

City of Wichita

WATER TREATMENT PLANT DISINFECTION FEED SYSTEM IMPROVEMENTS

Wichita, Kansas

GARY JANZEN, P.E. , CITY ENGINEER

Project No. 448-90661

OCA 635828
PPN 754074



Contract Drawings

August 2015

BMCD PROJECT No. 82747



Know what's **below**.
Call **811** before you dig.



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816-333-9400
LICENSEE NO. 000165

CITY OF WICHITA

Contract Drawings

ONE OR TWO CHARACTER DISCIPLINE DESIGNATOR (MAY NOT BE PRESENT IF CALLOUT AND TITLE ARE ON DRAWINGS WITHIN THE SAME DISCIPLINE)

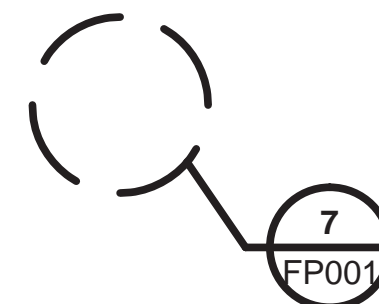
LETTER OR NUMBER DESIGNATOR

DRAWING SEQUENCE NUMBER INDICATES WHERE TITLE IS LOCATED (MAY NOT BE PRESENT IF CALLOUT AND TITLE ARE ON THE SAME DRAWING)

SECTION, DETAIL, AND ELEVATION SYMBOL IDENTIFIERS



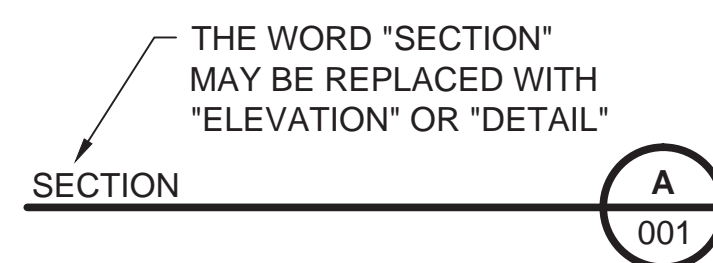
SECTION CALLOUT EXAMPLE



DETAIL CALLOUT EXAMPLE



ELEVATION CALLOUT EXAMPLE



SECTION, DETAIL, OR ELEVATION TITLE EXAMPLE

SECTION, DETAIL, AND ELEVATION IDENTIFICATION SYSTEM

GENERAL DRAWINGS

DWG. NO.	TITLE
	COVER SHEET
	INDEX SHEET
P-01	PROCESS LEGEND
P-02	AMMONIA SYSTEM P&ID CHEMICAL TANK FARM
P-03	AMMONIA SYSTEM P&ID GAS FEED BUILDING
P-04	CHLORINE SYSTEM P&ID CHEMICAL TANK FARM
P-05	CHLORINE SYSTEM P&ID GAS FEED BUILDING
P-06	CHLORINE SYSTEM P&ID
D-01	AMMONIA STORAGE
D-02	AMMONIA FEED SYSTEM
D-03	CHLORINE STORAGE
D-04	CHLORINE FEED SYSTEM
E-01	ELECTRICAL LEGEND
E-02	INSTRUMENTATION AND CABLE SCHEDULE
E-03	WIRING DIAGRAMS
E-04	PLC CABINET DETAILS
E-05	EQUIPMENT LOCATION PLAN

