# 2-Phase<sup>TM</sup> Extraction Remedial Implementation Report Emerson Power Transmission, Ithaca, NY (Morse Industrial Corporation, Site No. 7-55-010)

## Prepared for:

Emerson Electric Company 8000 West Florissant St. Louis, Missouri 63136-8506

Prepared by:

Radian International LLC 155 Corporate Woods, Suite 100 Rochester, New York 14623

## 2-PHASE™ Extraction Remedial Implementation Report Emerson Power Transmission, Ithaca, NY (Morse Industrial Corporation, Site No. 7-55-010)

### Prepared for:

Emerson Electric Company 8000 West Florissant St. Louis, Missouri 63136-8506

Prepared by:

Radian International LLC 155 Corporate Woods, Suite 100 Rochester, New York 14623 This section of the Remedial Actions Implementation Report provides the previously submitted 2-PHASE™ Groundwater Extraction Construction Certification report. It includes as-built construction drawings of the 2-PHASE system and a signed certification by a Professional Engineer in the State of New York. This Construction Certification Report was submitted to Mr. Amar Nagi of the New York State Department of Environmental Conservation on October 16, 1996.

To meet the other requirements of the Record of Decision (ROD) for 2-PHASE groundwater extraction and treatment at the site the following documents have been developed and will be provided to NYSDEC in separate transmittals:

- Operation, Maintenance, and Monitoring Manual for Operation of a 2-PHASE<sup>TM</sup> Extraction System:
  - Health & Safety Plan for Operation of a 2-PHASE™ Extraction System
  - Sampling Plan for Operation of a 2-PHASE™ Extraction System
  - Data Evaluation and Reporting Plan for Operation of a 2-PHASE™
    Extraction System
  - 2-PHASE<sup>TM</sup> Extraction Skid Operation and Maintenance Manual
- Semi-Annual 2-PHASE<sup>TM</sup> Extraction Progress Report (submitted on an ongoing semi-annual basis)

October 16, 1996

155 Corporate Woods Suite 100 Rochester, NY 14623 (716)292-1870 FAX# (716)292-1878

Mr. Amar Nagi

Bureau of Construction Services

Division of Hazardous Waste Remediation

New York State Department of Environmental Conservation

50 Wolf Road

Albany, NY 12233-7010

SUBJECT:

Site No. 7-55-010; Emerson Power Transmission (formerly Morse Industrial

Corporation), Tompkins, New York; Construction Certification and As-Built

Drawings for 2-PHASE™ System Installation

Dear Mr. Nagi:

In accordance with the Order on Consent Index #A7-0125-87-09, paragraph XI, for Site No. 7-55-010, Emerson Power Transmission (formerly Morse Industrial Corporation), Tompkins, New York, attached are the following documents:

One copy of as-built drawings of the 2-PHASE System installation; and
A certification that construction was completed in accordance with the approved
Remedial Design and any approved modifications.

Please provide us with an acknowledgement that implementation of the Remedial Program is complete and in accordance with the approved Remedial Design. If you have any questions, please call John Yackiw at (716) 292-1870 or me at (703) 713-6437.

ohn Yackin for Edward M. Andrechak

Sincerely,

Edward M. Andrechak

Project Manager

#### ENGINEER'S CONSTRUCTION CERTIFICATION STATEMENT

OWNER:

Emerson Power Transmission

(Formerly Morse Industrial Corp.);

Tompkins, New York

NYSDEC SITE NO. 7-55-010

ENGINEER:

Radian Engineering of New York

PROJECT:

2-PHASE Extraction™ System Installation

I hereby certify, as a Professional Engineer registered in the State of New York, that, based on our continuous observations of the subject contract, the work of this contract has been completed in general conformance with the Final Remedial Design, 2-PHASE Extraction System document, dated May 1995. Construction was mechanically complete on July 19, 1996.

As-built drawings of the 2-PHASE Extraction System accompany this certification. Minor modifications were made to the electrical drawings (E1 and E2). Specifically, air inlet louvers were placed at both ends of the building for better ventilation, and an all stop feature was added to the fan start push button. All other aspects of the design remained as previously submitted.

Bw.

John C. Yackiw, P.E.

Senior Engineer

Radian Engineering of New York

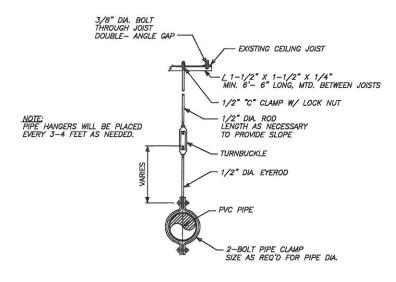
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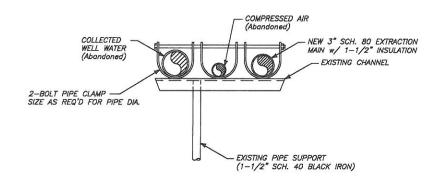
Radian Engineering Inc.

Attachments

c: Derek Chase, EmersonJohn Yackiw, Radian



TYPICAL INTERIOR HANGER
ASSEMBLY DETAIL
SCALE: NONE
MTD. 5'-6" O.C.

