

# OZONE SPARGE/SVE TREATMENT SYSTEM AS-BUILT DRAWINGS

PREPARED FOR  
**OSMOSE, INC.**  
980 ELLICOTT STREET  
BUFFALO, NEW YORK 14209

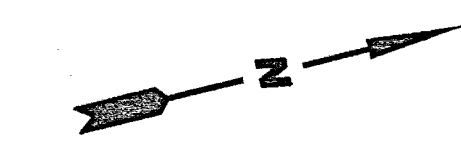
OCTOBER 12, 1999

SHEET INDEX	
DWG. NO.	TITLE
<b>Y1</b>	SITE MAP
<b>Y2</b>	OZONE INJECTION SYSTEM LAYOUT
<b>Y3</b>	PIPING AND UTILITY TRENCH LAYOUT
<b>P1</b>	PIPING AND INSTRUMENTATION DIAGRAM LEGEND
<b>P2</b>	PIPING AND INSTRUMENTATION DIAGRAM
<b>P3</b>	INSTRUMENTATION LOGIC DIAGRAMS
<b>S1</b>	TREATMENT COMPOUND LAYOUT: TC-2
<b>S2</b>	TREATMENT COMPOUND LAYOUT: TC-1
<b>D1</b>	WELL AND TRENCHING DETAILS
<b>D2</b>	OZONE SPARGE / SVE MANIFOLD LAYOUTS
<b>D3</b>	MISCELLANEOUS DETAILS
<b>E1</b>	ELECTRICAL LEGEND
<b>E2</b>	POWER PLAN AND ONE-LINE DIAGRAM

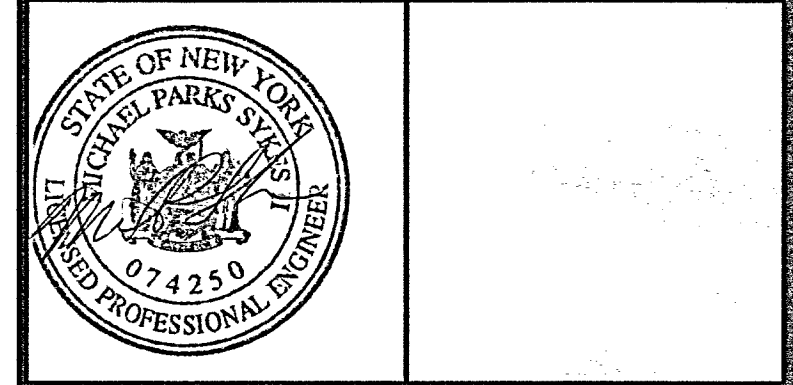


NO.	DATE	BY	REVISION
-----	------	----	----------

- LEGEND**
- ◆ MONITORING WELL
  - ⊕ RECOVERY WELL
  - ⊙ OZONE INJECTION WELL
  - ⊕ SVE EXTRACTION WELL
  - ⊙ OZONE INJECTION WELL WITHIN BIOCELL
  - ⊕ SVE EXTRACTION WELL WITHIN BIOCELL
  - SP SEWER INSPECTION PLUG
  - W WATER VALVE
  - V VALVE
  - X—X— FENCE LINE
  - SMH SEWER MANHOLE
  - TMH TELEPHONE MANHOLE
  - DI DRAIN INLET
  - S - SANITARY SEWER LOCATION (APPX.)
  - G - GAS LINE LOCATION (APPX.)
  - P - POWER LINE LOCATION (APPX.)
  - W - WATER LINE LOCATION (APPX.)



SIGNATURE	DATE
REVIEW ENGR:	
PROJECT ENGR:	
PROJECT MGR:	
CLIENT:	

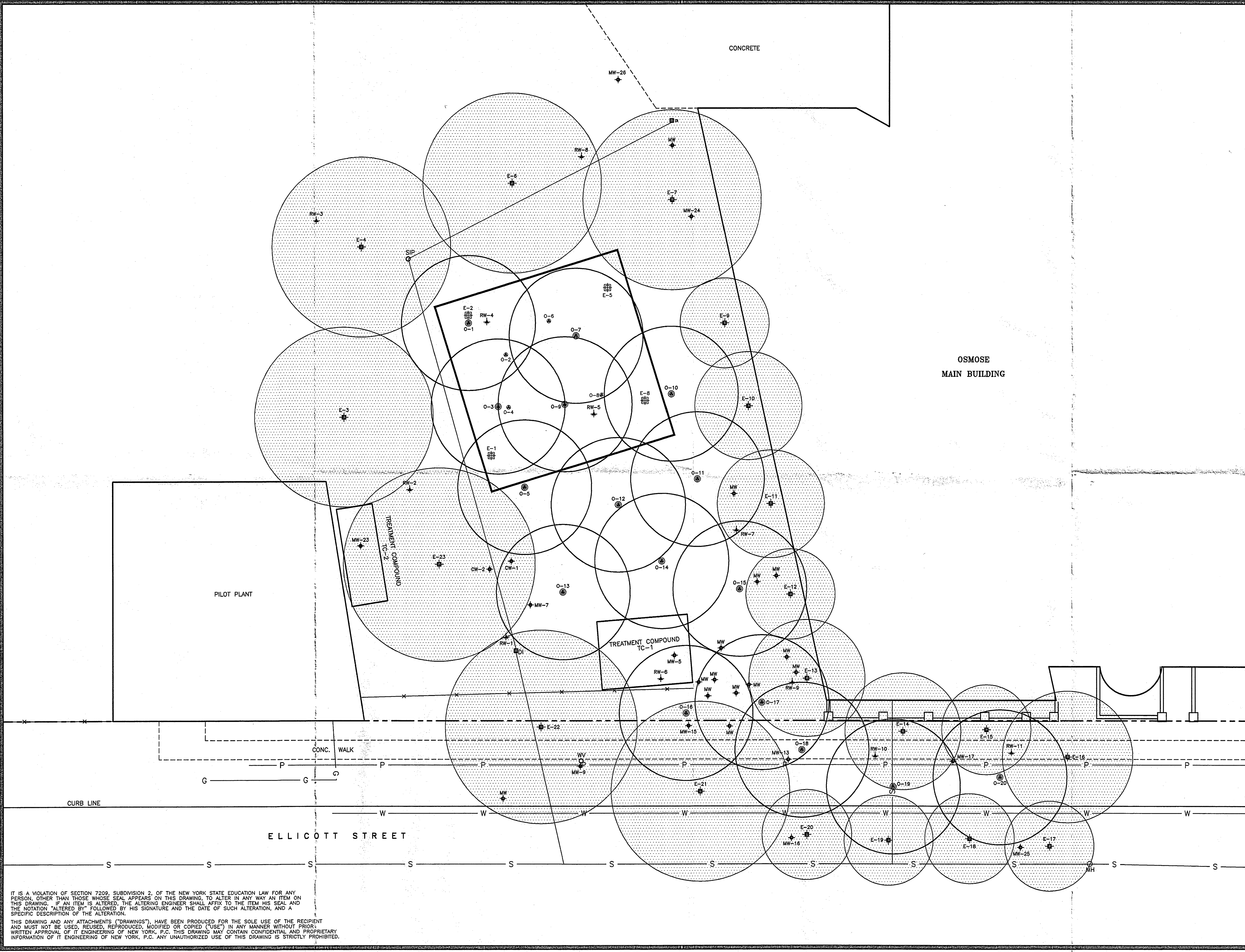


**IT ENGINEERING  
OF NEW YORK, P.C.**  
13 BRITISH AMERICAN BLVD.  
ALBANY, NY 12110  
(518) 783-1996

**OSMOSE, INC.**  
  
ELLICOTT STREET  
BUFFALO, NEW YORK

**OZONE INJECTION  
SYSTEM LAYOUT**

DESIGNED BY: BMT/KSD	DETAILED BY: DEO/SSH	CHECKED BY:
DRAWING DATE: 10/12/99	ACAD FILE: 8061-Y2	
PROJECT NO.: 01110-8061	CONTRACT:	
FIGURE: <b>Y-2</b>	REVISION:	



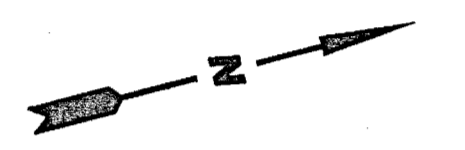
IT IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, OTHER THAN THOSE WHOSE SEAL APPEARS ON THIS DRAWING, TO ALTER IN ANY WAY AN ITEM ON THIS DRAWING. IF AN ITEM IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE AND THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

THIS DRAWING AND ANY ATTACHMENTS ("DRAWINGS"), HAVE BEEN PRODUCED FOR THE SOLE USE OF THE RECIPIENT AND MUST NOT BE USED, REUSED, REPRODUCED, MODIFIED OR COPIED ("USE") IN ANY MANNER WITHOUT PRIOR WRITTEN APPROVAL OF IT ENGINEERING OF NEW YORK, P.C. THIS DRAWING MAY CONTAIN CONFIDENTIAL AND PROPRIETARY INFORMATION OF IT ENGINEERING OF NEW YORK, P.C. ANY UNAUTHORIZED USE OF THIS DRAWING IS STRICTLY PROHIBITED.

NO.	DATE	BY	REVISION
-----	------	----	----------

**LEGEND**

- ◆ MONITORING WELL
- ⊕ RECOVERY WELL
- ⊙ OZONE INJECTION WELL
- ⊕ SVE EXTRACTION WELL
- ⊙ OZONE INJECTION WELL WITHIN BIOCELL
- ⊕ SVE EXTRACTION WELL WITHIN BIOCELL
- SP SEWER INSPECTION PLUG
- W WATER VALVE
- V VALVE
- X — FENCE LINE
- MH SEWER MANHOLE
- TH TELEPHONE MANHOLE
- DI DRAIN INLET
- S - SANITARY SEWER LOCATION (APPX.)
- G - GAS LINE LOCATION (APPX.)
- P - POWER LINE LOCATION (APPX.)
- W - WATER LINE LOCATION (APPX.)



SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_

REVIEW ENGR: \_\_\_\_\_

PROJECT ENGR: \_\_\_\_\_

PROJECT MGR: \_\_\_\_\_

CLIENT: \_\_\_\_\_



**IT ENGINEERING  
OF NEW YORK, P.C.**  
13 BRITISH AMERICAN BLVD.  
ALBANY, NY 12110  
(518) 783-1996

**OSMOSE, INC.**

ELLICOTT STREET  
BUFFALO, NEW YORK

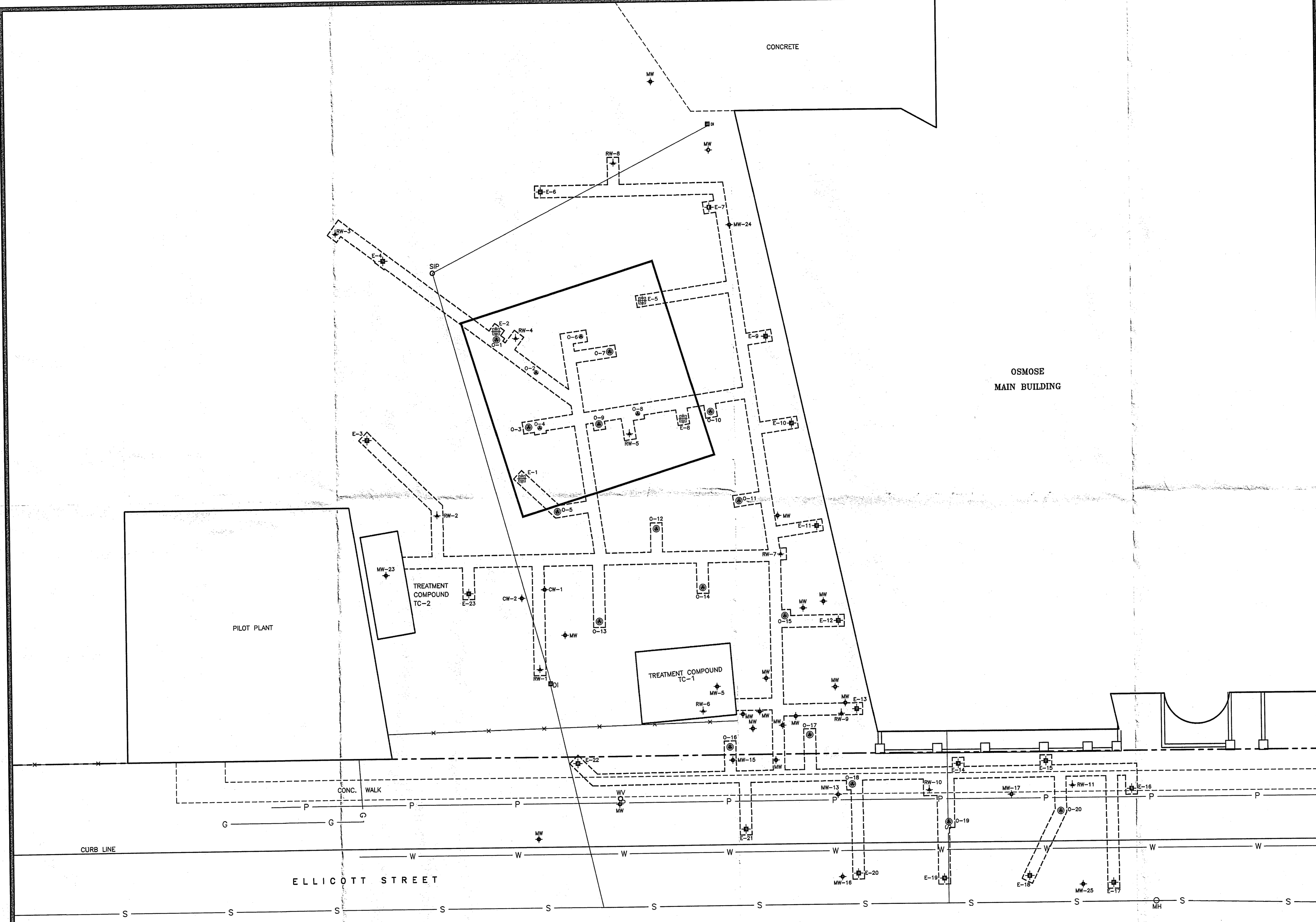
**PIPING AND  
UTILITY TRENCH LAYOUT**

DESIGNED BY: BMT/KSD    DETAILED BY: SSH/DEO    CHECKED BY: \_\_\_\_\_

DRAWING DATE: 10/13/99    ACAD FILE: 8061-Y3

PROJECT NO.: 01110-8061    CONTRACT: \_\_\_\_\_

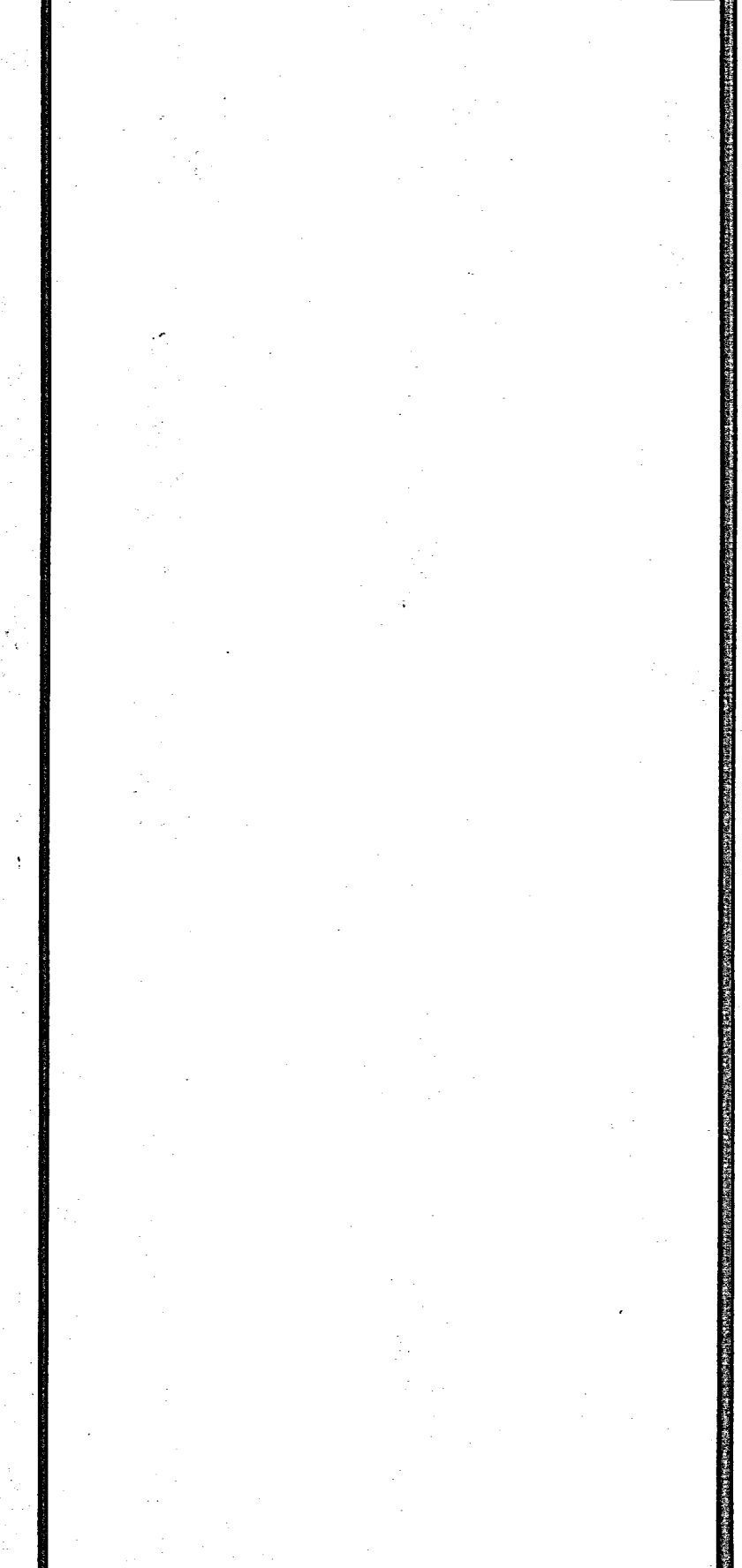
FIGURE: **Y-3**    REVISION: \_\_\_\_\_



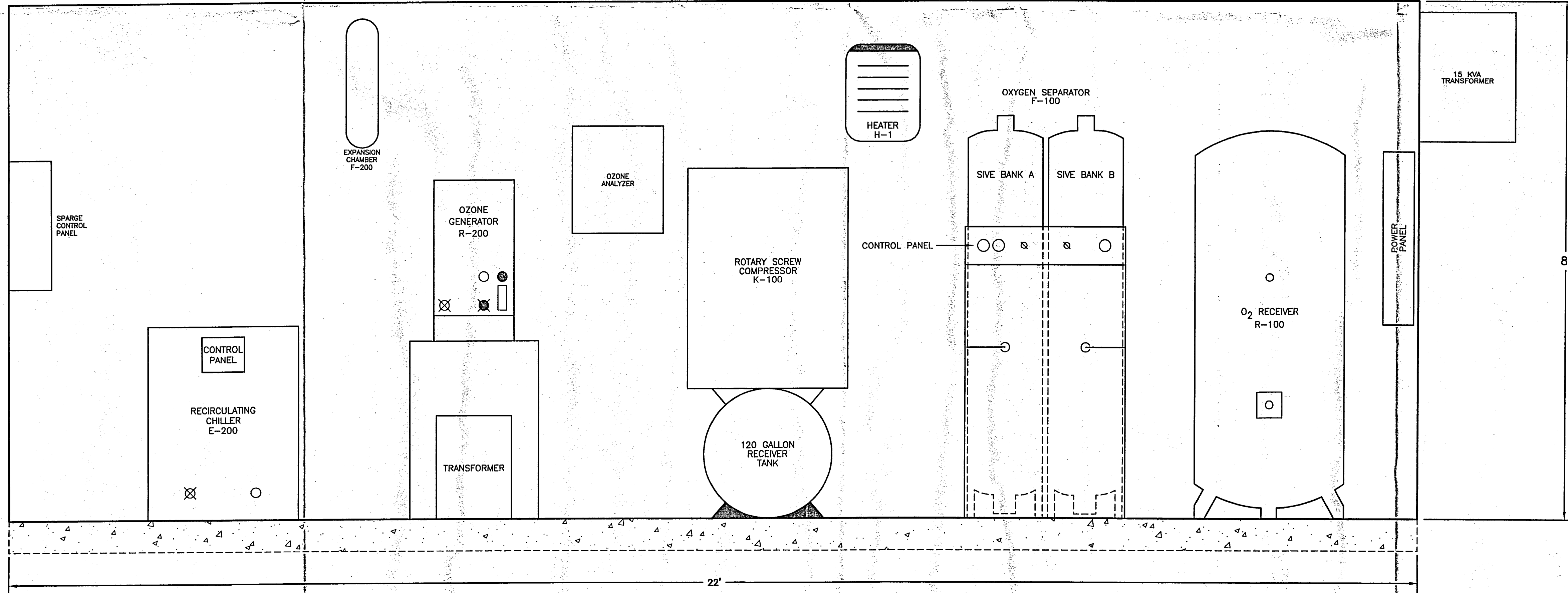
IT IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, OTHER THAN THOSE WHOSE SEAL APPEARS ON THIS DRAWING, TO ALTER IN ANY WAY AN ITEM ON THIS DRAWING. IF AN ITEM IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE AND THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

THIS DRAWING AND ANY ATTACHMENTS ("DRAWINGS"), HAVE BEEN PRODUCED FOR THE SOLE USE OF THE RECIPIENT AND MUST NOT BE USED, REUSED, REPRODUCED, MODIFIED OR COPIED ("USE") IN ANY MANNER WITHOUT PRIOR WRITTEN APPROVAL OF IT ENGINEERING OF NEW YORK, P.C. THIS DRAWING MAY CONTAIN CONFIDENTIAL AND PROPRIETARY INFORMATION OF IT ENGINEERING OF NEW YORK, P.C. ANY UNAUTHORIZED USE OF THIS DRAWING IS STRICTLY PROHIBITED.

NO.	DATE	BY	REVISION



PLAN VIEW



FRONT VIEW

IT IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, OTHER THAN THOSE WHOSE SEAL APPEARS ON THIS DRAWING, TO ALTER IN ANY WAY AN ITEM ON THIS DRAWING. IF AN ITEM IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE AND THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

THIS DRAWING AND ANY ATTACHMENTS ("DRAWINGS"), HAVE BEEN PRODUCED FOR THE SOLE USE OF THE RECIPIENT AND MUST NOT BE USED, REUSED, REPRODUCED, MODIFIED OR COPIED ("USE") IN ANY MANNER WITHOUT PRIOR WRITTEN APPROVAL OF IT ENGINEERING OF NEW YORK, P.C. THIS DRAWING MAY CONTAIN CONFIDENTIAL AND PROPRIETARY INFORMATION OF IT ENGINEERING OF NEW YORK, P.C. ANY UNAUTHORIZED USE OF THIS DRAWING IS STRICTLY PROHIBITED.

SIGNATURE		DATE
REVIEW ENGR:		
PROJECT ENGR:		
PROJECT MGR:		
CLIENT:		
<b>IT ENGINEERING OF NEW YORK, P.C.</b> 13 BRITISH AMERICAN BLVD. ALBANY, NY 12110 (518) 783-1996		
<b>OSMOSE, INC.</b>  ELLICOTT STREET BUFFALO, NEW YORK		
<b>TREATMENT COMPOUND LAYOUT TC-2</b>		
DESIGNED BY: BWA	DETAILED BY: DEO	CHECKED BY:
DRAWING DATE: 10/13/99	ACAD FILE: 8061-S1	
PROJECT NO.: 01110-8061	CONTRACT:	
DRAWING:	REVISION:	
<b>S-1</b>		

**VALVE AND PIPING SYMBOLS**

- GLOBE VALVE
- GATE VALVE
- BUTTERFLY VALVE
- CHECK VALVE
- PLUG VALVE
- 3-WAY VALVE
- ANGLE VALVE
- RELIEF OR SAFETY VALVE
- DIAPHRAGM VALVE
- BALL VALVE
- GLOBE VALVE  
SELF-CONTAINED PRESSURE REGULATING VALVE W/RELIEF
- KNIFE GATE VALVE
- BACKFLOW PREVENTER
- NO NORMALLY OPEN
- NC NORMALLY CLOSED
- SP SAMPLE PORT
- FLEXIBLE HOSE
- HOSE BARB
- BASKET TYPE STRAINER
- Y-TYPE STRAINER
- DUPLEX STRAINER
- SLEEVE COUPLING (SC)
- FLOOR DRAIN
- EQUIPMENT DRAIN
- CLEANOUT (CO)
- REMOVABLE PLUG
- REMOVABLE CAP
- BLIND FLANGE
- EXHAUST TO ATMOSPHERE (INSIDE)
- EXHAUST TO ATMOSPHERE (OUTSIDE)
- REDUCER
- UNION
- QUICK DISCONNECT COUPLING
- GAUGE SEAL
- DAMPER
- PITLESS ADAPTER
- CAMLOCK

**VALVE OPERATOR SYMBOLS**

- SOLENOID
- MOTOR, ELECTRIC
- DIAPHRAGM
- DIAPHRAGM WITH POSITIONER
- HANDWHEEL OR LEVER
- CHAINWHEEL

**PRIMARY ELEMENT SYMBOLS - FLOW**

- ORIFICE PLATE
- FLUME
- PITOT TUBE
- WEIR
- AVERAGING PITOT TUBE
- TURBINE OR PROPELLER TYPE METER
- VENTURI OR FLOW TUBE
- MAGNETIC FLOW METER
- TOTALIZING FLOW METER
- ROTAMETER

**EQUIPMENT SYMBOLS**

- SUBMERSIBLE PUMP
- BLOWER
- PUMP
- AIR COMPRESSOR
- PNEUMATIC DIAPHRAGM PUMP

**GENERAL INSTRUMENT SYMBOLS**

- ONE VARIABLE**  
 LOCALLY MOUNTED  
 PANEL MOUNTED  
 REAR-OF-PANEL MOUNTED  
 INTERLOCK  
 PURGE
- TWO VARIABLES**  
 LOCALLY MOUNTED  
 PANEL MOUNTED  
 REAR-OF-PANEL MOUNTED  
 INTERLOCK  
 PURGE

**LINE SYMBOLS**

- PROCESS PIPES OR CHANNELS
- CONNECTION TO PROCESS, MECHANICAL LINK OR INSTRUMENT SUPPLY
- PNEUMATIC SIGNAL
- ELECTRIC SIGNAL
- CAPILLARY TUBING (FILLED SYSTEM)
- HYDRAULIC SIGNAL
- ELECTROMAGNETIC OR SONIC SIGNAL NO WIRING OR TUBING

**INSTRUMENT IDENTIFICATION TABLE**

FIRST LETTER		SUCCEEDING LETTERS		
MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM	
B	BURNER FLAME			
C	CONDUCTIVITY			CONTROL
D	DENSITY (SP. GR.)	DIFFERENTIAL		
E	VOLTAGE		PRIMARY ELEMENT	
F	FLOW RATE	RATIO		
G	GAUGING (DIMENSIONAL)		GLASS	
H	HAND (MANUAL)			HIGH
I	CURRENT		INDICATE	
J	POWER	SCAN		
K	TIME OR SCHEDULE			CONTROL STATION
L	LEVEL		LIGHT (PILOT)	LOW
M	MOISTURE OR HUMIDITY			MIDDLE
N				
O			ORIFICE	
P	PRESSURE OR VACUUM		POINT (TEST)	
Q	QUANT. OR EVENT	INTEGRATE		
R	RADIOACTIVITY		RECORD OR PRINT	
S	SPEED OR FREQ.	SAFETY		SWITCH
T	TEMPERATURE			TRANSMIT
U	MULTIVARIABLE		MULTIFUNCTION	
V	VISCOSITY			VALVE OR DAMPER
W	WEIGHT OR FORCE		WELL	
X	UNCLASSIFIED		UNCLASSIFIED	
Y				RELAY OR COMPUTE
Z	POSITION			DRIVE, ACTUATE

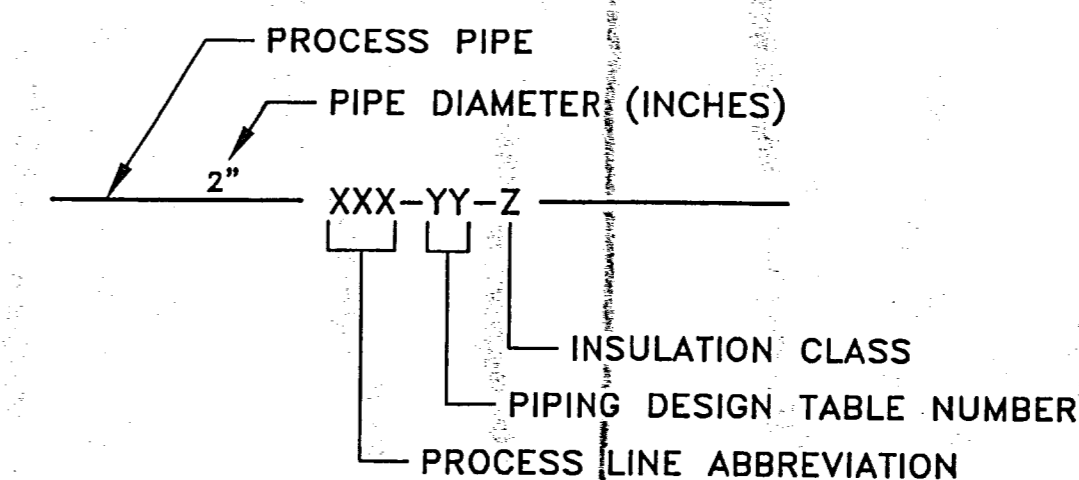
**PROCESS LINE ABBREVIATIONS**

- AIR AIR, ATMOSPHERIC PRESSURE
- BW BACKWASH
- CA COMPRESSED AIR
- CGW CONTAMINATED GROUNDWATER
- D DRAIN
- EFF EFFLUENT
- EXH EXHAUST
- GW GROUNDWATER
- NPW NON-POTABLE WATER
- P PRODUCT
- PW POTABLE WATER
- S SANITARY
- SL SLUDGE
- SP SAMPLE PORT
- SS STORM SEWER
- TF TOTAL FLUIDS
- V VENT
- VAP VAPOR

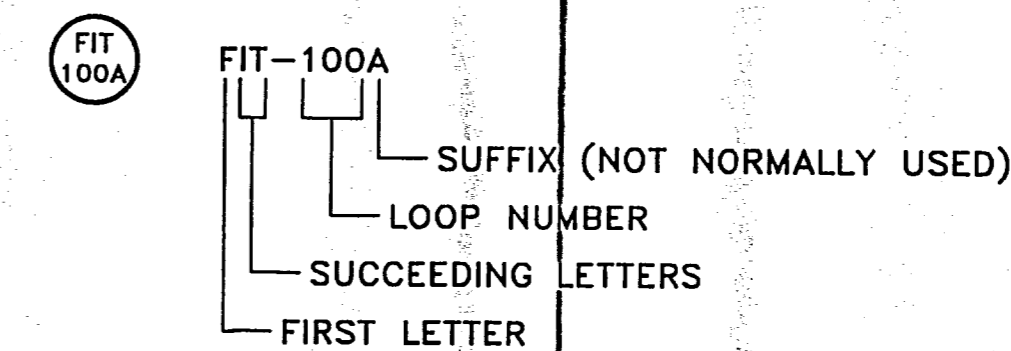
**PIPING MATERIAL IDENTIFICATION**

- CPVC CHLORINATED POLYVINYL CHLORIDE
- CSP CARBON STEEL PIPE
- COP COPPER
- CMP CORRUGATED METAL PIPE
- CIP CAST IRON PIPE
- DIP DUCTILE IRON PIPE
- FRE FIBERGLASS REINFORCED EPOXY
- GAL GALVANIZED STEEL PIPE
- PE POLYETHYLENE PIPE
- PP POLYPROPYLENE PIPE
- PVC POLYVINYL CHLORIDE PIPE
- RCP REINFORCED CONCRETE PIPE
- RUB RUBBER HOSE
- SS STAINLESS STEEL PIPE
- VCP VITRIFIED CLAY PIPE

**PROCESS PIPING IDENTIFICATION**



**INSTRUMENT IDENTIFICATION**

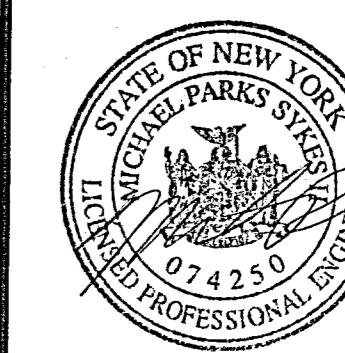


**FUNCTION ABBREVIATIONS**

- DO DISSOLVED OXYGEN
- FC FAIL CLOSED
- FI FAIL INDETERMINATE
- FL FAIL LOCKED
- FO FAIL OPEN
- HOA HAND-OFF-AUTOMATIC
- I/I CURRENT-TO-CURRENT
- I/P CURRENT-TO-PNEUMATIC
- LEL LOWER EXPLOSIVE LIMIT
- LR LOCAL-REMOTE
- OC OPEN-CLOSE
- OO ON-OFF (MAINTAINED)
- ORP OXIDATION REDUCTION POTENTIAL
- OSC OPEN-STOP-CLOSE (MOMENTARY)
- SS START-STOP (MOMENTARY)
- > HIGH SELECT
- < LOW SELECT
- √ SQUARE ROOT
- Σ ADD OR TOTALIZE

NO.	DATE	BY	REVISION
-----	------	----	----------

SIGNATURE	DATE
REVIEW ENGR:	
PROJECT ENGR:	
PROJECT MGR:	
CLIENT:	



**IT ENGINEERING OF NEW YORK, P.C.**  
13 BRITISH AMERICAN BLVD.  
ALBANY, NY 12110  
(518) 783-1996

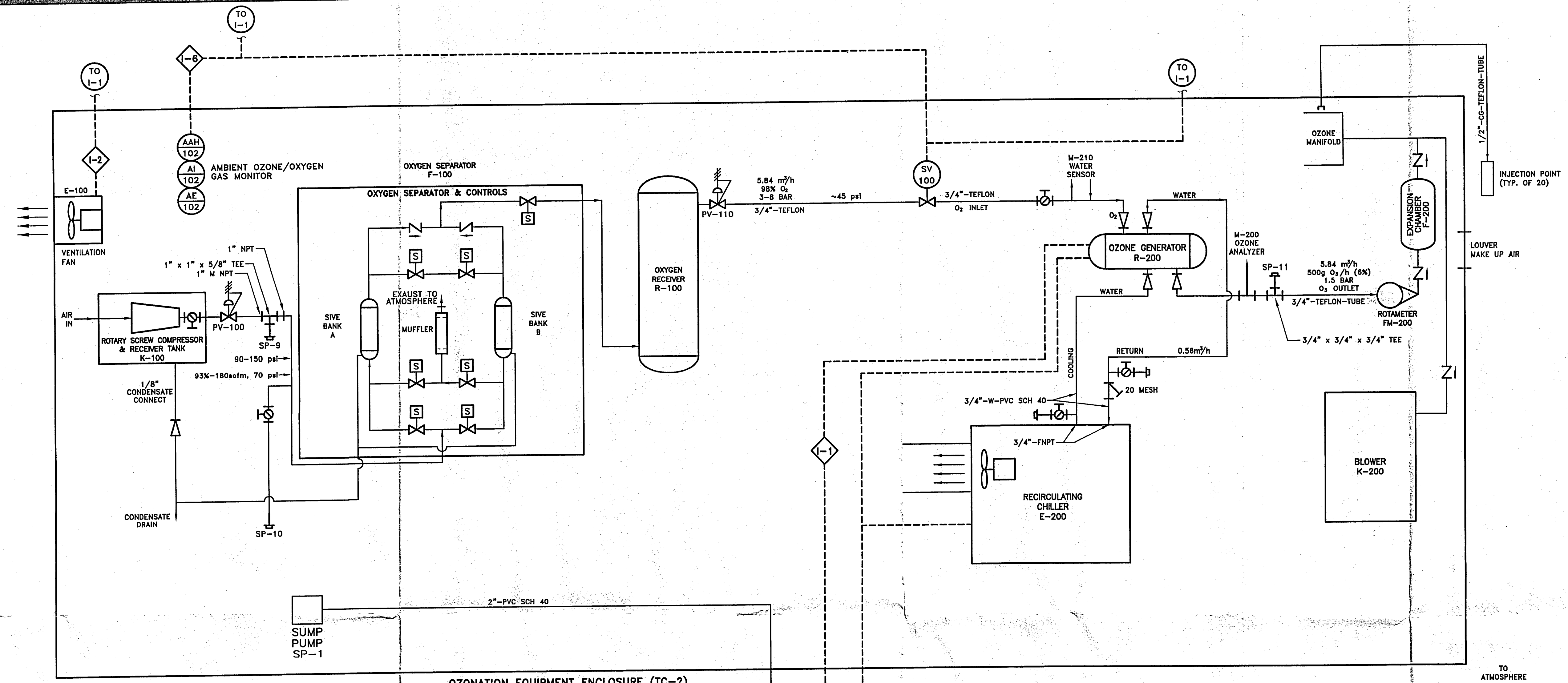
**OSMOSE, INC.**

ELLCOTT STREET  
BUFFALO, NEW YORK

**PIPING AND INSTRUMENTATION DIAGRAM LEGEND**

DESIGNED BY: ---	DETAILED BY: DEO	CHECKED BY:
DRAWING DATE: 10/12/99	ACAD FILE: 8061-P1	
PROJECT NO.: 01110-8061	CONTRACT:	
DRAWING: P-1	REVISION:	