GENERAL NOTES

- CONTRACTOR WILL BE REQUIRED TO FILL OUT AN INTRUSIVE WORK PERMIT FROM THE CITY OF WICHITA PRIOR TO STARTING SYSTEM TIES. SEE PERMIT APPLICATION FORM INCLUDED IN CONTRACT DOCUMENTS
- ALL WORKERS SHALL BE REQUIRED TO SIGN IN AND OUT DAILY.
- CONTRACTOR LAYDOWN AREA AND ENTRANCE LOCATION SHALL BE LOCATED IN PAVED AREA WEST OF FILTER BUILDING AND GAS FEED BUILDING.
- CONTRACTOR WILL BE REQUIRED TO STOP WORK DURING CHEMICAL DELIVERIES NEAR THE AREA OF WORK. TYPICAL DELIVERIES WILL LAST APPROXIMATELY 3 HOURS, BUT MAY LAST UP TO 6 HOURS DURING WHICH THE CONTRACTOR WILL BE REQUIRED TO STOP WORK. OWNER WILL NOTIFY THE CONTRACTOR MINIMUM 48 HOURS IN ADVANCE OF CHEMICAL DELIVERIES FOR AMMONIA, CHLORINE AND CARBON DIOXIDE.
- A SUGGESTED PIPING TIE-IN SEQUENCE IS BELOW BUT NOT REQUIRED IF THE CONTRACTOR CHOOSES NOT TO USE IT. THE PURPOSE OF THE SUGGESTED SEQUENCE BELOW IS TO MINIMIZE RISKS ASSOCIATED WITH PERFORMING TIE-INS AND TO ALLOW CHEMICAL FEED OPERATION TO BE MAINTAINED AT ALL TIMES. CONTRACTOR SHALL SUBMIT ANY ALTERNATE SEQUENCES TO OWNER AND ENGINEER FOR APPROVAL.
 - ISOLATE CHLORINE TANK TNK-MTS-03 PERFORM TIE-IN NEAR CHLORINE TANK AND NEAR VAPORIZERS FOR THE CORRESPONDING LINES AT THE SAME TIME (2 TIE-INS).
 - ISOLATE CHLORINE TANK MTS-TNK-04 PERFORM TIE-IN NEAR CHLORINE TANK AND NEAR VAPORIZERS FOR THE CORRESPONDING LINE AT THE SAME TIME (2 TIE-INS).
 - ISOLATE AMMONIA TANK T1. PERFORM TIE-IN NEAR AMMONIA TANK AND TIE-IN CONNECTION TO THE EXISTING EMERGENCY FEED PIPING AT THE SAME TIME (2 TIE-INS).
 - ISOLATE AMMONIA TANK T2 AND PERFORM THE REMAINING TIE-IN NEAR THE AMMONIA TANK (1 TIE-IN).
- WORK PERMIT SHALL IDENTIFY WHICH TANK, LINES, EQUIPMENT, ETC. WILL BE INVOLVED WITH EACH TIE-IN.
- THE CONTRACTOR SHALL HAVE ONE (1) SEALED COPY OF THE PLANS INCLUDING ANY ADDENDA RFI, AND CHANGE ORDER REVISIONS AT THE JOB SITE AT ALL TIMES.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL REQUIRED PERMITS, PAYING ALL FEES AND FOR OTHERWISE COMPLYING WITH ALL APPLICABLE REGULATIONS GOVERNING THE WORK.
- ALL ACCESS BY CONTRACTOR SHALL BE OFF WEST MUSEUM BLVD.
- CONTRACTORS SHALL KEEP ALL CONSTRUCTION MATERIALS, EQUIPMENT, AND TRAILERS, WITHIN THE LIMITS OF CONSTRUCTION DESIGNATED AFTER AWARD OF CONTRACT. VEHICLES SHALL BE PARKED OUTSIDE OF FENCED - IN WTP GROUNDS.
- THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE SAFETY OF THE CONSTRUCTION WORKERS, THE PUBLIC, AND OWNER PERSONNEL WORKING IN VICINITY OF CONSTRUCTION.
- UNLESS NOTED OTHERWISE, ALL EXISTING FACILITIES ARE TO REMAIN UNDISTURBED AND USED IN PLACE. THE CONTRACTOR SHALL TAKE PRECAUTIONS NECESSARY TO PREVENT DAMAGE. THE CONTRACTOR SHALL REPAIR AND/OR REPLACE, AT THEIR EXPENSE, ALL EXISTING FACILITIES DAMAGED DURING CONSTRUCTION ACTIVITIES.
- CONSTRUCTION SHALL COMPLY WITH ALL APPLICABLE CODES PER THE GOVERNING MUNICIPALITY.