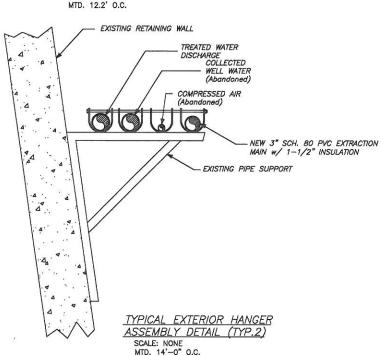


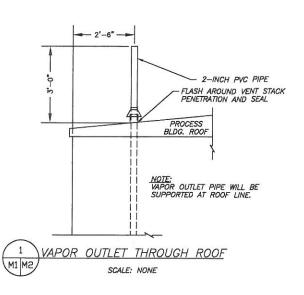
TYPICAL EXTERIOR HANGER

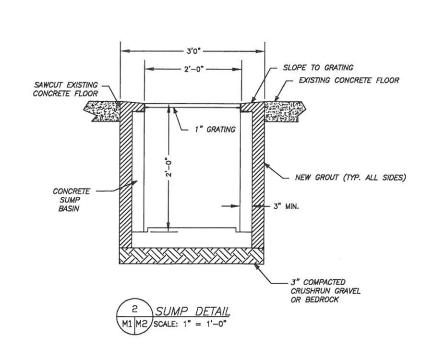
ASSEMBLY DETAIL (TYP.1)

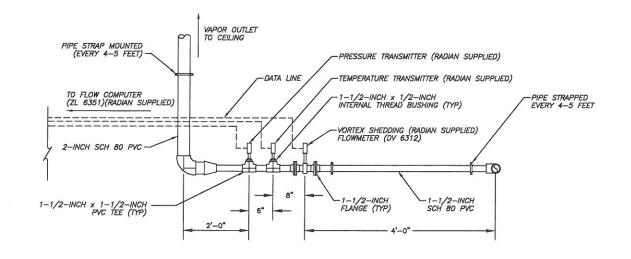
SCALE: 1"=1'-0"

MTD. 12.2' O.C.

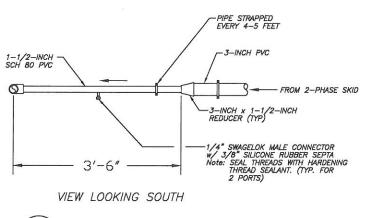








VIEW LOOKING EAST



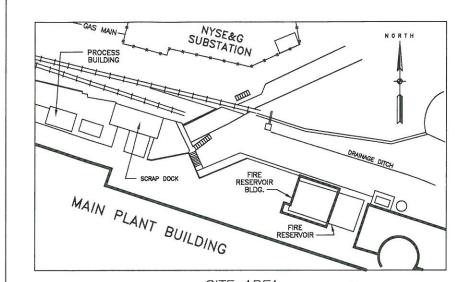
MI M2 VORTEX FLOWMETER
DETAIL C
SCALE: 1" = 1'-0"

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ZA)	AS-BUILTS	10-2-96
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	REVI	SIDNS

EMERSON ELECTRIC COMPANY 8000 W. FLORISSANT ST. LOUIS, MO. 63136

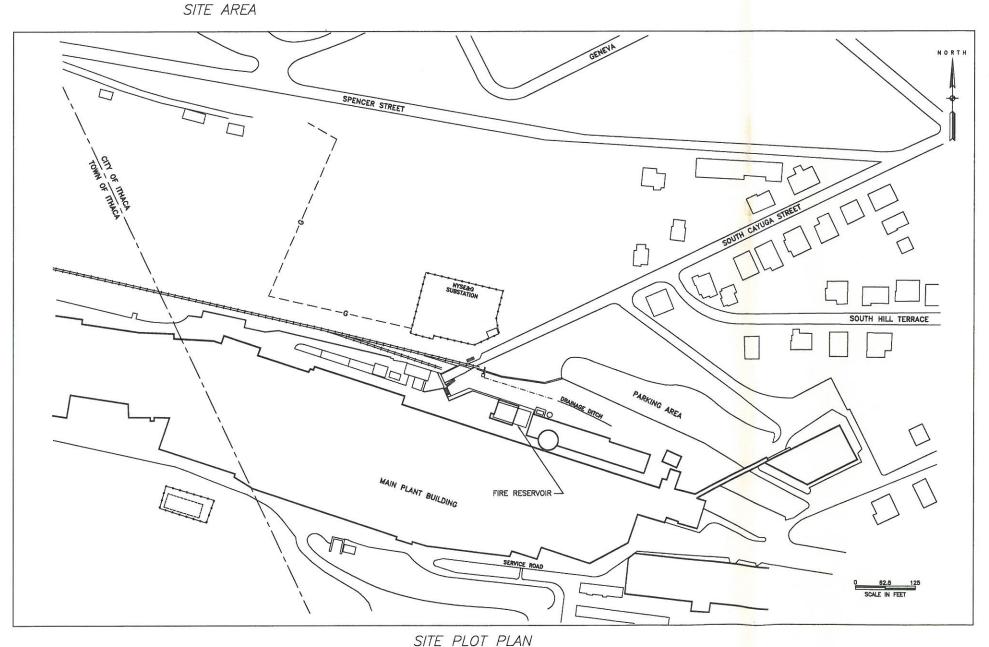
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AS SHOWN	JCY	1/3/96	DRAVING TITLE		
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ENGINEERING	JES	1/15/96	CAD DRAVING FILE EMER9506.DVG	DRAVING HE	RE
ROCHESTER, NEW YORK 14623	APPROVED BY	DATE	705-014	M-2	A