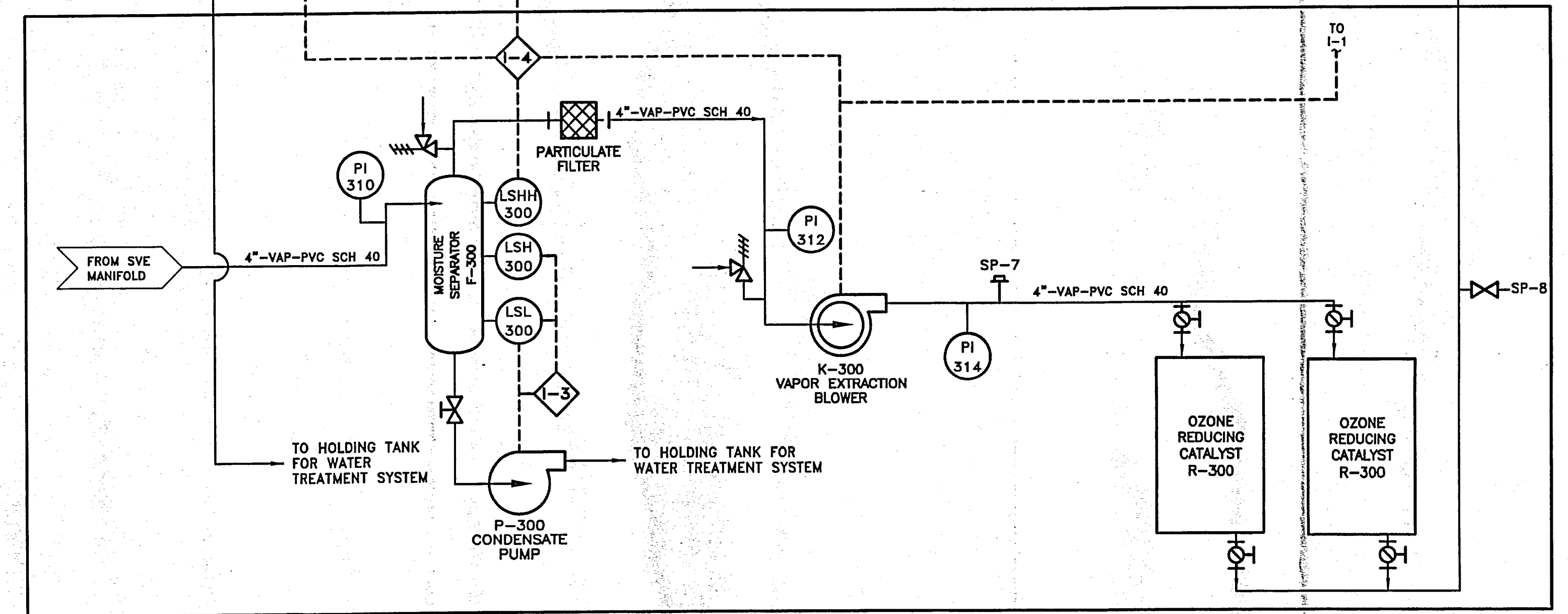
NO.	DATE	BY	REVISION
-----	------	----	----------



OZONATION EQUIPMENT ENCLOSURE (TC-2)

**INTERLOCKS**

- I-1 WITH OZONE GENERATOR AND VAPOR EXTRACTION BLOWER K-300 OPERATING, IF K-300 SHUTS DOWN, OR GAS ALARMS ARE REGISTERED, THE OZONE GENERATOR IS SHUT DOWN.
- I-2 IF VENTILATION FAN (E-100) SHUTS OFF, THE OZONE GENERATOR (R-200) WILL SHUT DOWN.
- I-3 IF LIQUID RISES TO THE LEVEL OF LSH-300, PUMP P-300 IS STARTED AND OPERATES UNTIL LIQUID DROPS BELOW LSL-300.
- I-4 WITH VAPOR EXTRACTION BLOWER K-300 OPERATING, IF LIQUID RISES TO THE LEVEL OF LSHH-300, K-300 IS SHUT DOWN.
- I-6 IF OXYGEN CONCENTRATION EXCEEDS 22% AND/OR OZONE GAS IS DETECTED IN THE TREATMENT SYSTEM AMBIENT AIR AS MEASURED AT AE-102, THE OZONE GENERATORS SHUT DOWN, THE OXYGEN SUPPLY SOLENOID VALVE, SV-100, SHUTS, AND AN AUTODIALER (UA-100) NOTIFIES REMOTE LOCATION BY PHONE.



SVE/WATER TREATMENT ENCLOSURE (TC-1)

- NOTES:**
- A) ALL MATERIALS ON DISCHARGE OF OZONE GENERATOR ARE TEFLON.
  - B) ALL SCREWED JOINTS ARE SEALED WITH TEFLON TAPE ON THREADS AND SEALED WITH GE 1000 CAULK. PIPE DOPE AND ANAEROBIC PIPE THREAD SEALANT WERE NOT USED.
  - C) ALL JOINTS WERE CHECKED FOR LEAKS UNDER AIR OR OXYGEN SERVICE USING SOAP SOLUTION AND LEAKS WERE ELIMINATED PRIOR TO GENERATING OZONE.

SIGNATURE	DATE
REVIEW ENGR:	
PROJECT ENGR:	
PROJECT MGR:	
CLIENT:	



**IT ENGINEERING OF NEW YORK, P.C.**  
 13 BRITISH AMERICAN BLVD.  
 ALBANY, NY 12110  
 (518) 783-1996

**OSMOSE, INC.**

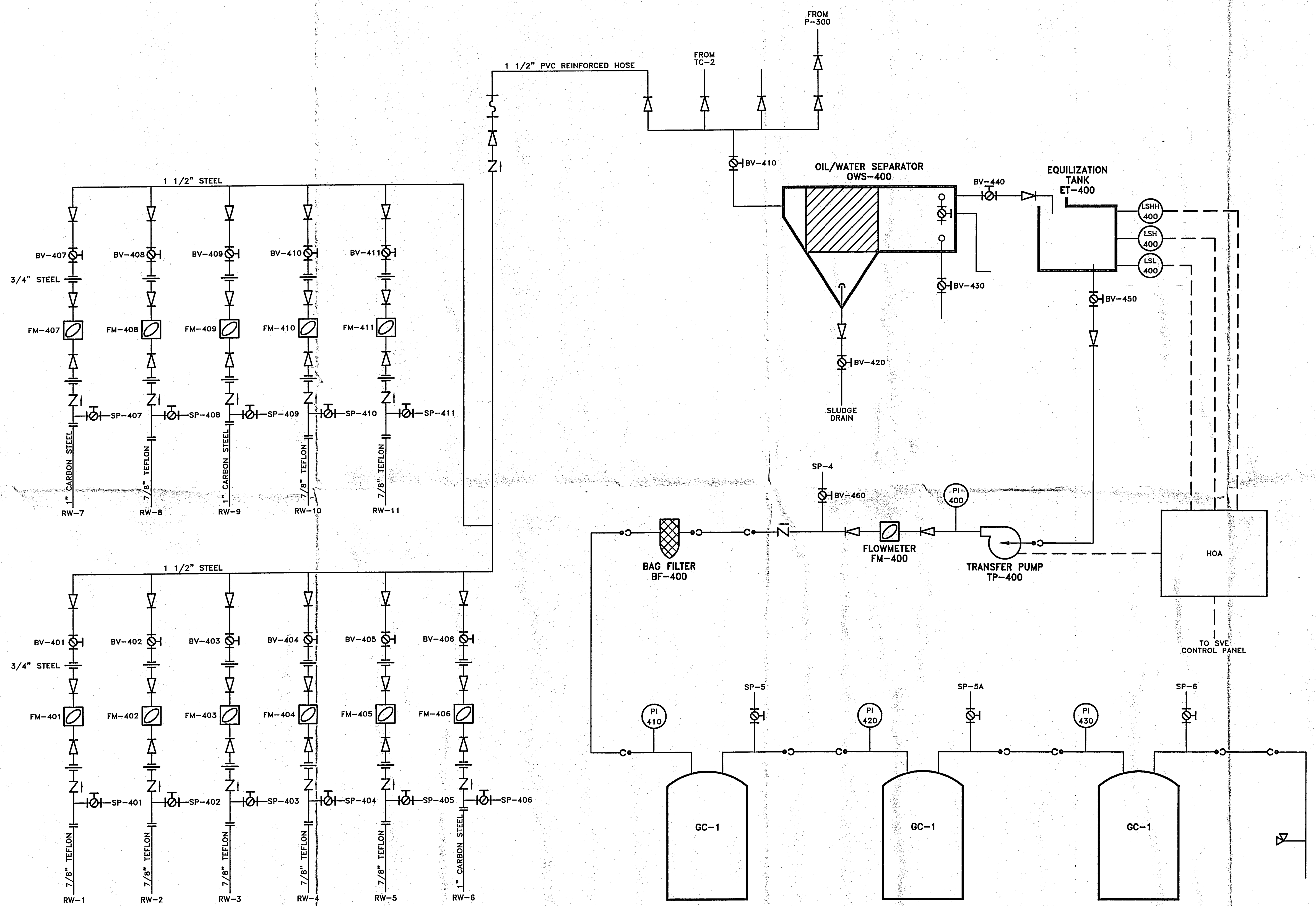
ELLICOTT STREET  
 BUFFALO, NEW YORK

**PIPING AND INSTRUMENTATION DIAGRAM**

DESIGNED BY: KSD/BMT	DETAILED BY: SSH/DEO	CHECKED BY:
DRAWING DATE: 10/13/99	ACAD FILE: 8061-P2	
PROJECT NO.:	CONTRACT:	
01110-8061		
DRAWING:	REVISION:	
<b>P-2</b>		

IT IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, OTHER THAN THOSE WHOSE SEAL APPEARS ON THIS DRAWING, TO ALTER IN ANY WAY AN ITEM ON THIS DRAWING. IF AN ITEM IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE AND THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.  
 THIS DRAWING AND ANY ATTACHMENTS ("DRAWINGS"), HAVE BEEN PRODUCED FOR THE SOLE USE OF THE RECIPIENT AND MUST NOT BE USED, REUSED, REPRODUCED, MODIFIED OR COPIED ("USED") IN ANY MANNER WITHOUT PRIOR WRITTEN APPROVAL OF IT ENGINEERING OF NEW YORK, P.C. THIS DRAWING MAY CONTAIN CONFIDENTIAL AND PROPRIETARY INFORMATION OF IT ENGINEERING OF NEW YORK, P.C. ANY UNAUTHORIZED USE OF THIS DRAWING IS STRICTLY PROHIBITED.

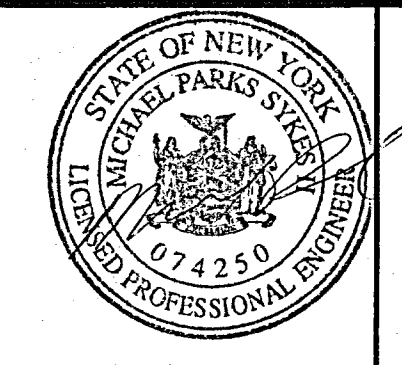
NO.	DATE	BY	REVISION



IT IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, OTHER THAN THOSE WHOSE SEAL APPEARS ON THIS DRAWING, TO ALTER IN ANY WAY AN ITEM ON THIS DRAWING. IF AN ITEM IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE AND THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

THIS DRAWING AND ANY ATTACHMENTS ("DRAWINGS"), HAVE BEEN PRODUCED FOR THE SOLE USE OF THE RECIPIENT AND MUST NOT BE USED, REUSED, REPRODUCED, MODIFIED OR COPIED ("USE") IN ANY MANNER WITHOUT PRIOR WRITTEN APPROVAL OF IT ENGINEERING OF NEW YORK, P.C. THIS DRAWING MAY CONTAIN CONFIDENTIAL AND PROPRIETARY INFORMATION OF IT ENGINEERING OF NEW YORK, P.C. ANY UNAUTHORIZED USE OF THIS DRAWING IS STRICTLY PROHIBITED.

SIGNATURE	DATE
REVIEW ENGR:	
PROJECT ENGR:	
PROJECT MGR:	
CLIENT:	