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**WTP DISINFECTION FEED SYSTEM
IMPROVEMENTS**
Project No. 448-90661
BMCD PROJECT No. 82747

Index

VALVES AND PIPING

PIPING ABBREVIATIONS

GENERAL NOTES

no.	date	by	ckd	description
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- GATE VALVE
- BUTTERFLY VALVE
- CHECK VALVE
- 3-WAY VALVE
- ANGLE VALVE
- BACK PRESSURE VALVE
- FLEXIBLE HOSE
- PIPE WITH HEATING CABLE
- UNION
- REDUCER (CONCENTRIC)
- REDUCER (ECCENTRIC)
- REMOVABLE PLUG
- REMOVABLE CAP
- WELDED CAP
- WALL HYDRANT
- QUICK DISCONNECT COUPLING
- HOSE CONNECTOR
- BALL VALVE - STANDARD
- BALL VALVE - CHLORINE SERVICE
- VACUUM REGULATOR
- GLOBE VALVE
- BALL CHECK VALVE
- DIAPHRAGM SEAL STANDARD
- DIAPHRAGM SEAL SPECIAL SERVICE
- SELF CONTAINED REGULATING VALVE
- PRESSURE RELIEF VALVE
- RUPTURE DISK FOR PRESSURE RELIEF
- UNCLASSIFIED TYPE AS SHOWN ON THE DRAWINGS ADJACENT TO SYMBOL
- EXHAUST TO ATMOSPHERE (INSIDE)
- EXHAUST TO ATMOSPHERE (OUTSIDE)
- DIAPHRAGM VALVE
- TIE-IN LOCATION

MISCELLANEOUS

- BxS BELL AND SPIGOT
- CL CENTERLINE
- DIA DIAMETER
- DJ DISMANTLING JOINT
- DN DOWN
- EL ELEVATION
- FCA FLANGED COUPLING ADAPTER
- GR GRINDER
- INV INVERT
- MGD MILLION GALLONS PER DAY
- MJ MECHANICAL JOINT
- NPW NON-POTABLE WATER
- PE PLAIN END
- PS PIPE SUPPORT
- RAS RETURN ACTIVATED SLUDGE
- SW SOCKET WELD
- UV ULTRAVIOLET
- TYP TYPICAL
- WAS WASTE ACTIVATED SLUDGE
- WP WALL PIPE
- T THREADED
- V SOLVENT WELD

PIPING

- CS CARBON STEEL
- CIP CAST IRON PIPE
- DIP DUCTILE IRON PIPE
- SST STAINLESS STEEL
- HDPE HIGH DENSITY POLYETHYLENE
- CPVC CHLORINATED POLYVINYL CHLORIDE
- PVC POLYVINYL CHLORIDE
- GALV GALVANIZED
- RCP REINFORCED CONCRETE PIPE
- FRP FIBER REINFORCED PLASTIC

VALVES

- BFV BUTTERFLY VALVE
- BV BALL VALVE
- CV CHECK VALVE
- HV HAND VALVE
- MV MIXING VALVE
- NC NORMALLY CLOSED
- PV PLUG VALVE

PROCESS FLUID

- AMA ANHYDROUS AMMONIA
- AMG AMMONIA GAS
- AML AMMONIA LIQUID
- AMS AMMONIA SOLUTION
- CA COMPRESSED AIR
- CAD COMPRESSED AIR DRIED
- CDG CARBON DIOXIDE GAS
- CL2G CHLORINE GAS
- CL2L CHLORINE LIQUID
- CL2S CHLORINE SOLUTION
- PPW PLANT PROTECTED WATER
- PW POTABLE WATER

EQUIPMENT

- AM AMMONIATOR
- CH CHLORINATOR
- CI CHLORINATOR INJECTOR
- CK CHECK VALVE
- CSBR CHLORINE SCRUBBER
- EVA AMMONIA EVAPORATOR
- EVC CHLORINE EVAPORATOR
- LSM LEAK SENSOR MONITOR
- PI PRESSURE INDICATOR GAUGE
- TNK TANK
- VI VACUUM INDICATOR
- WE WEIGHT ELEMENT

ACTUATOR SYMBOLS

SYMBOL	TYPE	SYMBOL	TYPE
	CYLINDER		DIAPHRAGM WITH HANDWHEEL
	DIAPHRAGM		CHAINWHEEL
	MOTOR		FLOAT
	SOLENOID		

EQUIPMENT SYMBOLS

SYMBOL	TYPE	SYMBOL	TYPE
	CENTRIFUGAL PUMP		VACUUM GAUGE
	FILTER OR STRAINER		FLOW SWITCH FLOW SENSOR
	ROTAMETER		DIFUSER
	Y- STRAINER		EXPANSION TANK
	PRESSURE SWITCH		LEVEL SWITCH
	PRESSURE GAUGE		LEVEL SWITCH HIGH