# 2-PHASE EXTRACTION AND TREATMENT SYSTEM

EMERSON POWER TRANSMISSION ITHACA, NEW YORK JANUARY 1996



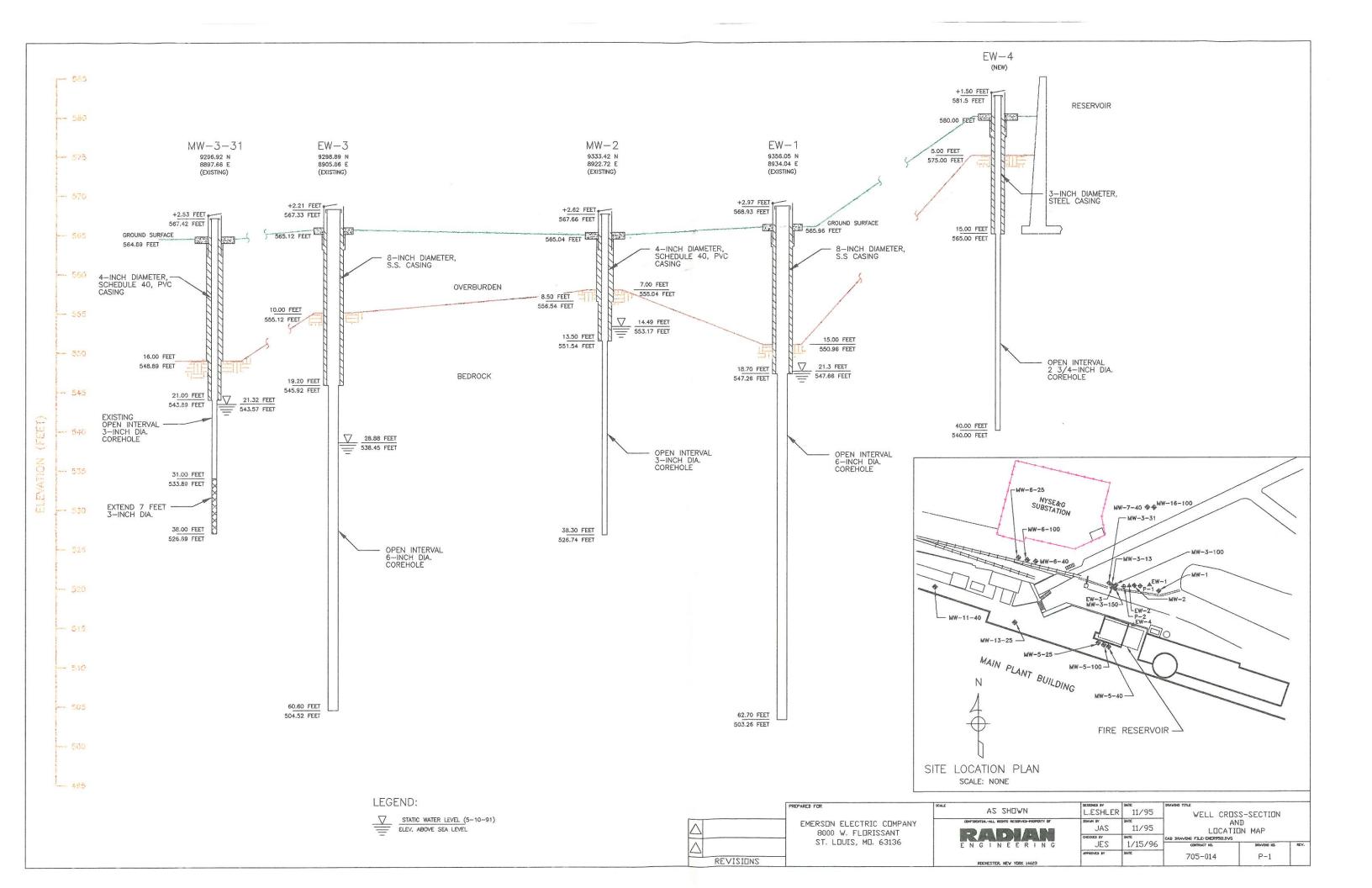
DRAWING NUMBER	DRAWING TITLE
P-1 P-2 P-3	Well Cross—section and Location Map Site Plan and Piping Layout Wellbox and Well Head Locations
M-1 M-2	Process Building Equipment Layout Process Building Equipment Details
E-1 E-2	Process Building Electrical One—Line Process Building Electrical One—Line
I—1	Process and Instrumentation Diagram