**IT ENGINEERING OF NEW YORK, P.C.**  
 13 BRITISH AMERICAN BLVD.  
 ALBANY, NY 12110  
 (518) 783-1996

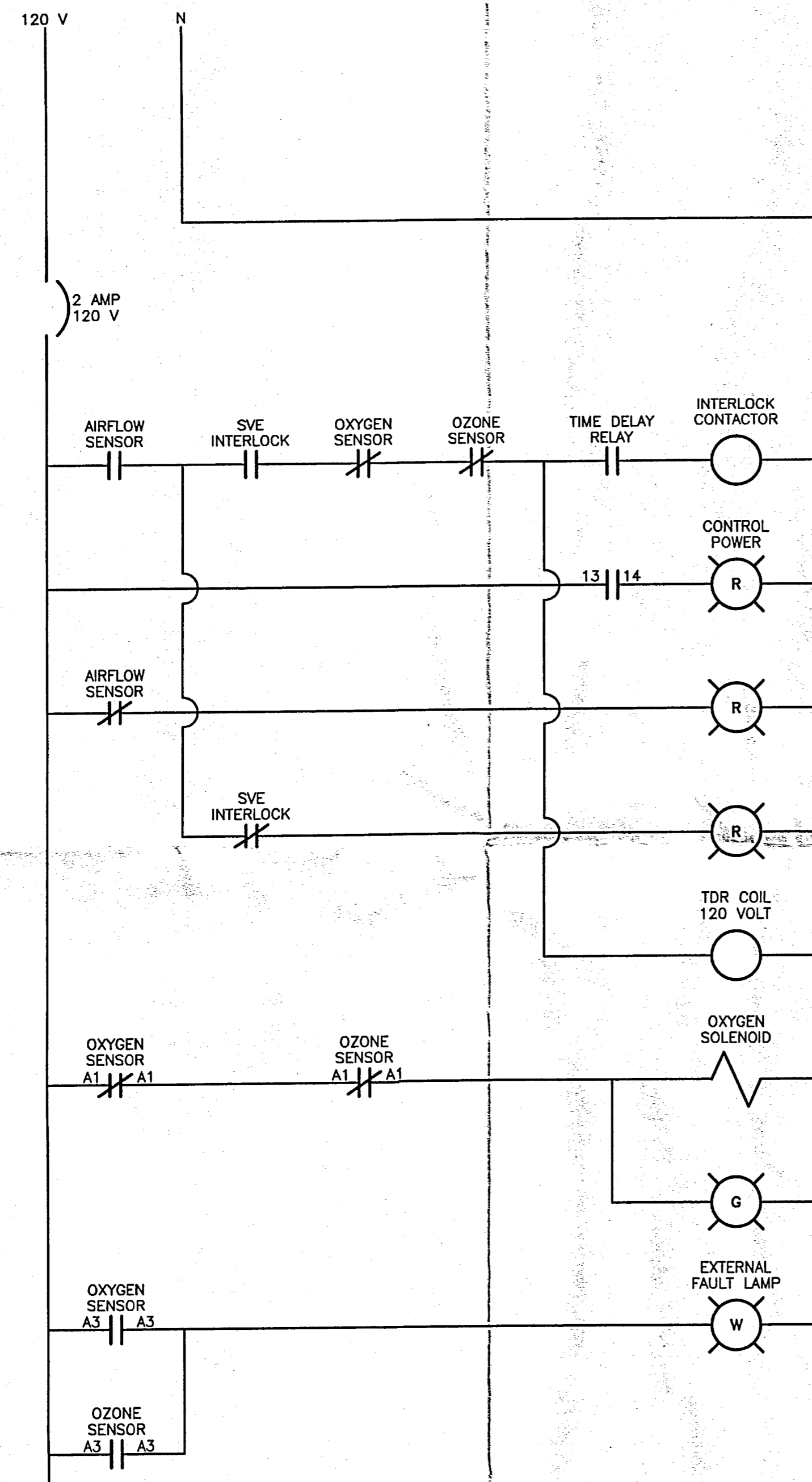
**OSMOSE, INC.**

ELLICOTT STREET  
 BUFFALO, NEW YORK

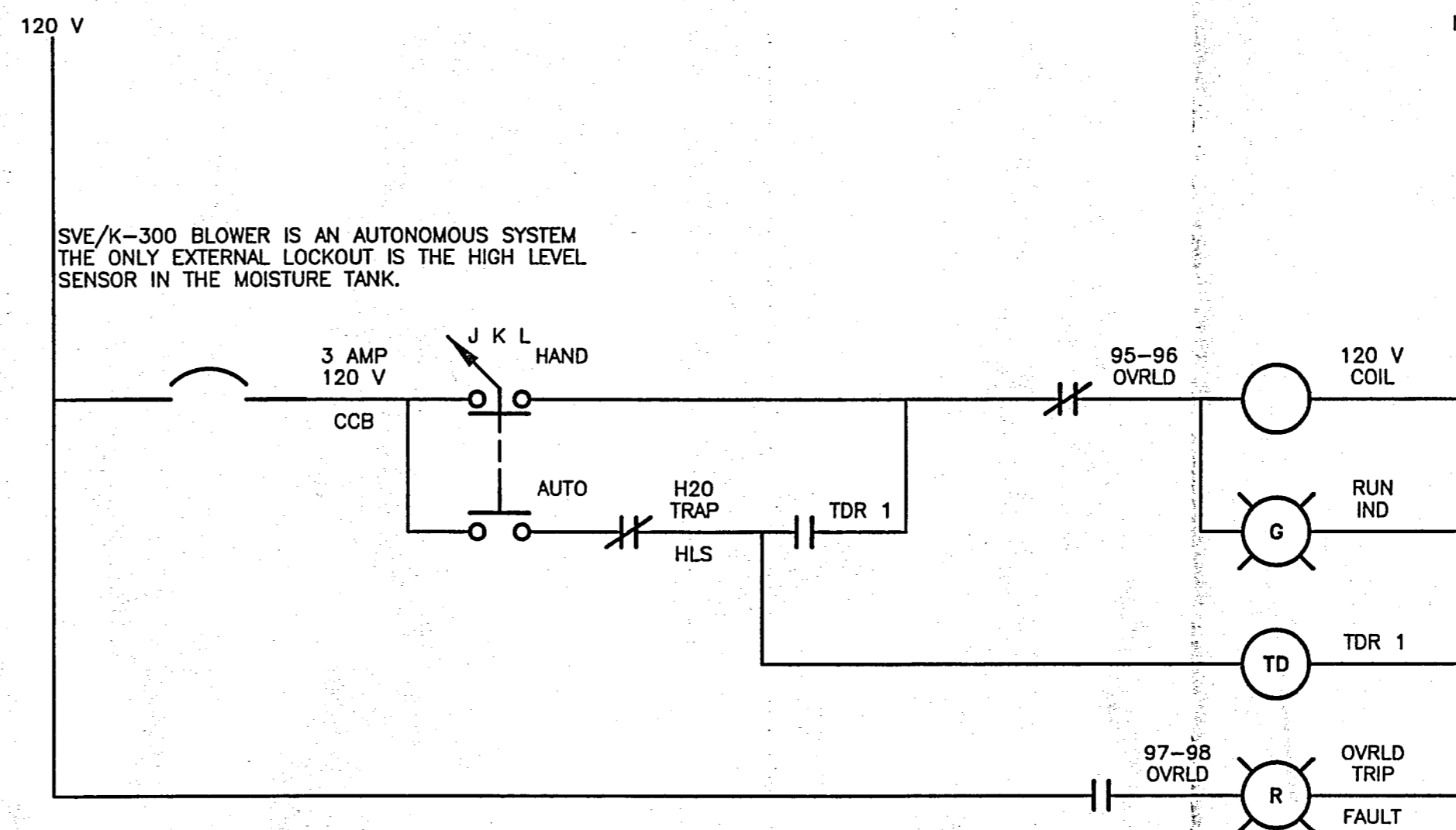
**PUMPING/TREATMENT SYSTEM P&ID**

DESIGNED BY: BWA	DETAILED BY: DEO	CHECKED BY:
DRAWING DATE: 11/3/99	ACAD FILE: 8061-P4	
PROJECT NO.: 11108061	CONTRACT:	
FIGURE: <b>P-4</b>	REVISION:	



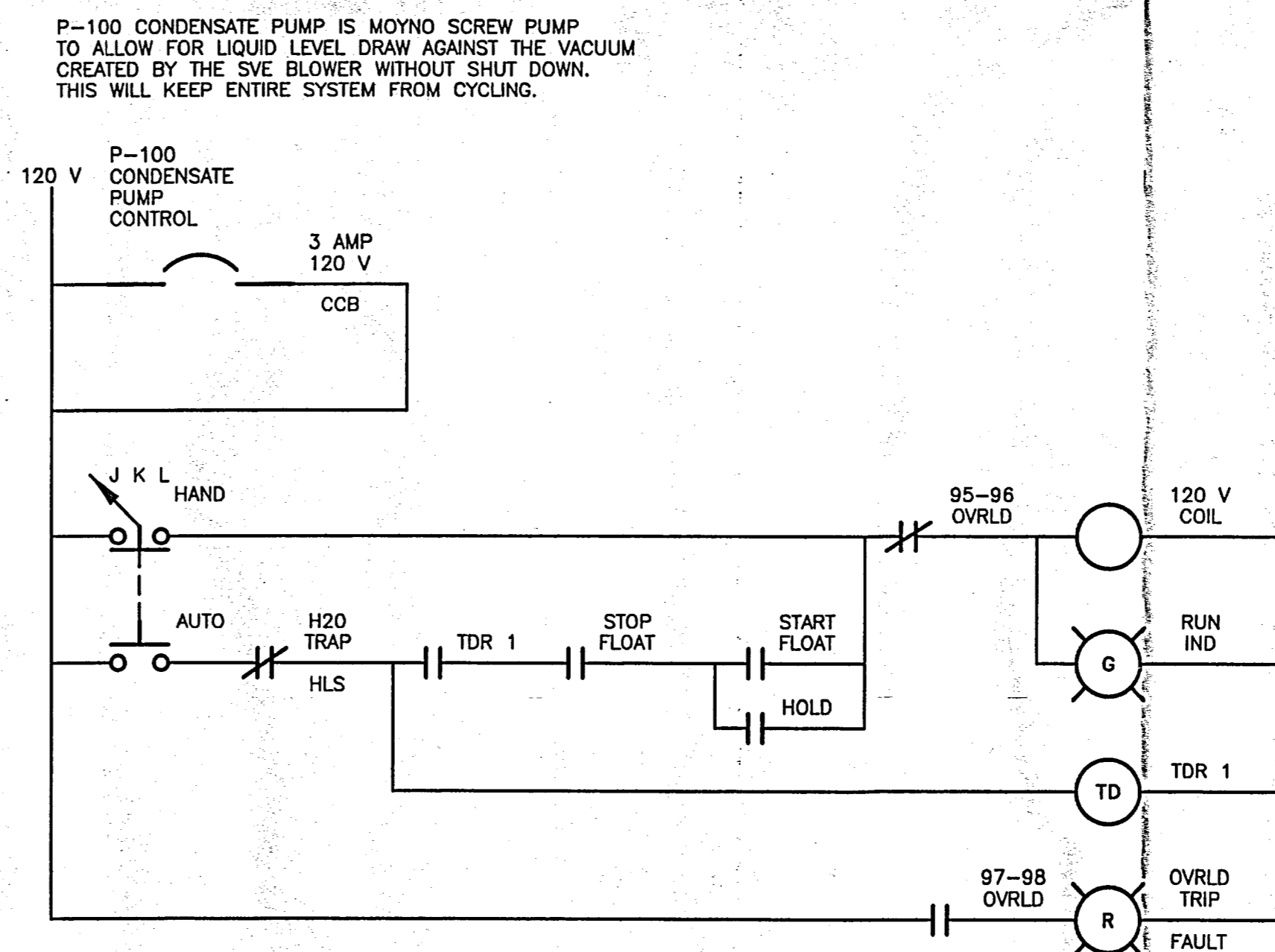


DETAIL #1



DETAIL #2

NOTES:  
 HIGH LEVEL SENSOR SIGNAL IS INPUT THROUGH A TIME DELAY RELAY TO STOP RAPID CYCLING OF MOTOR  
 HIGH LEVEL SENSOR IN MOISTURE KNOCKOUT TANK WIRED THROUGH ISR REPEATER  
 SENSORS PLACED ON K-300 OUTPUT AIRSTREAM ARE INPUT TO OXYGEN & OZONE GENERATOR CONTROL PANEL



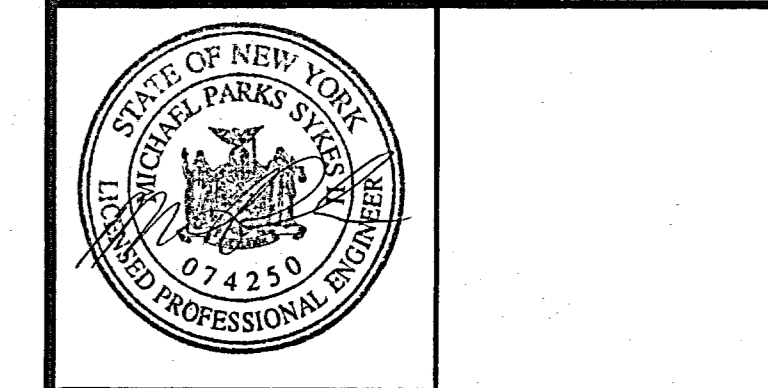
DETAIL #3

NOTES:  
 P-100 CONDENSATE PUMP RUNS AS AN AUTONOMOUS SYSTEM. THE ONLY LOCKOUT IS THE HIGH LEVEL SENSOR IN THE OIL WATER SEPARATOR.  
 HIGH LEVEL SENSOR IN OIL WATER SEPARATOR, STOP FLOAT AND START FLOAT ARE WIRED THROUGH AN ISR ISOLATION/REPEATER RELAY.  
 HIGH LEVEL SENSOR SIGNAL/OIL WATER SEPARATOR HAS TIME DELAY FUNCTION TO ALLOW FOR ADEQUATE DISCHARGE OF PROCESSED WATER.

IT IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, OTHER THAN THOSE WHOSE SEAL APPEARS ON THIS DRAWING, TO ALTER IN ANY WAY AN ITEM ON THIS DRAWING. IF AN ITEM IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE AND THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.  
 THIS DRAWING AND ANY ATTACHMENTS ("DRAWINGS"), HAVE BEEN PRODUCED FOR THE SOLE USE OF THE RECIPIENT AND MUST NOT BE USED, REUSED, REPRODUCED, MODIFIED OR COPIED ("USE") IN ANY MANNER WITHOUT PRIOR WRITTEN APPROVAL OF IT ENGINEERING OF NEW YORK, P.C. THIS DRAWING MAY CONTAIN CONFIDENTIAL AND PROPRIETARY INFORMATION OF IT ENGINEERING OF NEW YORK, P.C. ANY UNAUTHORIZED USE OF THIS DRAWING IS STRICTLY PROHIBITED.

NO.	DATE	BY	REVISION
-----	------	----	----------

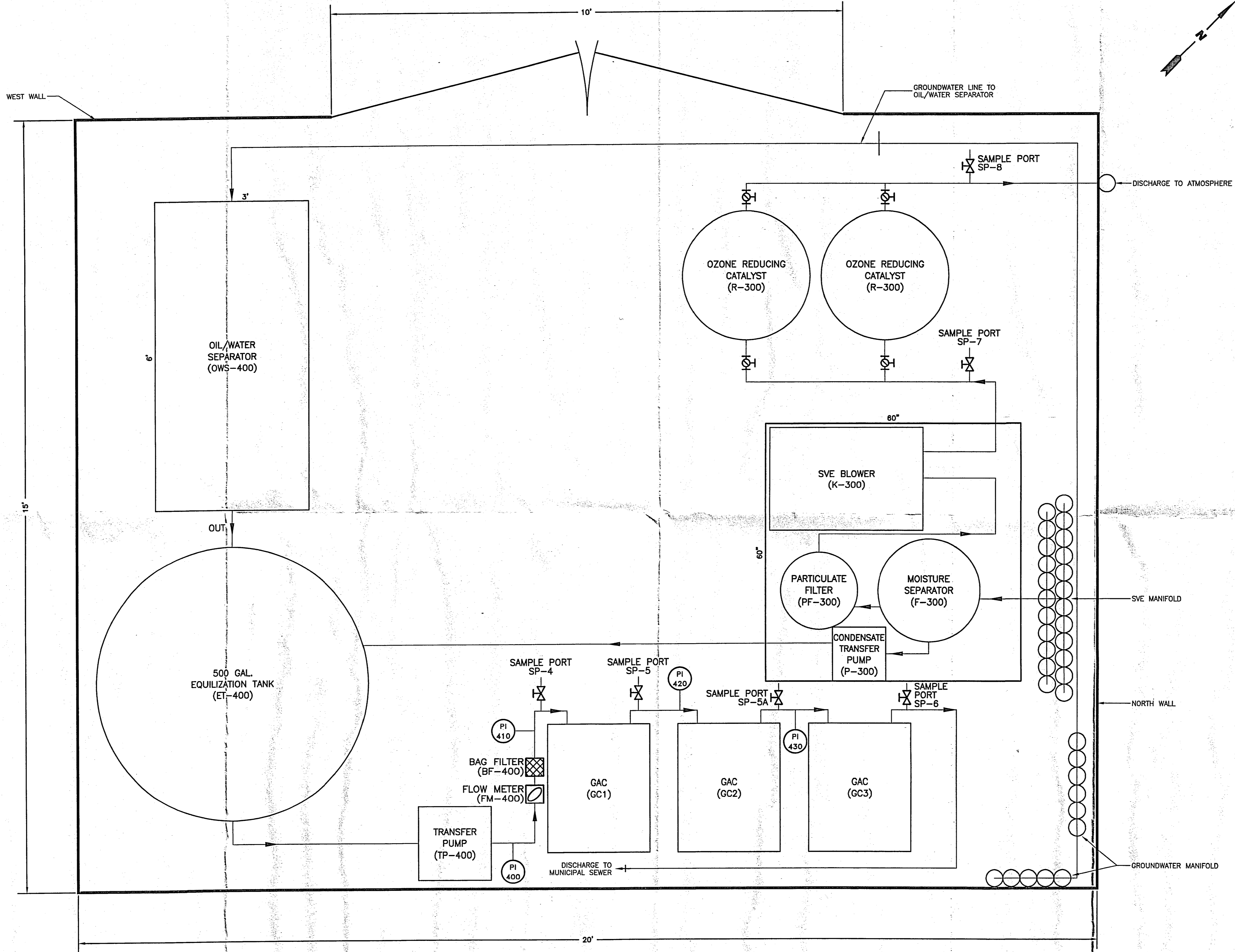
SIGNATURE	DATE
REVIEW ENGR:	
PROJECT ENGR:	
PROJECT MGR:	
CLIENT:	



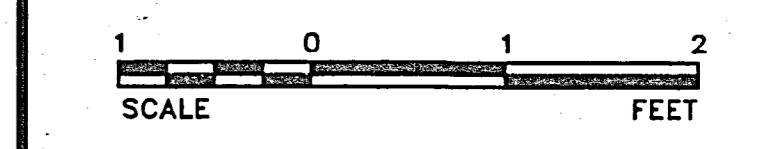
**IT ENGINEERING OF NEW YORK, P.C.**  
 13 BRITISH AMERICAN BLVD.  
 ALBANY, NY 12110  
 (518) 783-1996

**OSMOSE**  
 ELLICOTT STREET  
 BUFFALO, NEW YORK

INSTRUMENTATION LOGIC DIAGRAMS		
DESIGNED BY: KSD	DETAILED BY: DEO	CHECKED BY:
DRAWING DATE: 10/2/98	ACAD FILE: 8061-P3	
PROJECT NO.: 11108061	CONTRACT:	
FIGURE: P-3	REVISION:	



NO.	DATE	BY	REVISION



SIGNATURE	DATE
REVIEW ENGR:	
PROJECT ENGR:	
PROJECT MGR:	
CLIENT:	



**IT ENGINEERING OF NEW YORK, P.C.**  
 13 BRITISH AMERICAN BLVD.  
 ALBANY, NY 12110  
 (518) 783-1996

**OSMOSE, INC.**

ELLICOTT STREET  
 BUFFALO, NEW YORK

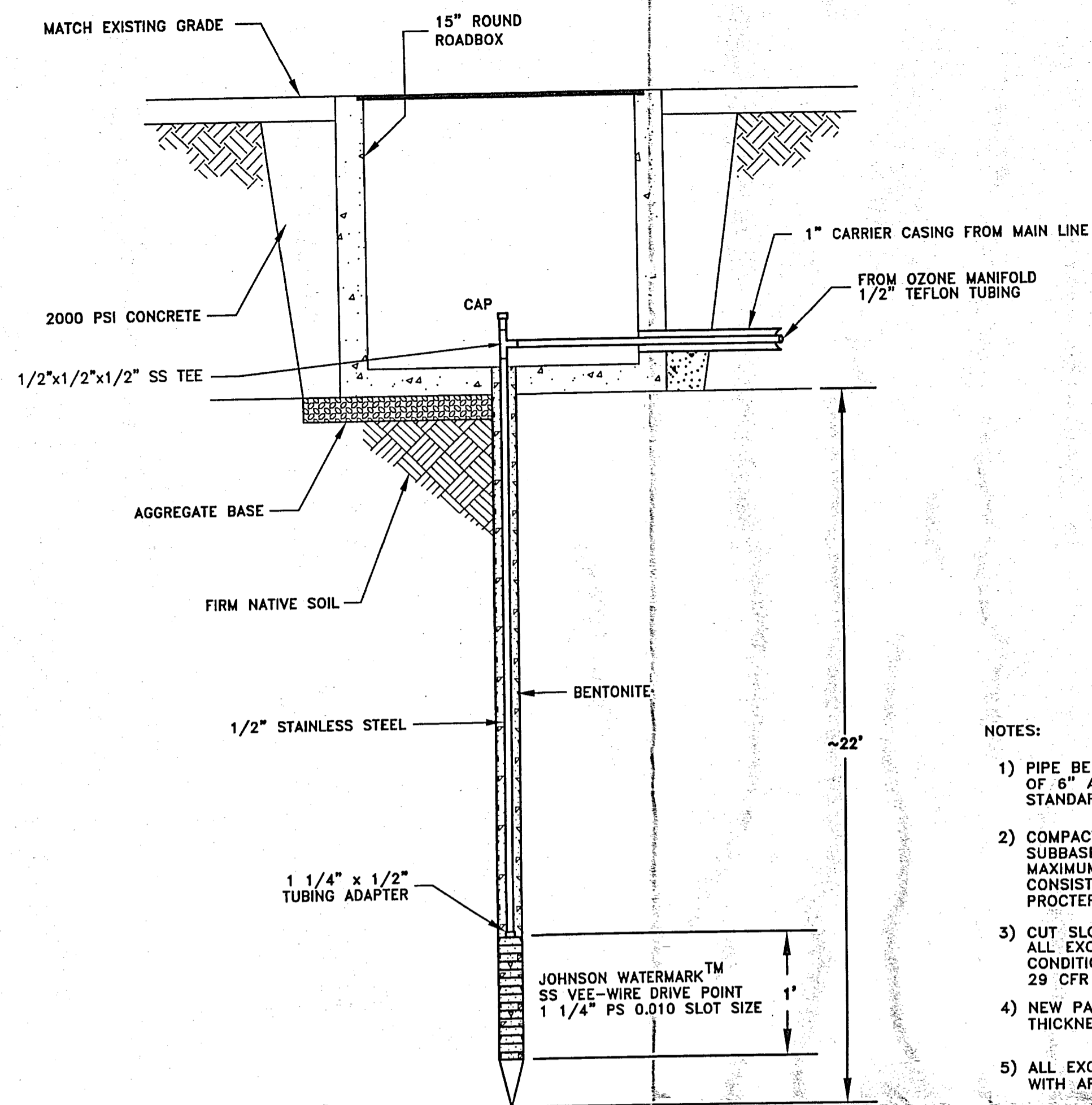
**TREATMENT COMPOUND LAYOUT TC-1**

DESIGNED BY: KSD	DETAILED BY: DEO	CHECKED BY:
DRAWING DATE: 10/13/99	ACAD FILE: 8061-S2	
PROJECT NO.: 01110-8061	CONTRACT:	
DRAWING: S-2	REVISION:	