LINESTYLES AND INTERFACE SYMBOLS

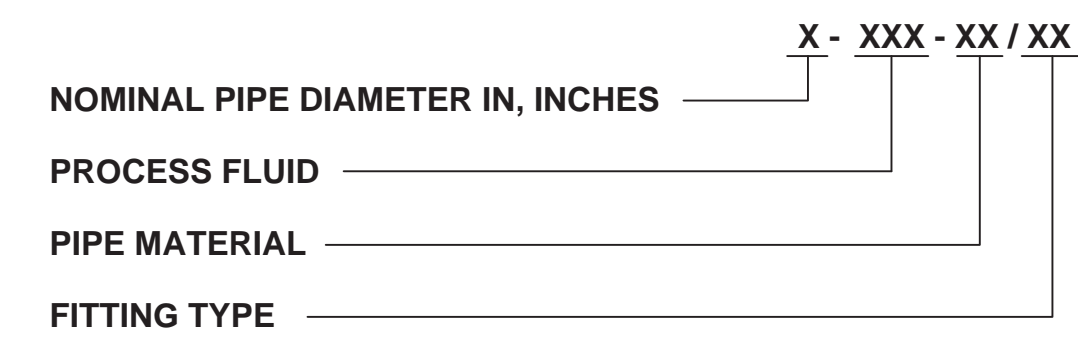
- NEW
- EXISTING
- FUTURE

MISCELLANEOUS SYMBOLS

- PIPE INSULATION
- CALIBRATION CHAMBER
- CONVEYOR
- SLUICE/SLIDE GATE
- MIXER (PROPELLER)
- DRAIN
- INLINE MIXER (STATIC)
- PARSHALL FLUME
- SIGHT GLASS
- SIGHT FLOW INDICATOR
- PIPE SUPPORT LOCATION

- CONTRACTOR SHALL COORDINATE ALL WORK WITH OWNER TO MINIMIZE INTERFERENCE WITH PLANT OPERATIONS.
- ALL EXISTING PIPING LOCATIONS ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY ACTUAL PIPE LOCATIONS.
- CONTRACTOR SHALL PROVIDE PIPE SUPPORTS AS INDICATED AND AS REQUIRED ACCORDING TO MSS-SP-58 AND PIPE MANUFACTURER REQUIREMENTS.
- FOR CLARITY, ALL TAPS, DRAIN VALVES, SUPPORTS FITTINGS, ACCESSORIES, ETC. MAY NOT BE INDICATED. SEE SPECIFICATIONS AND DRAWINGS FOR ADDITIONAL DETAILS, NOTES, AND REQUIREMENTS.
- CONTRACTOR SHALL FURNISH AND INSTALL ALL FITTINGS, NIPPLES, ACCESSORIES, ETC. AS REQUIRED FOR INSTALLATION OF PIPING, VALVES, ARVS, ETC.

PIPE NAMING CONVENTION



NOTE:
THIS LEGEND IS TAKEN FROM A STANDARD MECHANICAL LEGEND AND NOT ALL ITEMS OR EQUIPMENT AS DESIGNATED HEREON ARE USED ON THIS PROJECT.



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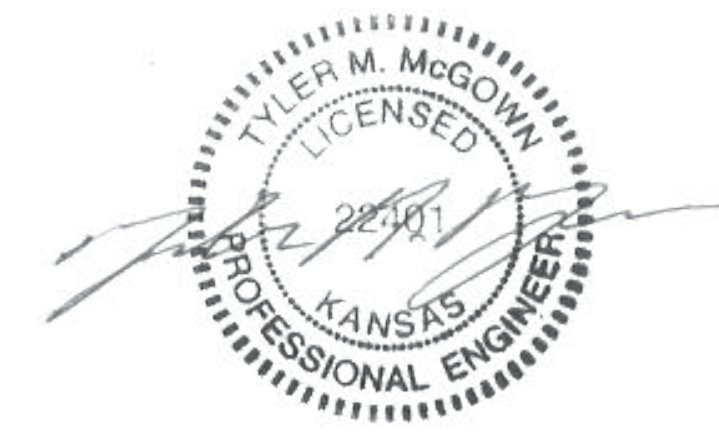
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designed	R. THOMPSON	checked	J. KLEIN