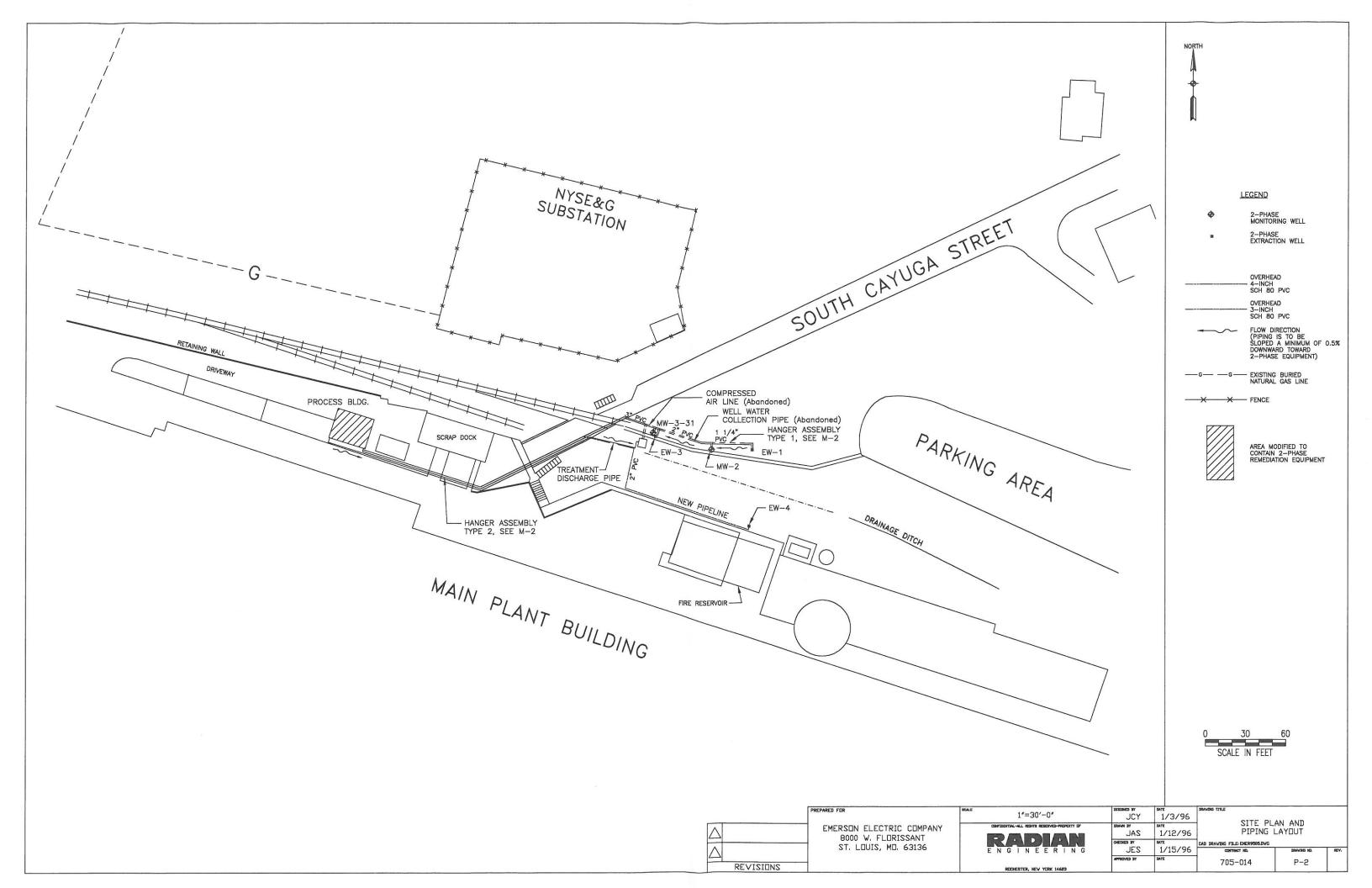
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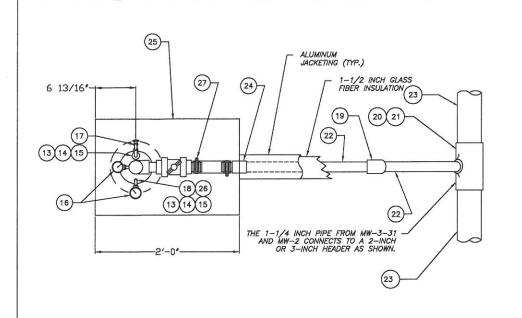


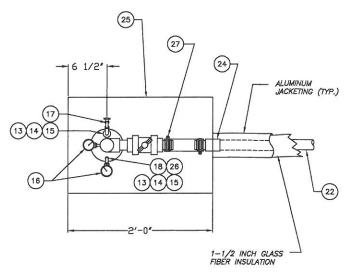
ROCHESTER, NEW YORK 14623

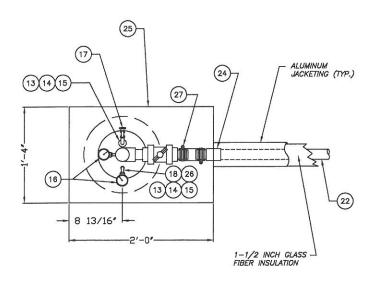
EMER9500.DW







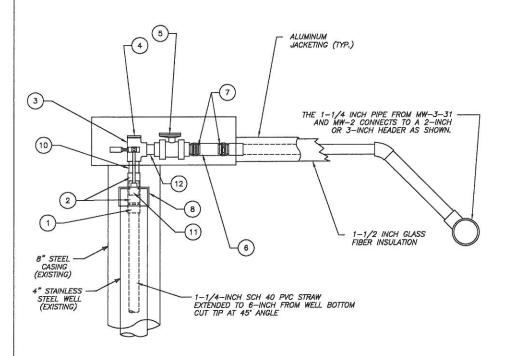


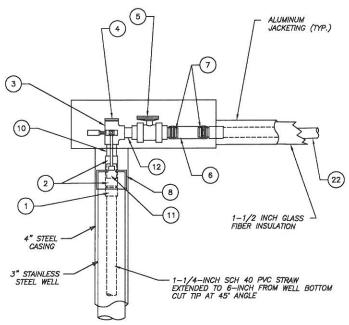


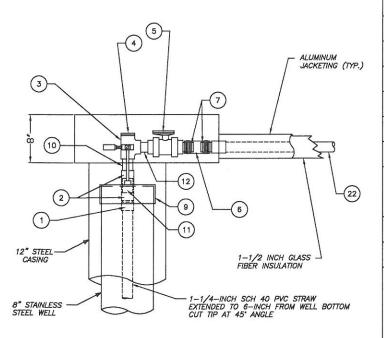
MW-3-31 AND MW-2 PLAN VIEW (TYP.)