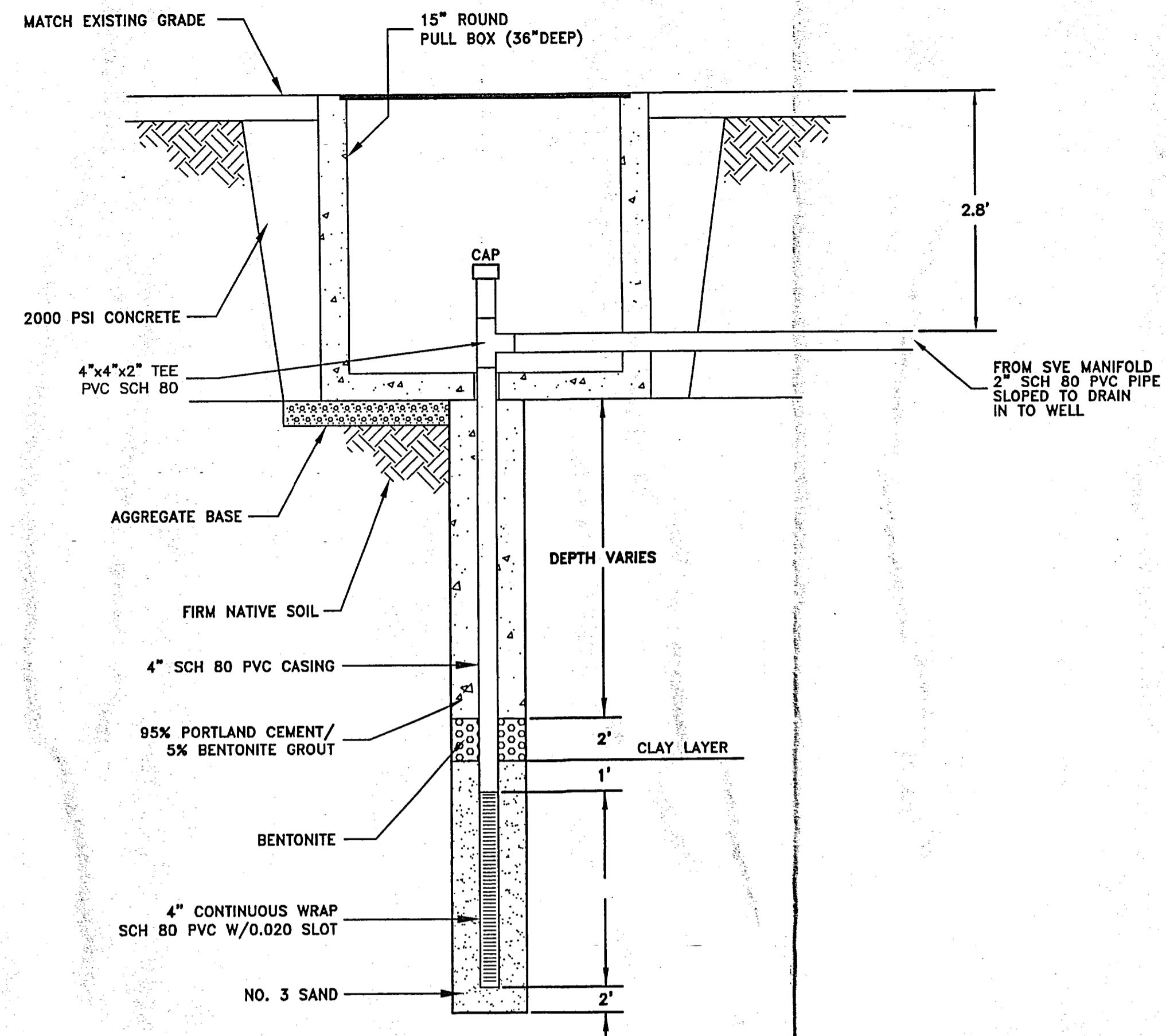
IT IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, OTHER THAN THOSE WHOSE SEAL APPEARS ON THIS DRAWING, TO ALTER IN ANY WAY AN ITEM ON THIS DRAWING. IF AN ITEM IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE AND THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

THIS DRAWING AND ANY ATTACHMENTS ("DRAWINGS"), HAVE BEEN PRODUCED FOR THE SOLE USE OF THE RECIPIENT AND MUST NOT BE USED, REUSED, REPRODUCED, MODIFIED OR COPIED ("USE") IN ANY MANNER WITHOUT PRIOR WRITTEN APPROVAL OF IT ENGINEERING OF NEW YORK, P.C. THIS DRAWING MAY CONTAIN CONFIDENTIAL AND PROPRIETARY INFORMATION OF IT ENGINEERING OF NEW YORK, P.C. ANY UNAUTHORIZED USE OF THIS DRAWING IS STRICTLY PROHIBITED.

NO.	DATE	BY	REVISION
-----	------	----	----------



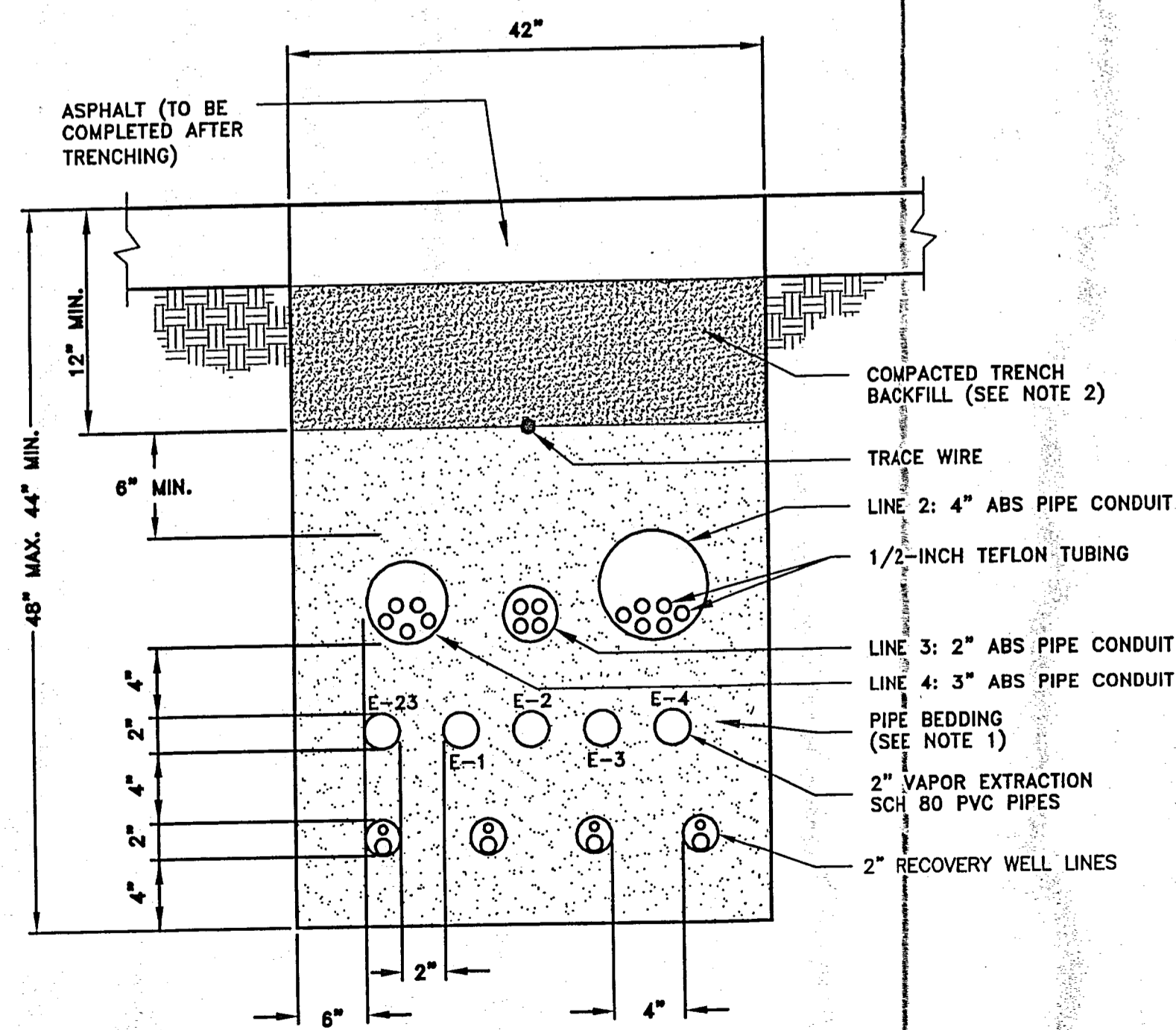
**4 TYPICAL OZONE INJECTION WELL CONSTRUCTION**  
NOT TO SCALE



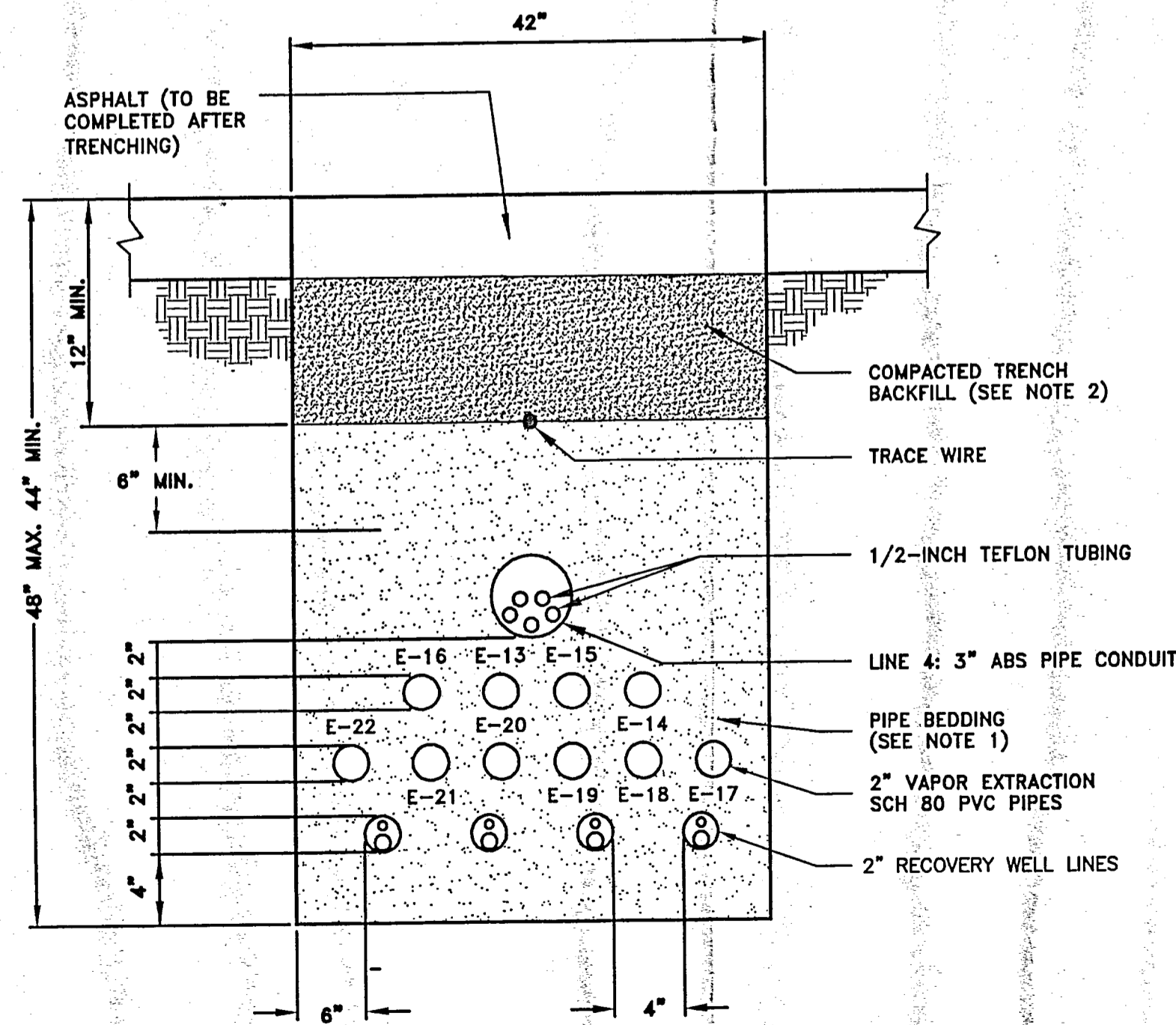
**5 TYPICAL SVE WELL CONSTRUCTION**  
NOT TO SCALE

**NOTES:**

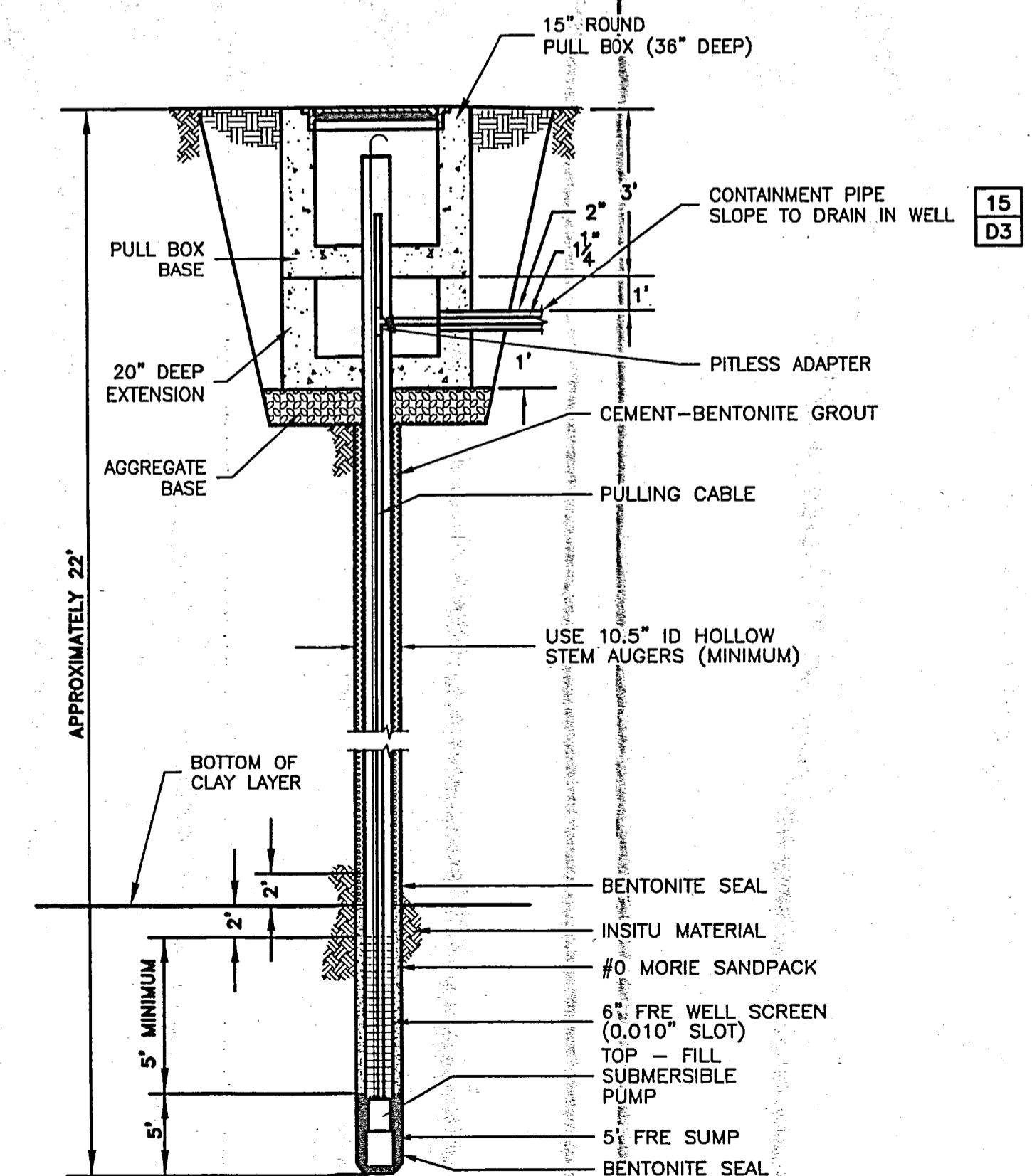
- 1) PIPE BEDDING IS NYSDOT MORTAR SAND OR CLEAN SAND TO A LEVEL OF 6" ABOVE THE HIGHEST PIPE, COMPACTED IN 6" LIFTS, MINIMUM OF 95% STANDARD PROCTER DENSITY.
- 2) COMPACTED TRENCH BACKFILL IN PAVED AREAS CONSISTS OF NYSDOT SUBBASE TYPE 1, COMPACTED TO A MINIMUM MODIFIED PROCTER OF 90% MAXIMUM DENSITY. COMPACTED TRENCH BACKFILL IN UNPAVED AREAS CONSISTS OF NATIVE SOIL, COMPACTED TO A MINIMUM OF 90% STANDARD PROCTER DENSITY.
- 3) CUT SLOPES WERE DETERMINED BY CONTRACTOR. ALL EXCAVATION WORK WAS PERFORMED IN ACCORDANCE WITH ALL CONDITIONS SET FORTH BY OSHA'S REVISED STANDARDS FOR EXCAVATIONS, 29 CFR 1926 SUBPART P.
- 4) NEW PAVEMENT AND AGGREGATE BASE IS OF THE SAME TYPE AND THICKNESS AS THAT WHICH WAS REMOVED.
- 5) ALL EXCESS MATERIALS WERE REMOVED AND DISPOSED OF IN CONFORMANCE WITH APPLICABLE REGULATIONS.
- 6) CARRIER CASING WAS SEALED OFF AT ENTRANCE TO PULL BOX.



