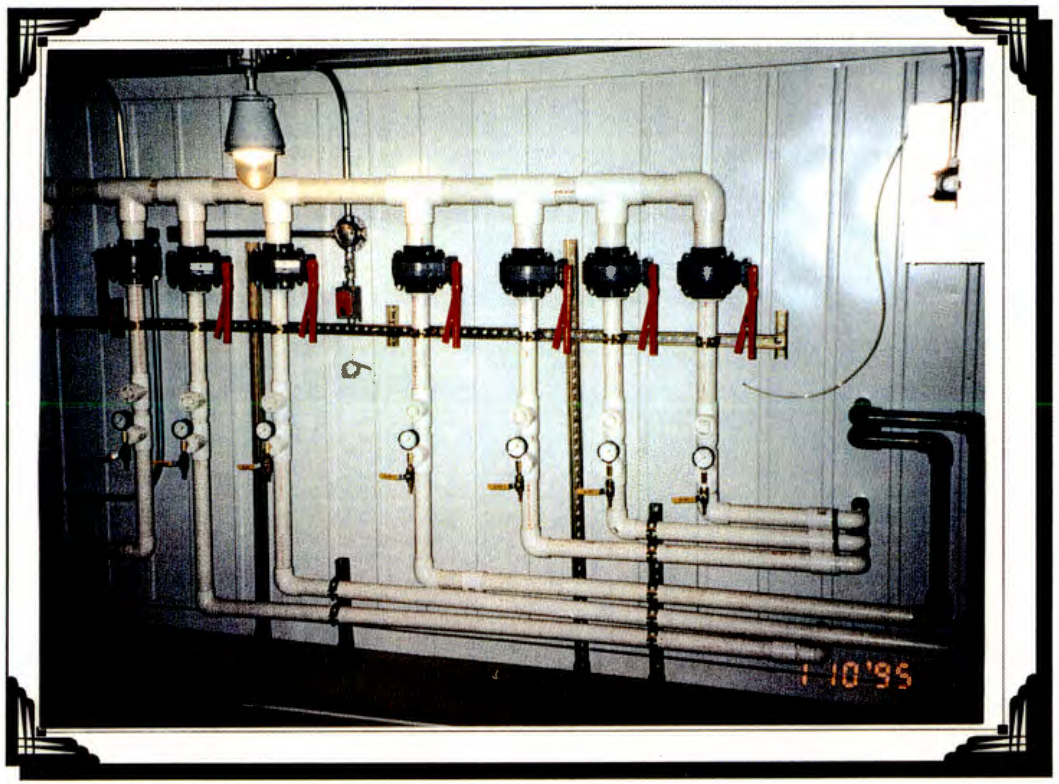
P-11 Parratt Wolff drilling RW-2 within corresponding pipe trench (AOC #16).

P-12 REW personnel finishing surface of concrete for PV-1, PV-2, VE-2, VE-3, and VE-4 pipe trenches (AOC #16).

P-13 REW personnel installating recovery well piping along north side of treatment building pad (AOC #16).



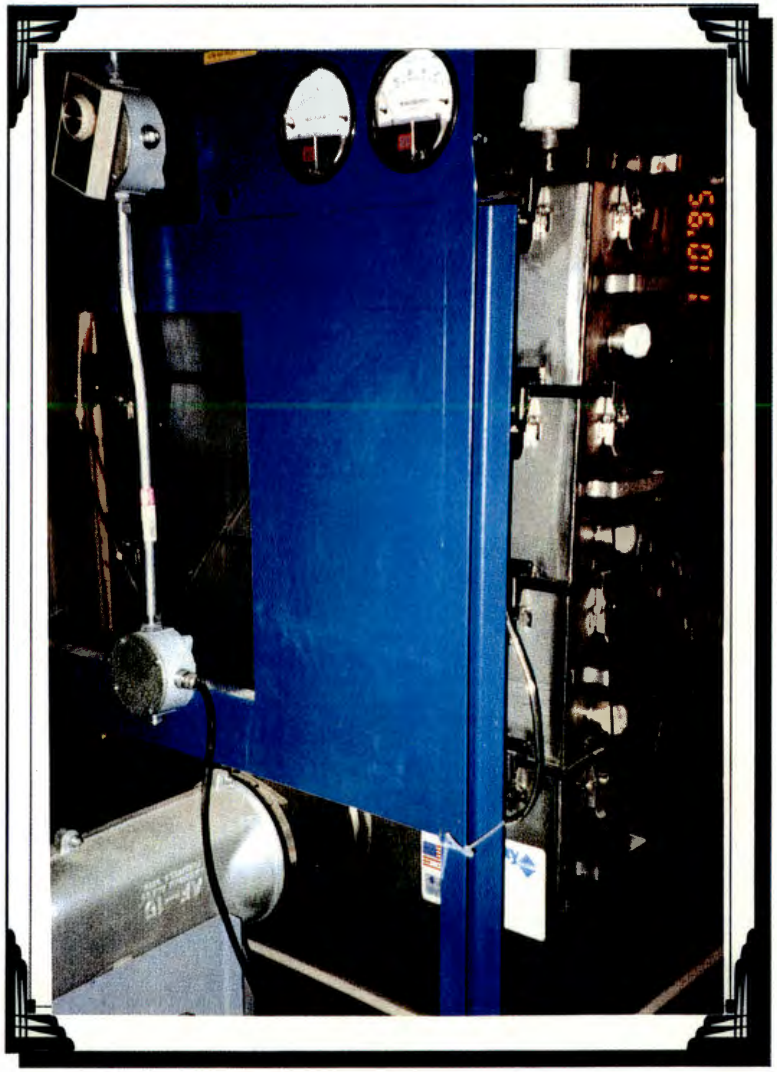
P-14 Control panels and circuit boxes supported to east wall of treatment building (AOC #16). Vapor extraction laterals VE-2, VE-3, VE-4, VE-5, VE-6, and VE-7 can be seen entering into building in foreground.