PLAN VIEW (TYP.)

EW-1 AND EW-3 PLAN VIEW (TYP.)







<u>EW-1 AND EW-3</u> <u>ELEVATION VIEW (TYP.)</u>

MW-3-31 AND MW-2 ELEVATION VIEW (TYP.)

<u>EW-4</u> ELEVATION VIEW (TYP.)

	PREPARED FOR
Δ	EMERSON ELECTRIC CO 8000 W. FLORISSAN ST. LOUIS, MO. 631
REVISIONS	

DMPANY ANT 3136

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# REQ.

2

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3

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LENGTH

LENGTH

2

PART NAME

MALE ADAPTER

FEMALE ADAPTER

PLUG (Mipt)

CAP (Slip)

CAP (Slip)

MALE ADAPTER

NIPPLE, 2" Lg.

BALL VALVE

45° ELL (Slip x Slip)

PIPE, SCH 80

PIPE, SCH 80

REDUCER, BELL

90° ELBOW (Slip x Slip)

VACUUM GAUGE (0-30in Hg)

REDUCING BUSHING (Spig x Fipt)

TEE, REDUCING (Slip x Slip x Slip)

TEE, REDUCING (Slip x Slip x Slip)

FEMALE ADAPTER (Slip x Fipt)

HOFFMAN ENCLOSURE, TYPE 4X,

MODEL #A-24H1608SS6LP W/ 3-1/4" x 3-1/4" LOUVER, MODEL #A-VK23SS6

HOSE CLAMP, REUSEABLE, 300 SERIES

STAINLESS STEEL, MARINE GRADE

TEE (Fipt x Fipt x Fipt)

BALL VALVE, TRUE UNION

BARB x MALE ADAPTER (Mipt)

CLOSE NIPPLE (Mipt X Mipt)

PIPE, SCH 40, 2-3/4" Lg.

NIPPLE THREADED ONE END, 3" Lg.

FLEX HOSE, 6" Lg.

NUMBER

2

3

5

8

9

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11

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22

23

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25

26

27

SIZE

1-1/4"

1-1/4"

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1-1/4"

1-1/4"

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2" x 2"

k 1-1/4" 3" x 3"

1-1/4

1-1/4"

2" or 3"

1-1/4"

x 8"h

1/2" x

1/4"