**6 TYPICAL TRENCH SECTION**  
NOT TO SCALE



**7 TYPICAL TRENCH SECTION**  
NOT TO SCALE

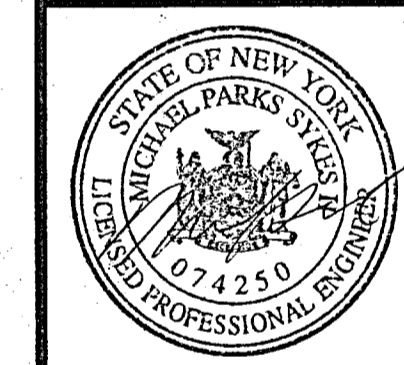


**8 TYPICAL RECOVERY WELL SECTION**  
NOT TO SCALE

IT IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, OTHER THAN THOSE WHOSE SEAL APPEARS ON THIS DRAWING, TO ALTER IN ANY MANNER ANY ITEM ON THIS DRAWING. IF AN ITEM IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE AND THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

THIS DRAWING AND ANY ATTACHMENTS ("DRAWINGS"), HAVE BEEN PRODUCED FOR THE SOLE USE OF THE RECIPIENT AND MUST NOT BE USED, REUSED, REPRODUCED, MODIFIED OR COPIED ("USE") IN ANY MANNER WITHOUT PRIOR WRITTEN APPROVAL OF IT ENGINEERING OF NEW YORK, P.C. THIS DRAWING MAY CONTAIN CONFIDENTIAL AND PROPRIETARY INFORMATION OF IT ENGINEERING OF NEW YORK, P.C. ANY UNAUTHORIZED USE OF THIS DRAWING IS STRICTLY PROHIBITED.

SIGNATURE	DATE
REVIEW ENGR:	
PROJECT ENGR:	
PROJECT MGR:	
CLIENT:	



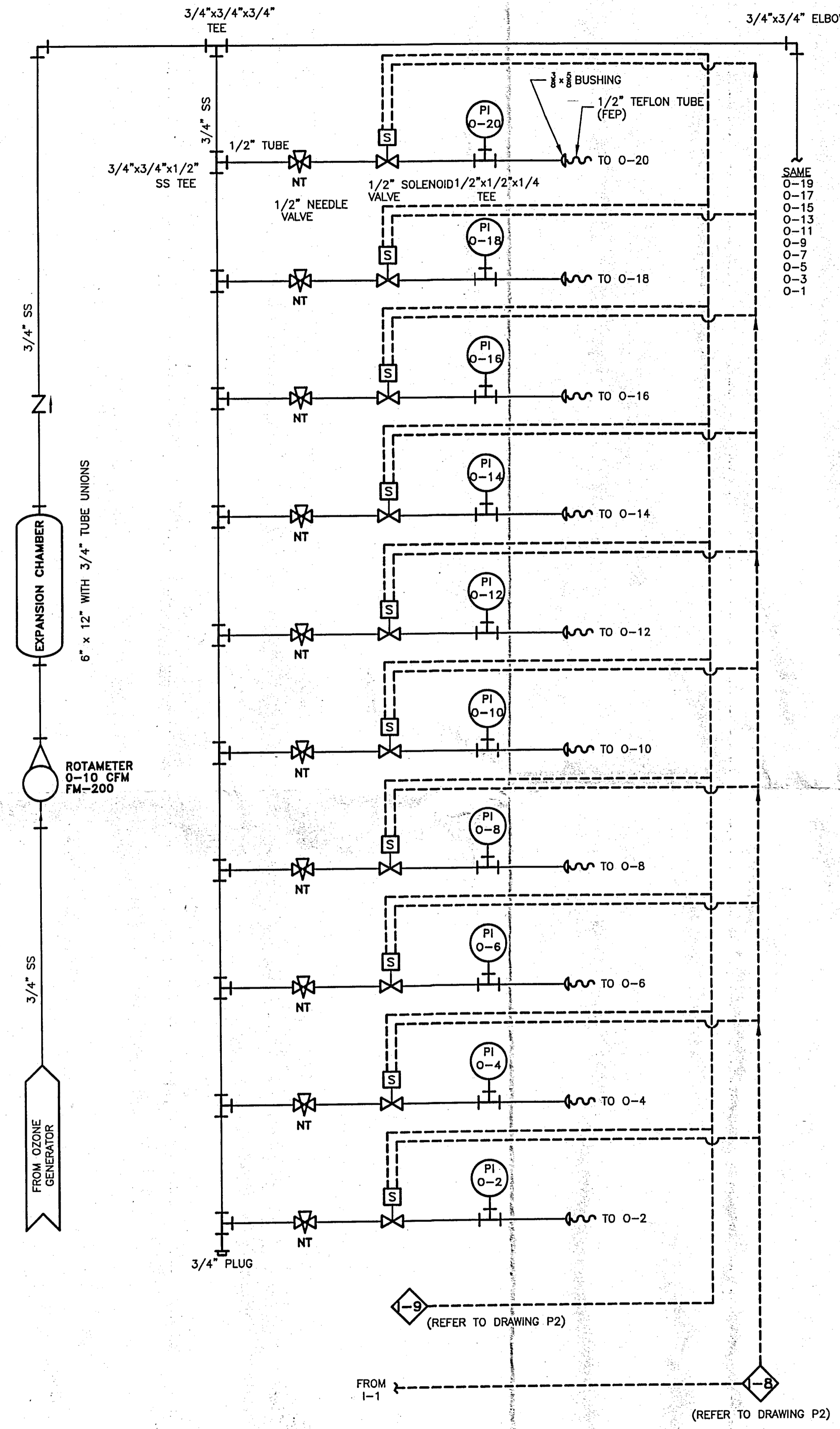
**IT ENGINEERING OF NEW YORK, P.C.**  
13 BRITISH AMERICAN BLVD.  
ALBANY, NY 12110  
(518) 783-1996

**OSMOSE, INC.**

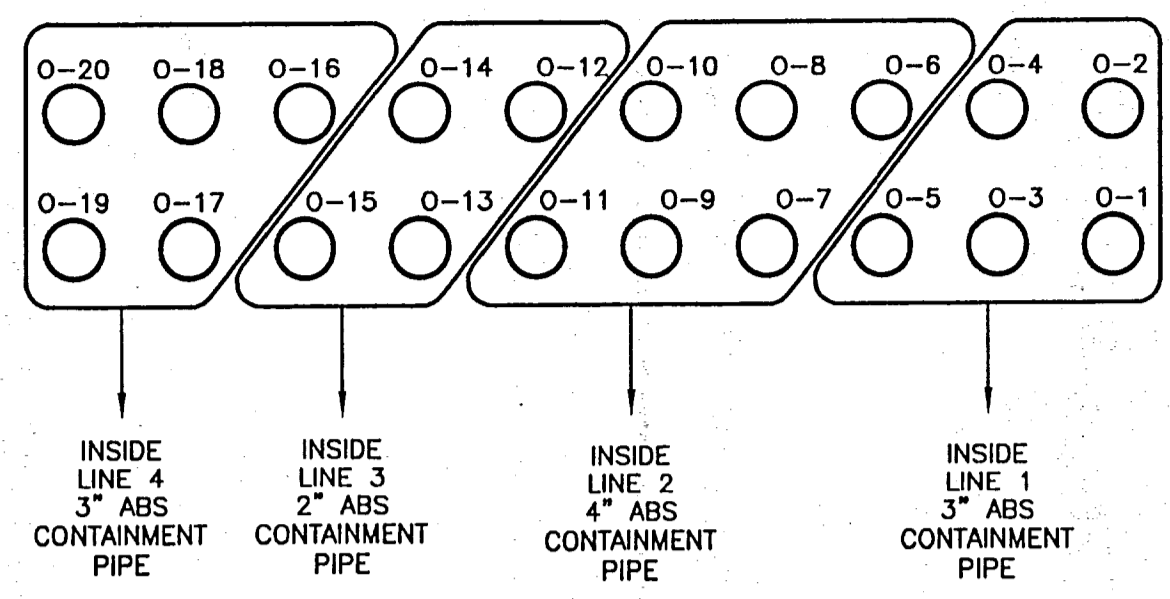
ELLCOTT STREET  
BUFFALO, NEW YORK

**WELL AND TRENCHING DETAILS**

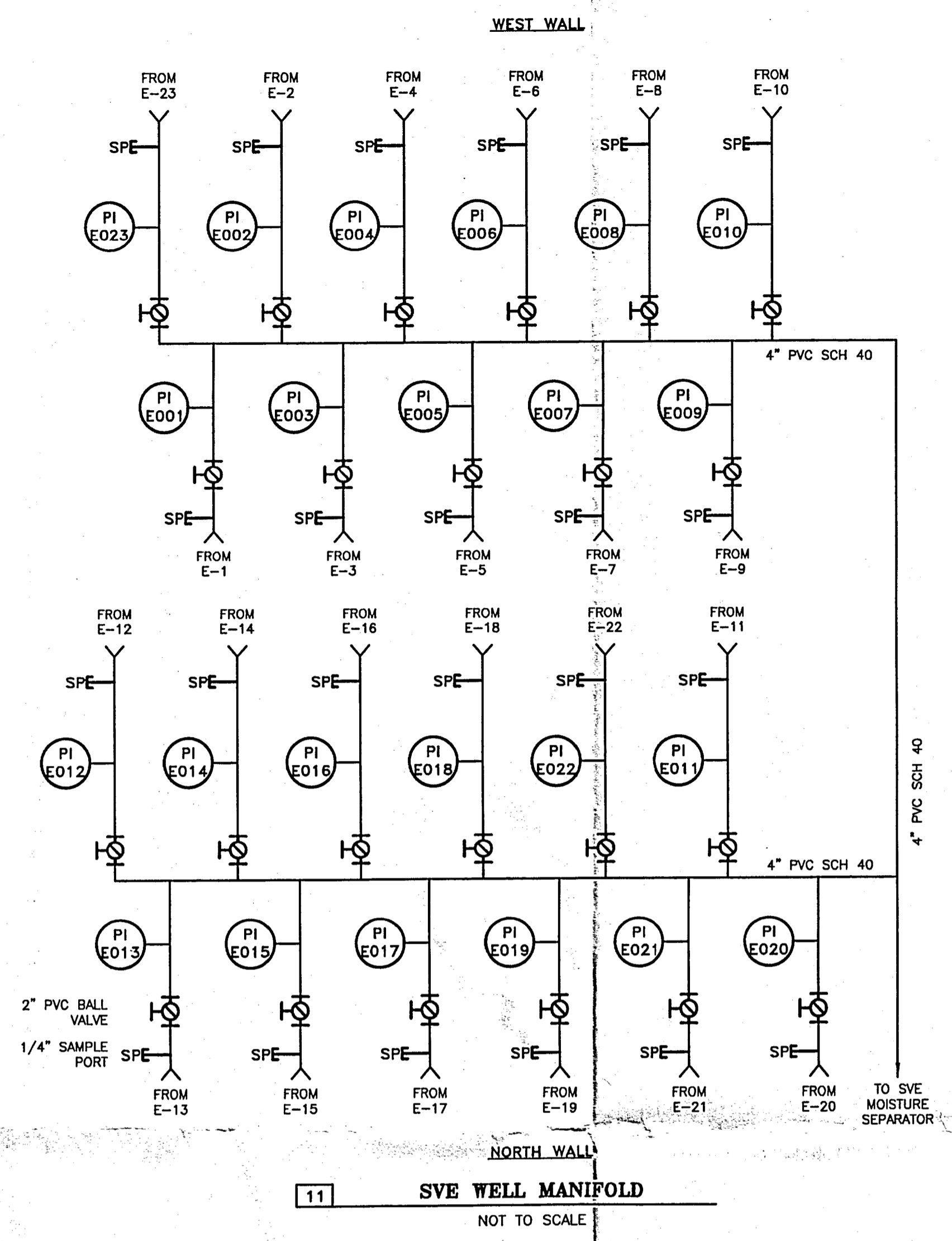
DESIGNED BY: KSD/BT	DETAILED BY: SWL/BT/SSH	CHECKED BY:
DRAWING DATE: 10/13/99	ACAD FILE:	8061-D1
PROJECT NO.:	CONTRACT:	
01110-8061		
DRAWING:	REVISION:	
	<b>D-1</b>	



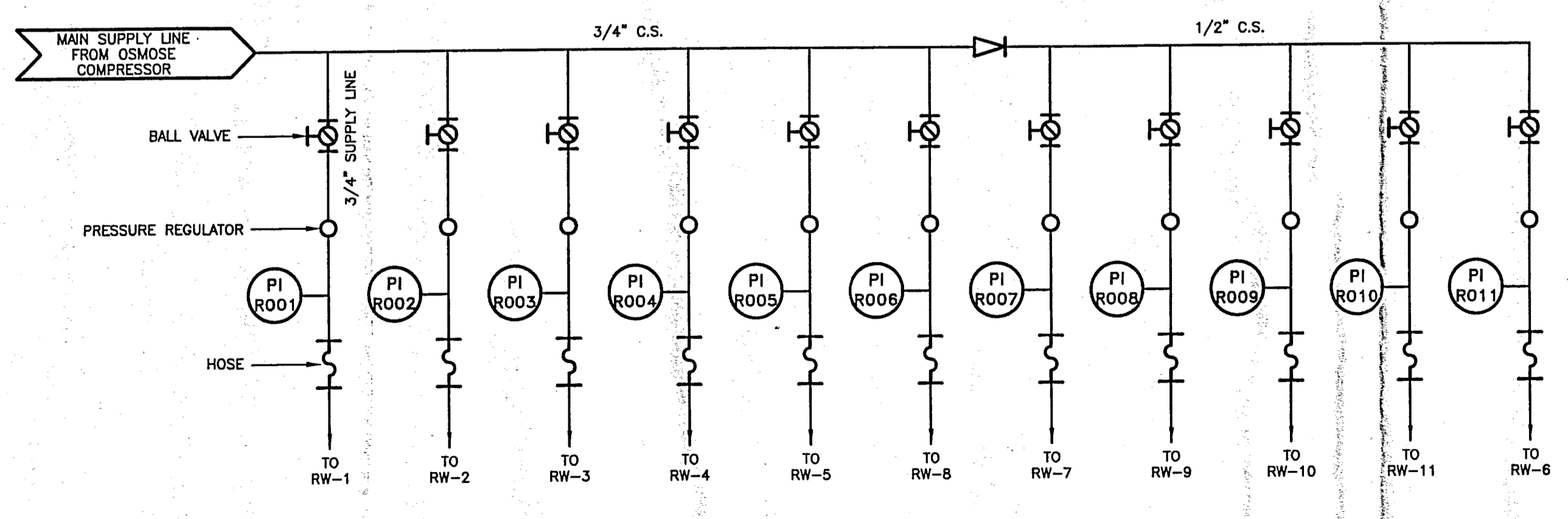
**9 OZONE SPARGE MANIFOLD**  
NOT TO SCALE



**10 OZONE LINE SECONDARY CONTAINMENT PIPE LAYOUT**  
NOT TO SCALE



**11 SVE WELL MANIFOLD**  
NOT TO SCALE



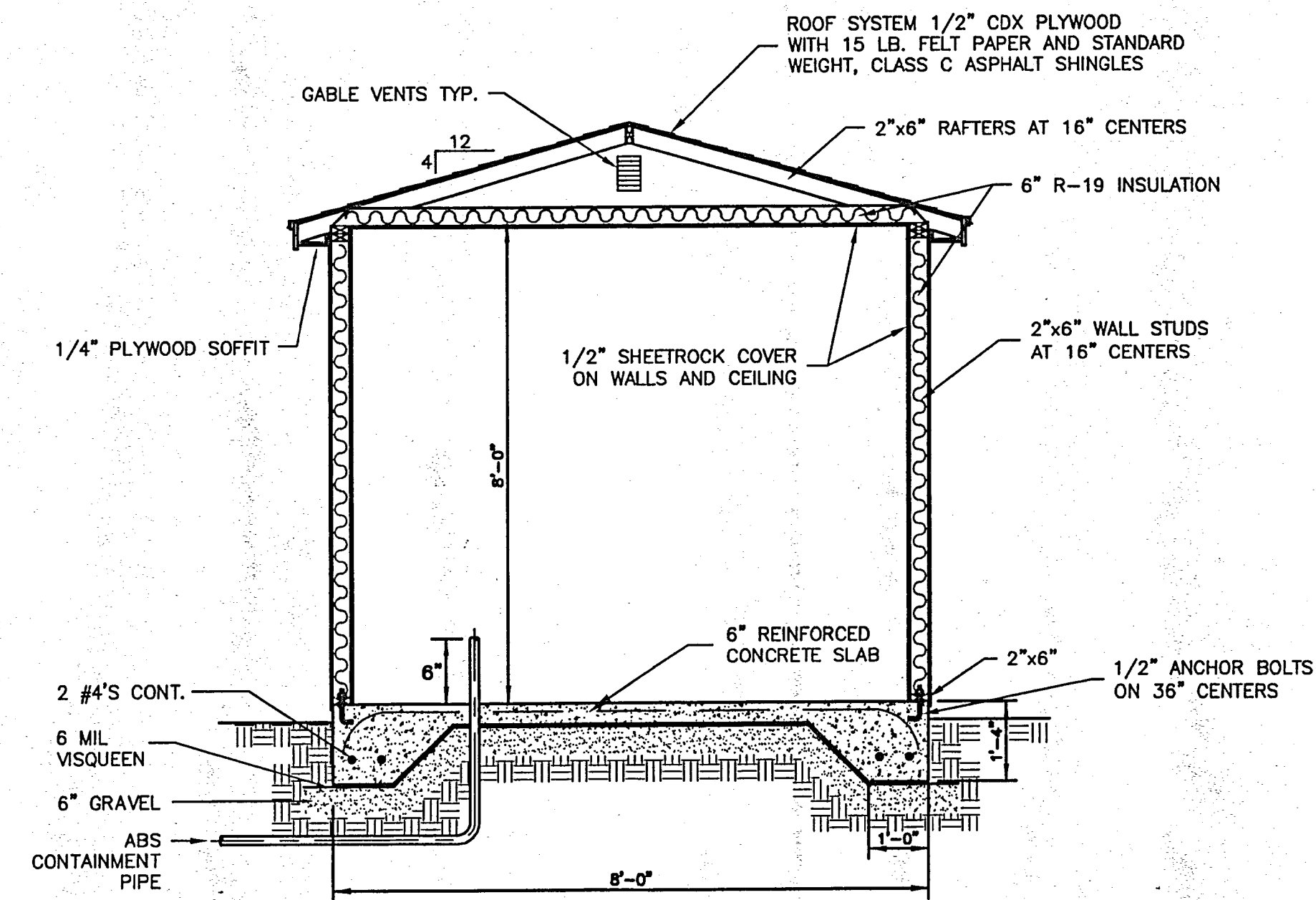
**13 AIR SUPPLY MANIFOLD**  
NOT TO SCALE

IT IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, OTHER THAN THOSE WHOSE SEAL APPEARS ON THIS DRAWING, TO ALTER IN ANY WAY AN ITEM ON THIS DRAWING. IF AN ITEM IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE AND THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

THIS DRAWING AND ANY ATTACHMENTS ("DRAWINGS"), HAVE BEEN PRODUCED FOR THE SOLE USE OF THE RECIPIENT AND MUST NOT BE USED, REUSED, REPRODUCED, MODIFIED OR COPIED ("USE") IN ANY MANNER WITHOUT PRIOR WRITTEN APPROVAL OF IT ENGINEERING OF NEW YORK, P.C. THIS DRAWING MAY CONTAIN CONFIDENTIAL AND PROPRIETARY INFORMATION OF IT ENGINEERING OF NEW YORK, P.C. ANY UNAUTHORIZED USE OF THIS DRAWING IS STRICTLY PROHIBITED.