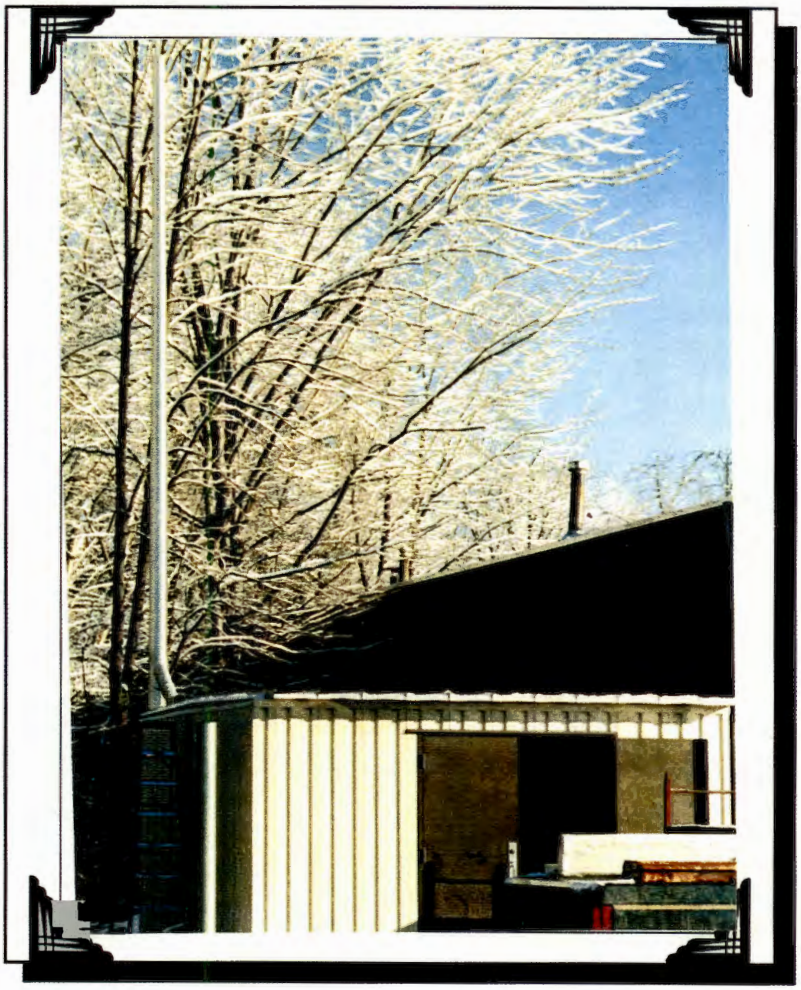
P-15 Vapor extraction piping entering PVC manifold within AOC #16 treatment building. View of sample ports, pressure gauges, and butterfly valves on laterals.

P-16 AOC #16 soil vapor extraction system.

P-17 Recovery well RW-2 and RW-3 piping enter building into corresponding filters. Sequestering agent 55-gallon drum feeding into groundwater influent line (AOC #16).



P-18 Three-tray air stripper (AOC #16).



P-19 AOC # 16 treatment building with view of the air emission discharge stack.