SAE# 24

MATERIAL

PVC

PVC

PVC

PVC

**PVC** 

VINYL

CLEAR

**PVC** 

PVC

PVC

PVC

PVC

PVC

PVC

PVC

STAINLESS

STEEL

BRASS

PVC

PVC

PVC

PVC

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PVC

STAINLESS

STEEL

BRASS

STAINLESS

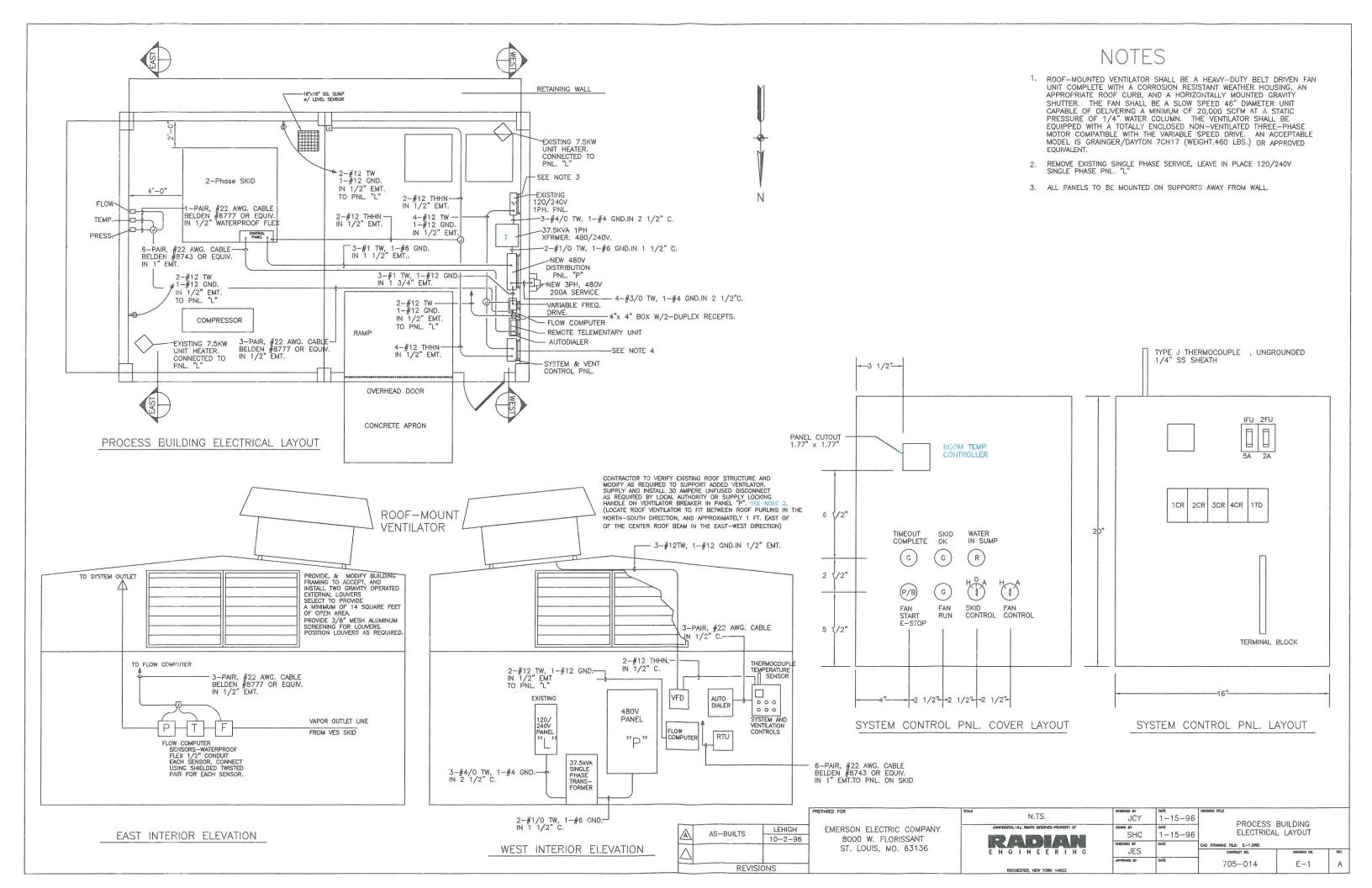
STEEL

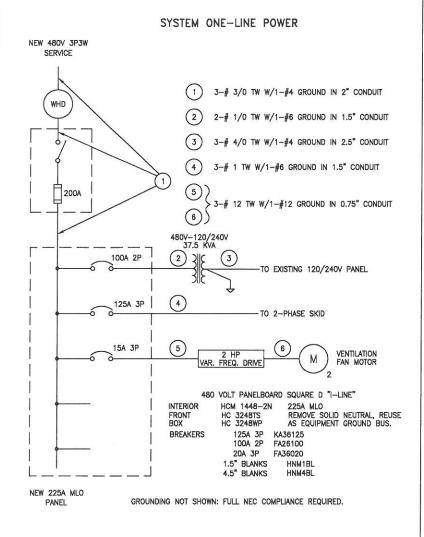
P-3

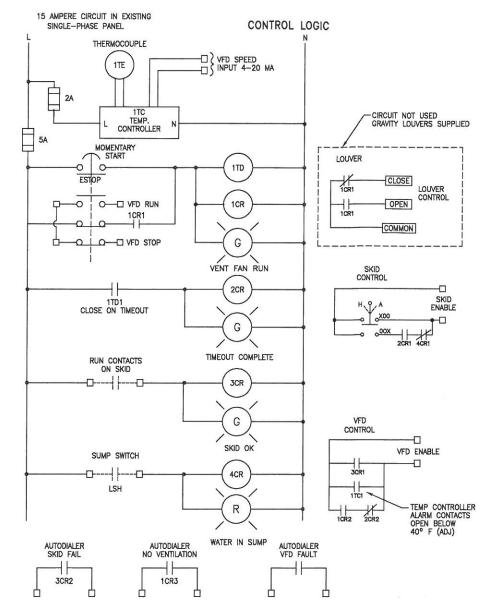
1. NUMBER REQUIRED FOR EACH PART IS FOR EACH WELL HEAD.
2. ALL PIPING INSIDE WELL BOXES IS 1-1/4 INCH SCH 40 PVC
EXCEPT WHERE NOTED.
3. ALL PIPING AND FITTINGS INSIDE WELL BOXES ARE WRAPPED
WITH INSULATION AND HEAT TRACED. HEAT TRACE WILL BE

COMPATIBLE WITH PVC PIPING.

4. WELL CAPS ARE NOT TO BE GLUED.







CIRC			LOAD DESCRIPTION	ODD L				NO.	LOAD DESCRIPTION	EVEN LO	
NO.		POLES		_A	В		-	POLES		A	В
_1_	20	_1	RECEPT AT PANEL	360		2	20	1	BLDG RECEPT	360	
3	20	11	RECEPT AT PHONE		360		20	1	BLDG RECEPT		360
5	20	1	SPARE			6	20	1	SYSTEM CONTROL	100	
7	20	2	SUMP PUMP		480		20	1	LIGHTS		1200
9	20	2	(FUTURE)	480		10	20	1	SPARE		
11	60	2	UNIT		3750		60	2	AIR	3750	
13	60	2	HEATER #1	3750		14	60	2	COMPRESSOR		3750
15	60	2	UNIT		3750						800-1100/2010
17	60	2	HEATER #2	3750		18					000000000000000000000000000000000000000
19	30	2	2 kW HEAT TAPE		1000	20					
21	30	2	#1	1000		22					
23	30	2	2 kW HEAT TAPE		1000	24					
25	30	2	#2	1000		26				2000	
27	30	2	1.2 kW HEAT		600						
29	30	2	TAPE	600		30				000.00000000000000000000000000000000000	
			ODD LOADS	10940	10940					4210	5310
			EVEN LOADS	4210	5310					*	
	CO	NECTE	LOAD, VA	15150	16250				8		
	EST	IMATED	DEMAND, VA	10560	11600	1					