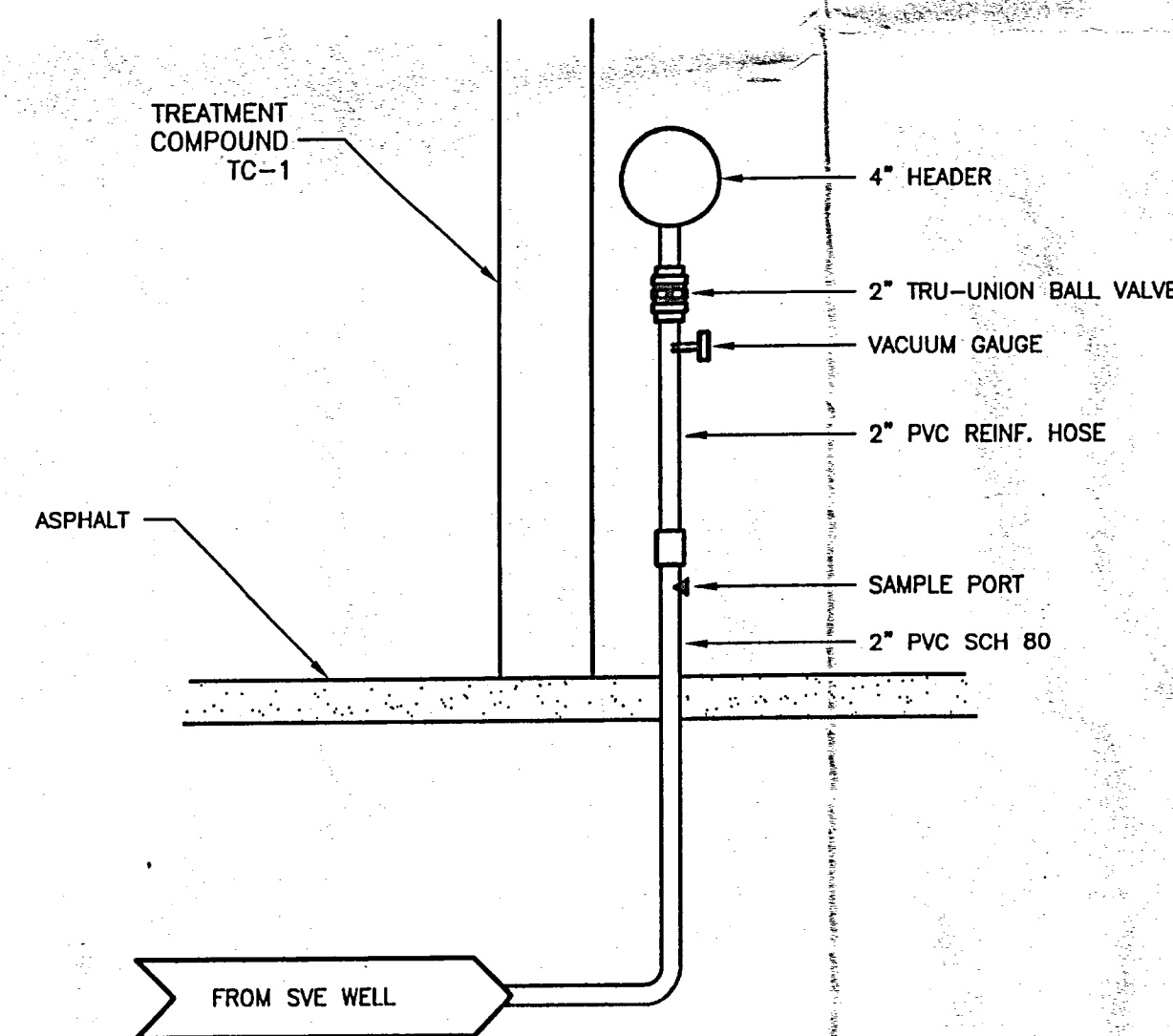
NO.	DATE	BY	REVISION
SIGNATURE		DATE	
REVIEW ENGR:			
PROJECT ENGR:			
PROJECT MGR:			
CLIENT:			
<b>IT ENGINEERING OF NEW YORK, P.C.</b> 13 BRITISH AMERICAN BLVD. ALBANY, NY 12110 (518) 783-1996			
<b>OSMOSE, INC.</b> ELLICOTT STREET BUFFALO, NEW YORK			
<b>OZONE SPARGE / SVE MANIFOLD LAYOUTS</b>			
DESIGNED BY:	DETAILED BY:	CHECKED BY:	
KSD	DEO/SSH		
DRAWING DATE:	ACAD FILE:		
10/12/99	8061-D2		
PROJECT NO.:	CONTRACT:		
01110-8061			
FIGURE:	REVISION:		
D-2	-		

NO.	DATE	BY	REVISION
-----	------	----	----------

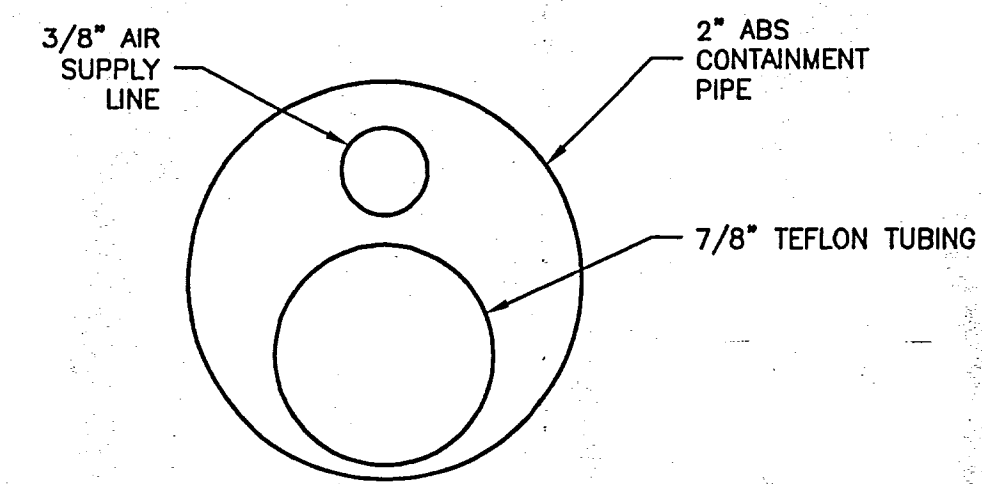


NOTE: ALL EXPOSED EXTERIOR SURFACES OF THE TREATMENT ENCLOSURE SHALL RECEIVE ONE COAT OF OIL BASED PRIMER AND ONE COAT OF LATEX FINISH PAINT. COLOR TO BE APPROVED BY THE OWNER.

14 BUILDING SECTION  
NOT TO SCALE



17 SVE MANIFOLD SECTION  
NOT TO SCALE

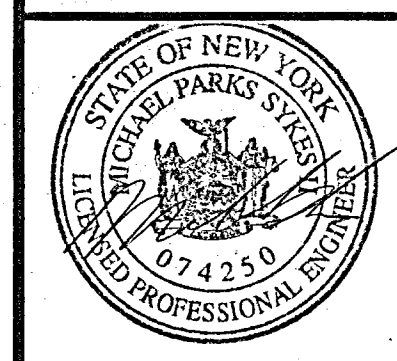


15 GROUNDWATER DISCHARGE LINE  
NOT TO SCALE

IT IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, OTHER THAN THOSE WHOSE SEAL APPEARS ON THIS DRAWING, TO ALTER IN ANY WAY AN ITEM ON THIS DRAWING. IF AN ITEM IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE AND THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

THIS DRAWING AND ANY ATTACHMENTS ("DRAWINGS"), HAVE BEEN PRODUCED FOR THE SOLE USE OF THE RECIPIENT AND MUST NOT BE USED, REUSED, REPRODUCED, MODIFIED OR COPIED ("USE") IN ANY MANNER WITHOUT PRIOR WRITTEN APPROVAL OF IT ENGINEERING OF NEW YORK, P.C. THIS DRAWING MAY CONTAIN CONFIDENTIAL AND PROPRIETARY INFORMATION OF IT ENGINEERING OF NEW YORK, P.C. ANY UNAUTHORIZED USE OF THIS DRAWING IS STRICTLY PROHIBITED.

SIGNATURE	DATE
REVIEW ENGR:	
PROJECT ENGR:	
PROJECT MGR:	
CLIENT:	



**IT ENGINEERING  
OF NEW YORK, P.C.**  
13 BRITISH AMERICAN BLVD.  
ALBANY, NY 12110  
(518) 783-1996

**OSMOSE**

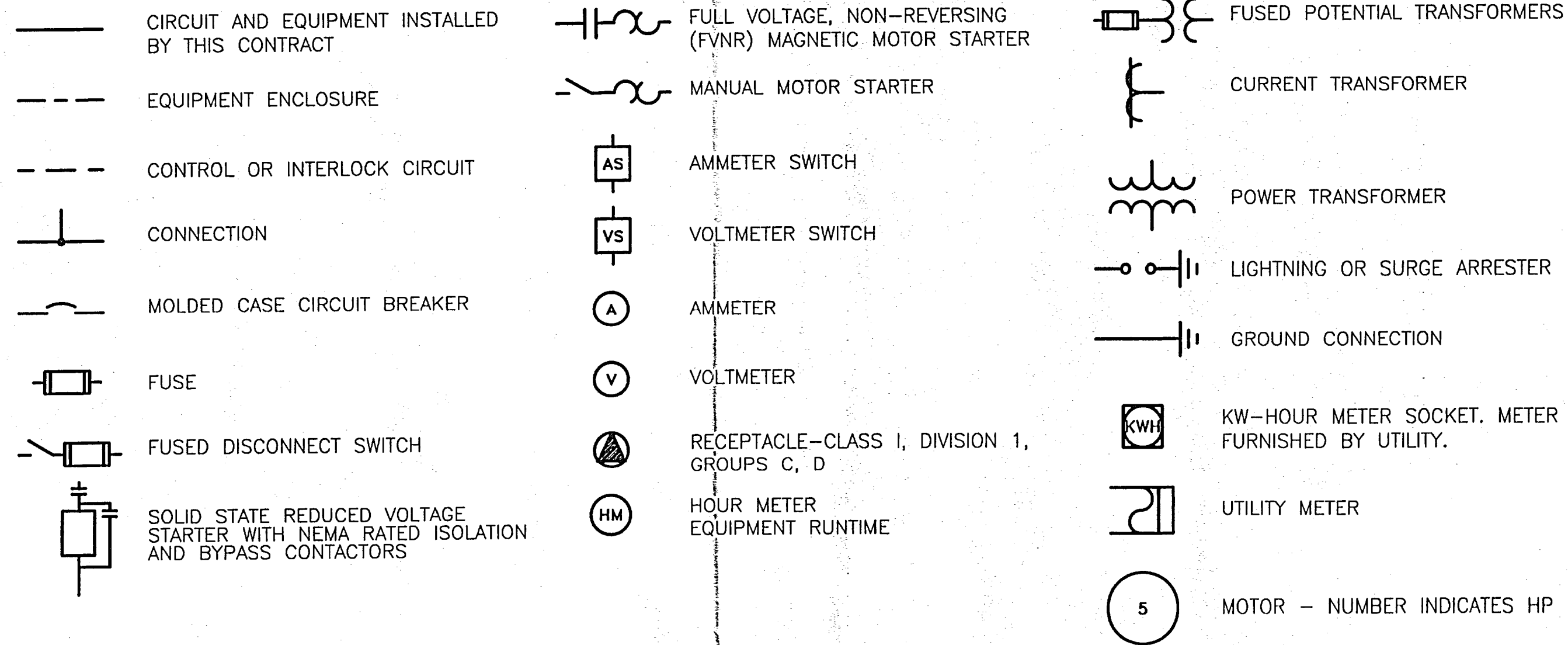
ELLICOTT STREET  
BUFFALO, NEW YORK

**MISCELLANEOUS  
DETAILS**

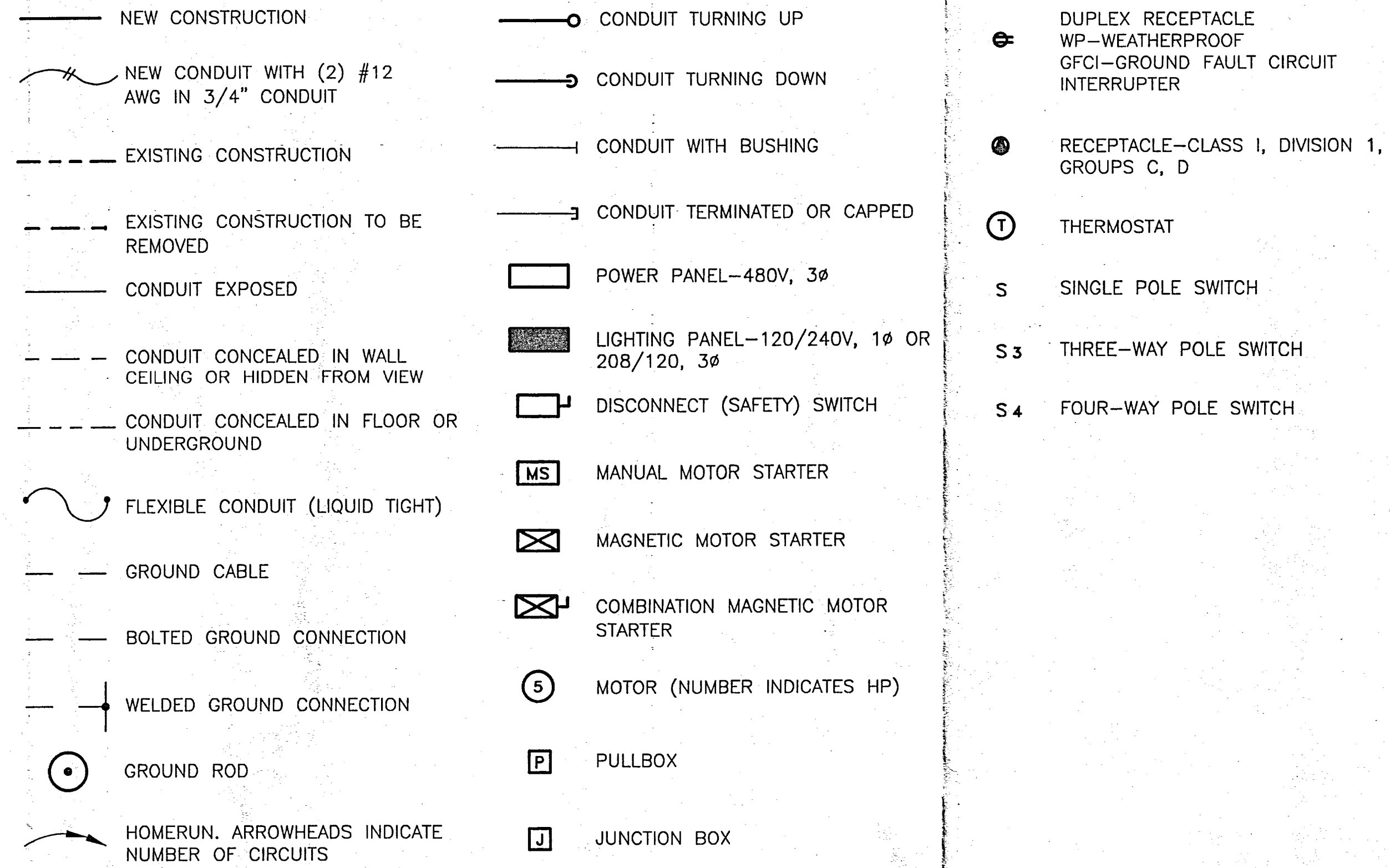
DESIGNED BY: KSD	DETAILED BY: DEO/SSH	CHECKED BY:
DRAWING DATE: 10/13/99	ACAD FILE: 8061-D3	PROJECT NO.:
		CONTRACT:
		FIGURE:
		REVISION:

**D-3**

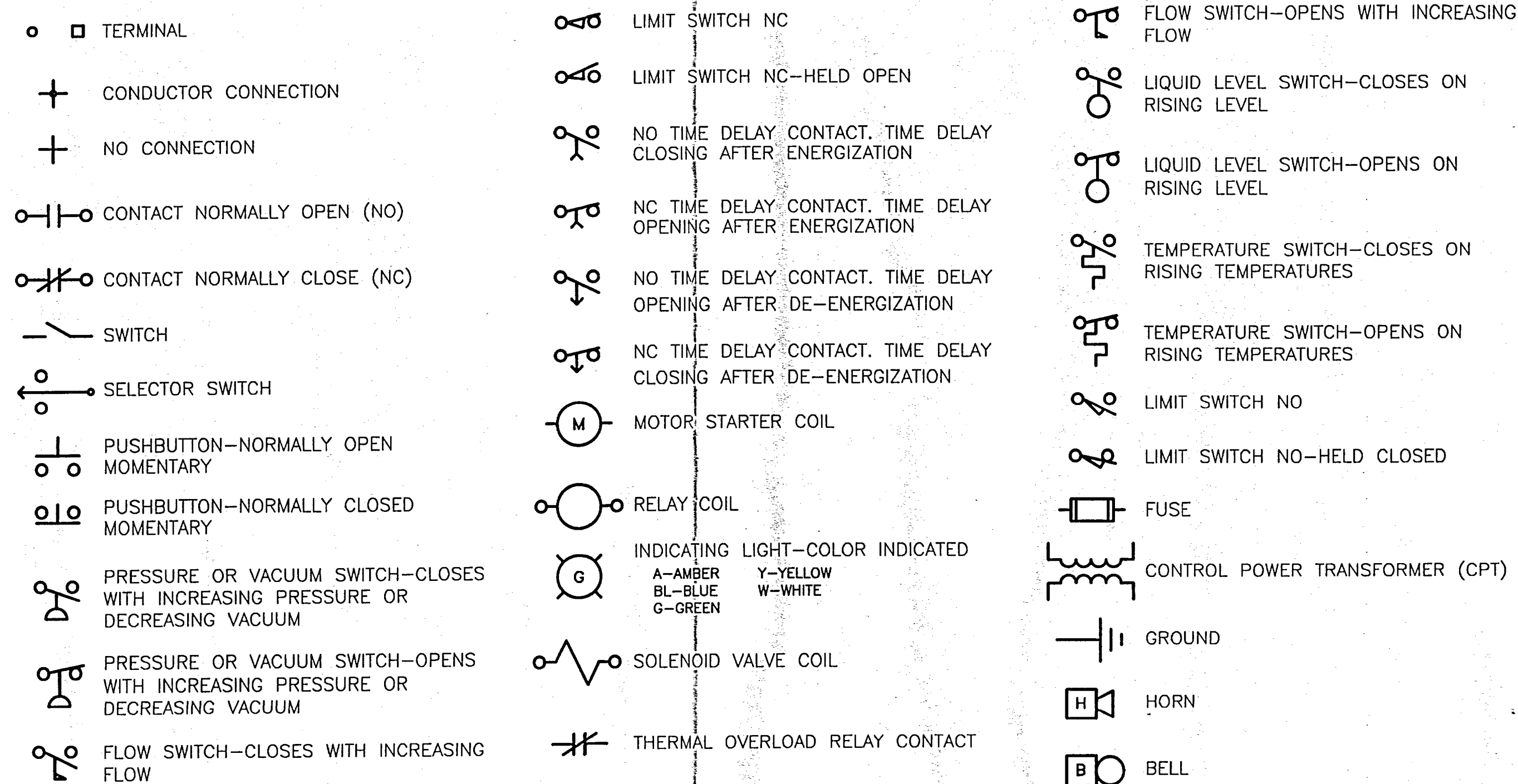
### ONE-LINE DIAGRAM SYMBOLS



### PLAN SYMBOLS



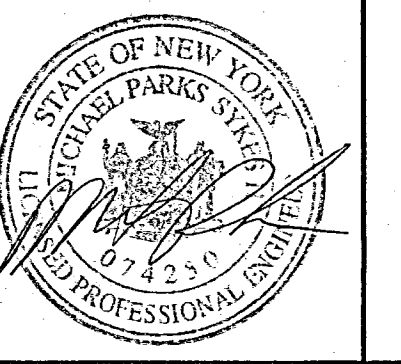
### SCHEMATIC DIAGRAM SYMBOLS



### GENERAL ABBREVIATIONS

A, AUTO	AUTOMATIC	H	HAND	PLC	PROGRAMMABLE LOGIC CONTROLLER
ACK	ACKNOWLEDGE	HI	HIGH	REM	REMOTE
AFF	ABOVE FINISH FLOOR	HS	HIGH SPEED	REV	REVERSE
AFG	ABOVE FINISH GRADE	IL	INDICATING LIGHT	SOL	SOLENOID (OTHER THAN VALVE)
BC	BARE COPPER	INST	INSTANTANEOUS	SP	SPARE
C	CONDUIT	L	LOW	SS	SELECTOR SWITCH
CB	CIRCUIT BREAKER	LOC	LOCAL	SV	SOLENOID VALVE
CL	CLOSE	LS	LOW SPEED	T, T-STAT	THERMOSTAT
CPT	CONTROL POWER TRANSFORMER	MAN	MANUAL	TDAE	TIME DELAY AFTER ENERGIZATION
CR	CONTROL RELAY	MCC	MOTOR CONTROL CENTER	TDAP	TIME DELAY AFTER DE-ENERGIZATION
CS	CONTROL SWITCH	MCP	MOTOR CIRCUIT PROTECTOR	TDR	TIME DELAY RELAY
CT	CURRENT TRANSFORMER	NC	NORMALLY CLOSED	TEMP	TEMPERATURE
DWG	DRAWING	NL	NIGHT LIGHT (UNSWITCHED FIXTURE)	TMR	TIMER
ETM	ELAPSED TIME METER	NO	NORMALLY OPEN	WP	WEATHERPROOF
FU	FUSE	O	OFF	XFMR	TRANSFORMER
FWD	FORWARD	OL	THERMAL OVERLOAD RELAY	XP	EXPLOSIONPROOF-CLASS I, DIVISION 1, GROUPS C, D
GND	GROUND	OP	OPEN		
		PB	PUSHBUTTON		

SIGNATURE	DATE
REVIEW ENGR:	
PROJECT ENGR:	
PROJECT MGR:	
CLIENT:	



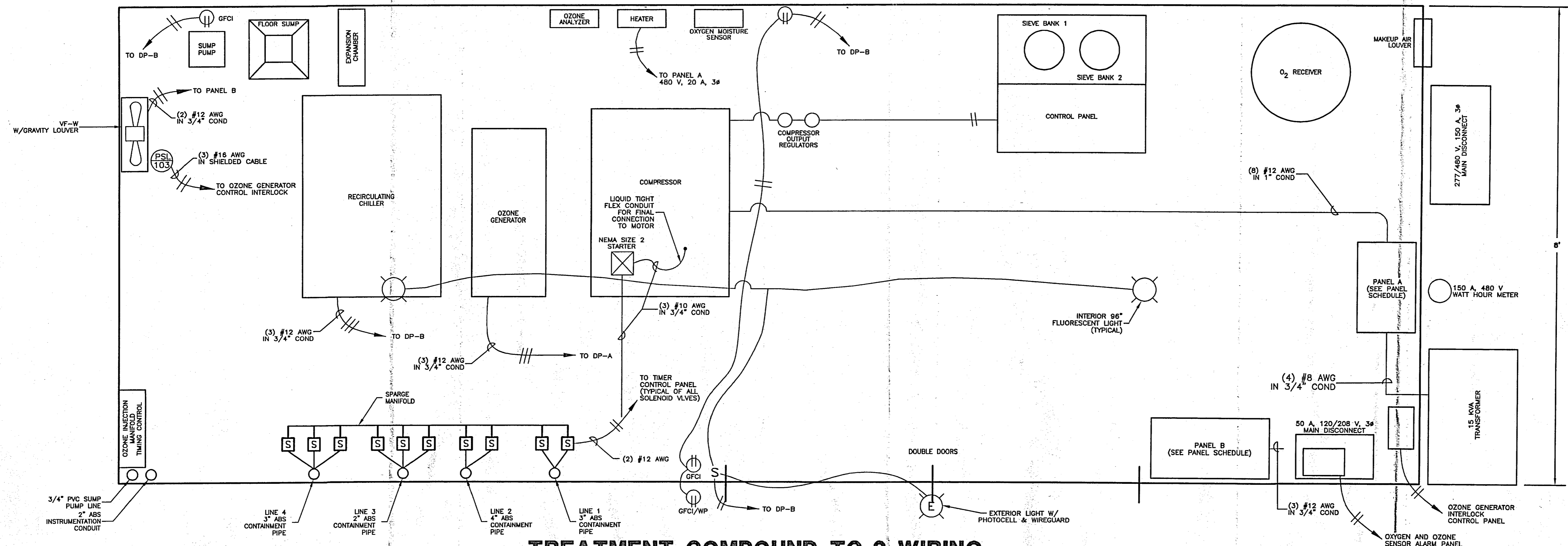
**IT ENGINEERING OF NEW YORK, P.C.**  
 13 BRITISH AMERICAN BLVD.  
 ALBANY, NY 12110  
 (518) 783-1996

### OSMOSE, INC.

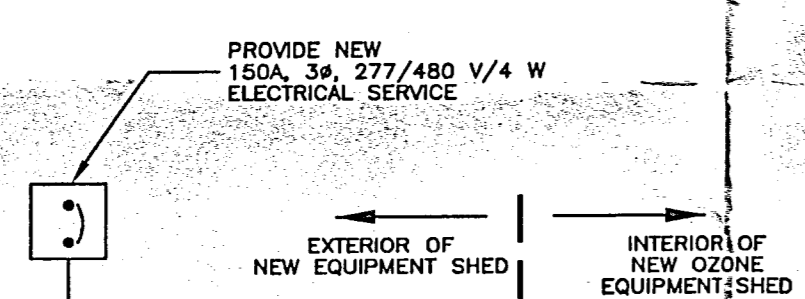
ELLCOTT STREET  
 BUFFALO, NEW YORK

### ELECTRICAL LEGEND

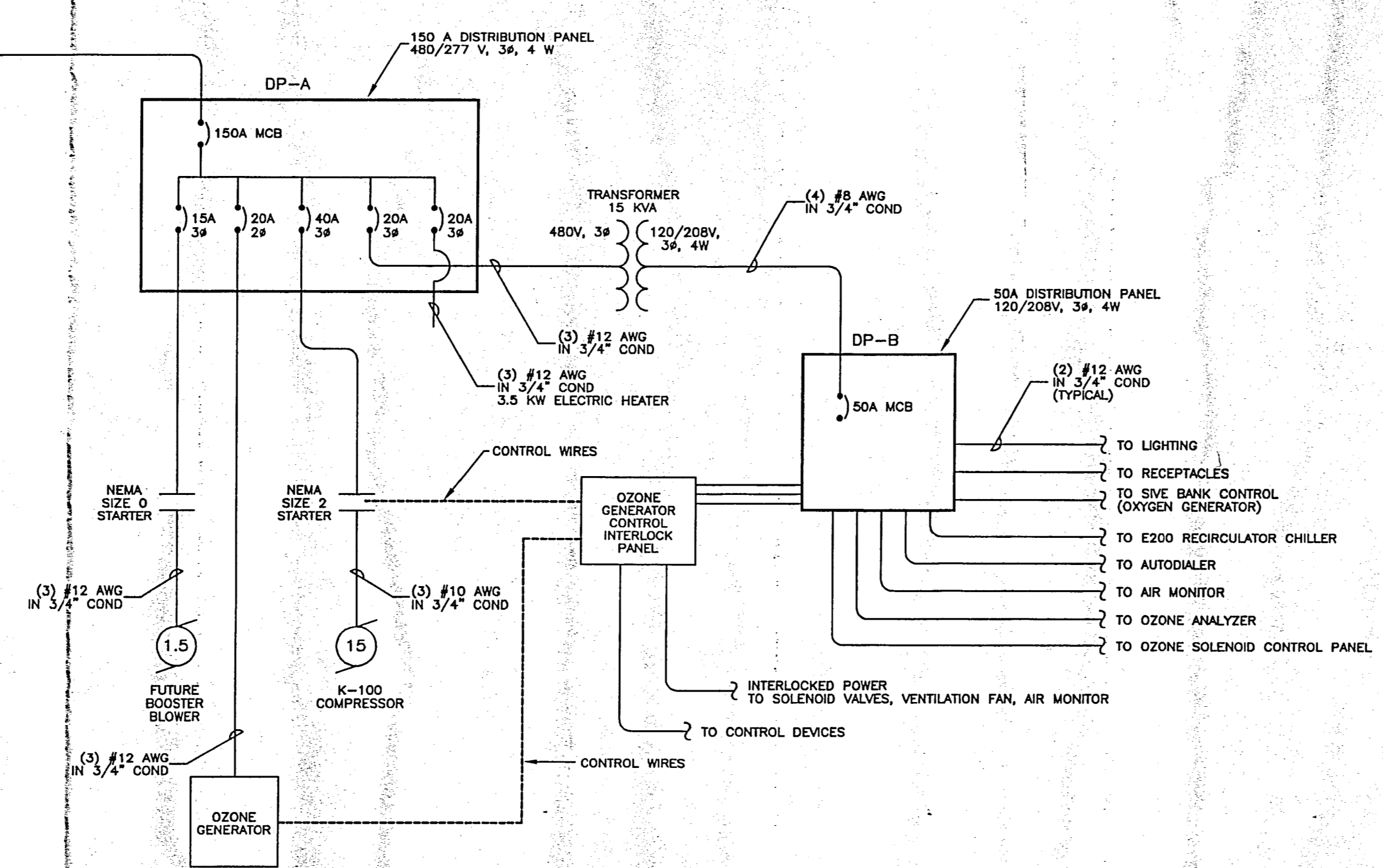
DESIGNED BY:	DETAILED BY:	CHECKED BY:
	DEO	
DRAWING DATE:	ACAD FILE:	
10/13/99	8061-E1	
PROJECT NO.:	CONTRACT:	
01110-8061		
DRAWING:	REVISION:	
E-1	-	



### TREATMENT COMPOUND TC-2 WIRING



### ONE LINE DIAGRAM



### PANEL SCHEDULES

DISTRIBUTION PANEL 'A'			
MCB: 70 AMP		VOLTAGE: 480/277V, 3PH, 4W	
		POLES 30	
	CIRCUIT IDENTIFICATION	BREAKER AMPERAGE	BREAKER POLES
1	TRANSFORMER FEEDER	20	3
2	K-100 COMPRESSOR	40	3
3	OZONE GENERATOR	20	2
4	BOOSTER BLOWER (SPARE)	15	3
5	SPARE	20	3
6	SPARE	20	3
7	3.5 KW ELECTRIC HEATER	20	3
		POLES USED 18	

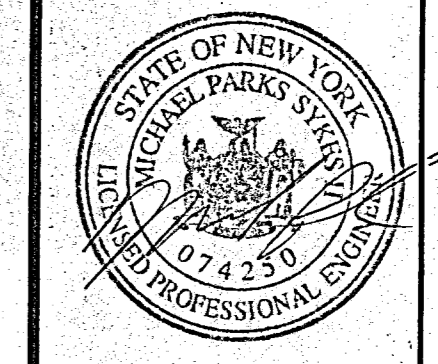
DISTRIBUTION PANEL 'B'			
MCB: 50 AMP		VOLTAGE 120/208V, 3PH, 4W	
		POLES 24	
	CIRCUIT IDENTIFICATION	BREAKER AMPERAGE	BREAKER POLES
1	SC-1 CONTROL PANEL	20	1
2	LIGHTING	20	1
3	RECEPTACLES	20	1
4	SIEVE BANK CONTROL (O <sub>2</sub> GENERATOR)	20	1
5	E-200 RECIRCULATING CHILLER	15	3
1	AIR MONITOR	20	1
1	E-100 VENTILATION FAN	20	1
2	SOLENOID VALVES (O <sub>3</sub> CONTROL)	20	1
4	SUMP PUMP RECEPTACLE	20	1
5	SPARE	20	2
5	SPARE	20	3
		POLES USED 17	

- NOTES**
- 1) NEMA SIZED MAGNETIC MOTOR STARTERS ARE PROVIDED WITH H-O-A SELECTORS FOR ALL MOTORS.
  - 2) CONTROL PANEL ARE EQUIPPED WITH ELAPSED TIME METERS, INTERLOCKS, AUTODIALER, SOLENOID TIME CONTROLS, AND VENTILATION FAN INTERLOCKS TO ALLOW DECLASSIFICATION TO A NON-HAZARDOUS LOCATION.

IT IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, OTHER THAN THOSE WHOSE SEAL APPEARS ON THIS DRAWING, TO ALTER IN ANY WAY AN ITEM ON THIS DRAWING. IF AN ITEM IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE AND THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

THIS DRAWING AND ANY ATTACHMENTS ("DRAWINGS"), HAVE BEEN PRODUCED FOR THE SOLE USE OF THE RECIPIENT AND MUST NOT BE USED, REUSED, REPRODUCED, MODIFIED OR COPIED ("USED") IN ANY MANNER WITHOUT PRIOR WRITTEN APPROVAL OF IT ENGINEERING OF NEW YORK, P.C. THIS DRAWING MAY CONTAIN CONFIDENTIAL AND PROPRIETARY INFORMATION OF IT ENGINEERING OF NEW YORK, P.C. ANY UNAUTHORIZED USE OF THIS DRAWING IS STRICTLY PROHIBITED.

SIGNATURE	DATE
REVIEW ENGR:	
PROJECT ENGR:	
PROJECT MGR:	
CLIENT:	



**IT ENGINEERING OF NEW YORK, P.C.**  
 13 BRITISH AMERICAN BLVD.  
 ALBANY, NY 12210  
 (518) 783-1996

**OSMOSE, INC.**

ELLICOTT STREET  
 BUFFALO, NEW YORK

### POWER PLAN AND ONE-LINE DIAGRAM

DESIGNED BY: AAA	DETAILED BY: TRS/DEO	CHECKED BY:
DRAWING DATE: 10/13/99	ACAD FILE: 8061-E2	
PROJECT NO.: 01110-8061	CONTRACT:	
DRAWING: E-2	REVISION:	