	THR	EE-PHASE F	POWER AT 48	O VOLTS				
	CONNEC	TED LOAD		ESTIMATED DEMAND				
PHASE:	A	В	С	A	В	С		
TEM 37.5 kVA SINGLE PHASE TRANSFORMER	78A	78A		46.2A	46.2			
TWO-PHASE PACKAGED SKID	85A	85A	85A	75A	75A	75A		
VENTILATION	4A	4A	44	3.6A	3.6A	3.6A		
AMPERES/PHASE	167A	167A	89A	125A	125A	78.5A		
VA/PHASE	45,260VA	45,260VA	24,650VA	34,625VA	34,625VA	21,745VA		
kVA		- X	115.2 kVA			91.0 kVA		

#### NOTES

 REMOVE PRESENT SINGLE—PHASE SERVICE. RESUPPLY EXISTING 120/240V SINGLE—PHASE PANEL FROM NEW 37.5 kVA SINGLE— PHASE TRANSFORMER. CIRCUITS TO LIGHTING, HEATING, AIR COMPRESSOR, AIR DRYER, AND EXISTING CONVENIENCE RECEPTACLES TO REMAIN. REMOVE REMAINING CIRCUITS.

ADD NEW CIRCUITS FOR FLOW COMPUTER, TELEPHONE DIALER, REMOTE TELEMENTARY UNIT, TWO NEW CONVENIENCE RECEPTACLE CIRCUITS, AND DAMPER CONTROL CIRCUIT.

- GROUNDING/BONDING: BOND TRANSFORMER NEUTRAL TO BUILDING STEEL, SERVICE, AND EXISTING GROUND SYSTEM. INSTALL EQUIPMENT GROUNDING CONDUCTOR PER NEC ARTICLE 250 IN ALL CIRCUITS.
- 3. VARIABLE FREQUENCY DRIVE SHALL BE RATED FOR A MINIMUM OF 2 Hp, 480V, AND SHALL BE EQUIPPED WITH 4-20 MILLIAMPERE INPUT FOR SPEED CONTROL, DRIVE ENABLE INPUT FOR REMOTE CONTROL, DRIVE RUN DRY CONTACT OUTPUT TO INDICATE RUNNING AT SPEED, AND DRIVE FAULT DRY CONTACT OUTPUT TO INDICATE DRIVE FAULTED, DRIVE SHALL HAVE A FULL OPERATOR PANEL TO ACCESS ALL FEATURES OF THE DRIVE. DRIVE MAY BE AN ALLENBRADLEY 1305-BAOA4 WITH INTERFACE MODULE 1201-HA2 OR AN APPROVED EQUIVALENT.
- 4. TEMPERATURE CONTROLLER SHALL BE AN OMRON MODEL E5CX-CTC-F OR APPROVED EQUIVALENT. THERMOCOUPLE SHALL BE A TYPE J UNIT WITH 12" LONG 1/4" DIAMETER INSULATED SHEATH CONSTRUCTION AND SHALL BE MOUNTED SO THAT THE PROBE TIP EXTENDS A MINIMUM OF 8" FROM THE CONTROL CABINET.
- 5. SUMP FLOAT SWITCH SHALL BE A FLEXIBLE TETHERED CORD MECH-ANICAL TYPE MOUNTED IN THE SUMP SO AS TO CLOSE THE CIRCUIT WHEN 4-6 INCHES OF LIQUID IS DETECTED. THE SWITCH MAY BE A W.W. GRAINGER CATALOG 2P313 OR 2P055 OR APPROVED EQUIVALENT.

E	EQUIPMENT SCHEDULE		
DESCRIPTION	MANUFACTURER	QTY.	SUPPLY
SYSTEM CONTROL PANEL	HOFFMAN #A-201608LP & A-20P16 OR EQUIV.	1EA.	CONTRACTOR
TEMP, CONTROLLER (1TC)	OMRON #E5CX-CTC-F OR EQUIV.	1	CONTRACTOR
TIME DELAY RELAY .1 - 10 MIN. (1TD)	SQUARE-D #JCK15V20 OR EQUIV.	1	CONTRACTOR
3POLE RELAY 1CR. 2CR. 3CR. 4CR	SQUARE-D #KP13V20 OR EQUIV.	4	CONTRACTOR
RELAY SOCKET	SQUARE-D #NR61	5	CONTRACTOR
120V PUSH TO TEST RED PILOT LIGHT	SQUARE-D #KT1R31	1	CONTRACTOR
120V PUSH TO TEST GREEN P/LIGHT	SQUARE-D #KT1G31	3	CONTRACTOR
3-POS START-STOP MUSHROOM P/B	SQUARE-D #XB2 BN422	1	CONTRACTOR
HAND-OFF-AUTO SEL, SW.	SQUARE-D #KS43BH13	1	CONTRACTOR
37.5KVA XFRMER, 480-120/240V 1PH.	SQUARE-D #37S3H OR EQUIV.	1	CONTRACTOR
V.F.D 480V 2HP. W/HUMAN-INTERFACE MODULE	ALLEN BRADLEY #1305-BAO4A-HA2	1	RADIAN
VAPOR FLOWMETER	ENDRESS & HAUSER #DV6312	1	RADIAN
FLOW COMPUTER	ENDRESS & HAUSER #6351	1	RADIAN
PRESS. SENSOR	PMC 133	1	RADIAN
TEMP. SENSOR	T-TEC-100	1	RADIAN
AUTO DIALER	PHONETICS	1	RADIAN
REMOTE TELEMENTARY UNIT	CAMPBELL SCIENTIFIC	1	RADIAN
480V PNL. BD. W/CKT. BRKRS.	SQUARE-D "I-LINE" AS SHOWN ON ONE LINE	1	CONTRACTOR
200A FUSIBLE SAFETY SWITCH	SQUARE-D H364RB	1	CONTRACTOR

AS-BUILTS

LEHIGH
10-2-96

REVISIONS

EMERSON ELECTRIC COMPANY 8000 W. FLORISSANT ST. LOUIS, MG. 63136

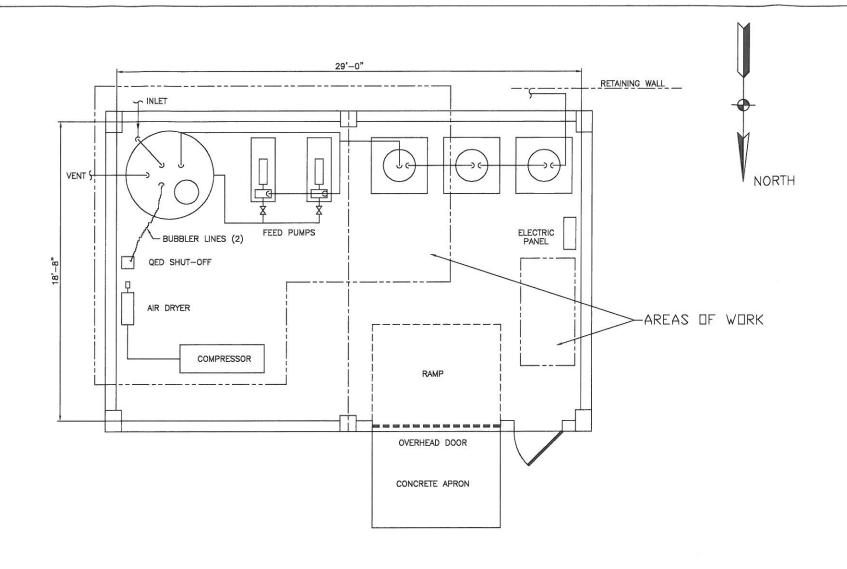
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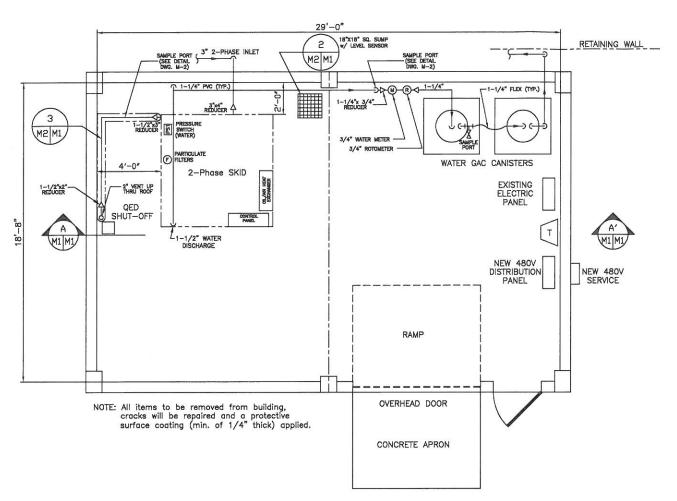
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N.T.S

| MINT | MIT | 1-15-96 | | MINT | MIT | MI

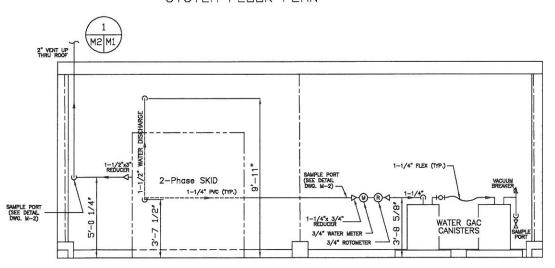
PROCESS BUILDING ELECTRICAL ONE-LINE





EXISTING IRM TREATMENT SYSTEM FLOOR PLAN

2-PHASE EXTRACTION SYSTEM FLOOR PLAN



SECTION A-A'

	PREPARED FOR	1"=3'-0"	JCY	1/3/96	DDDCESS	BUILDING	
AS-BUILTS LEHIGH	EMERSON ELECTRIC COMPANY 8000 W. FLORISSANT	CONFIDENTIAL-ALL RIGHTS RESERVED-PROPERTY OF	ZAL	1/12/96		T LAYOUT	
10-2-30	ST. LOUIS, MO. 63136	ENGINEERING	JES	1/15/96	CAD DRAWING FILE EMER9509.DVG	DRAVING NO.	REV.
REVISIONS		ROCHESTER, NEW YORK 14623	APPROVED BY	DATE	705-014	M-1	A