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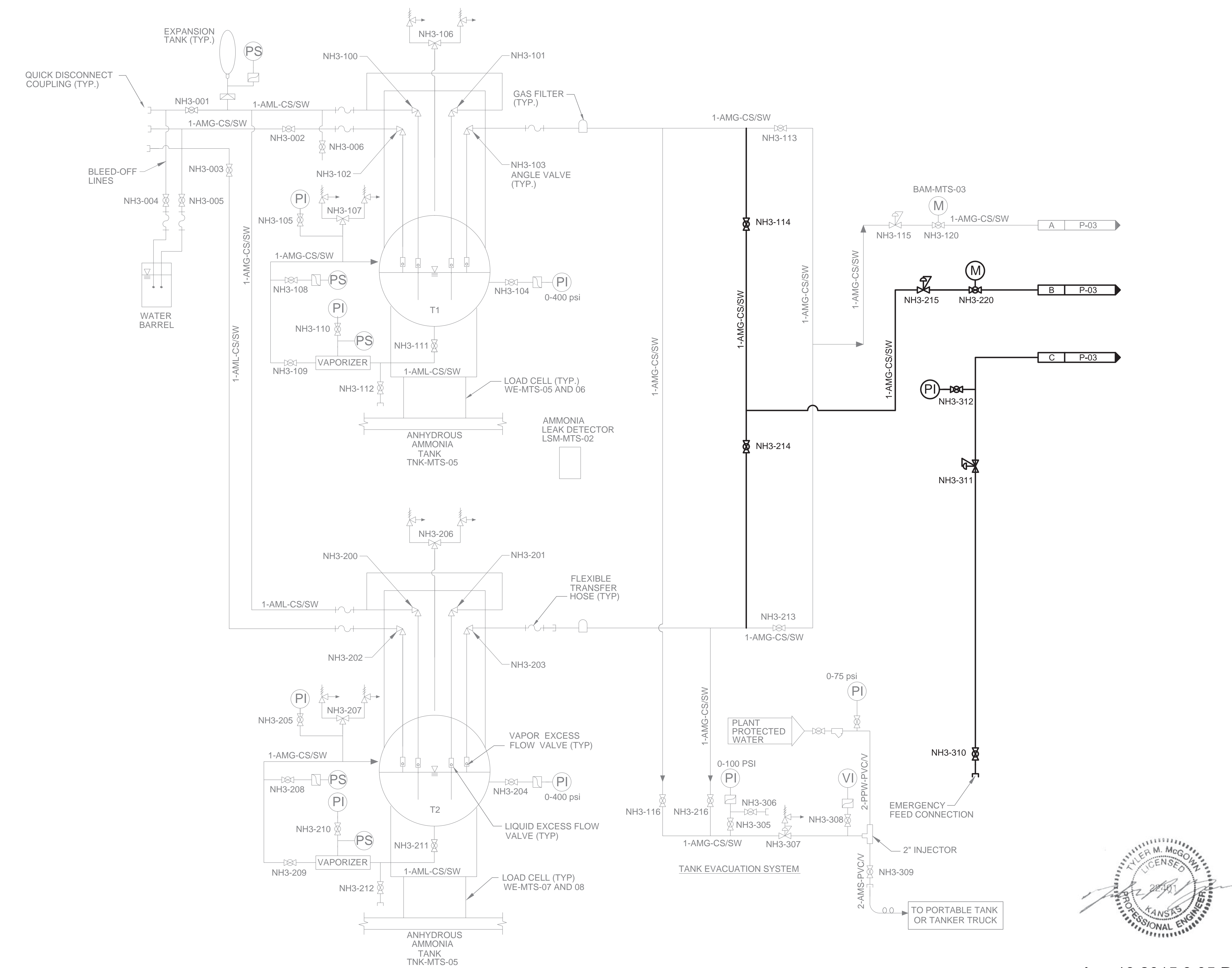
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FEED SYSTEM IMPROVEMENTS
PROCESS LEGEND**

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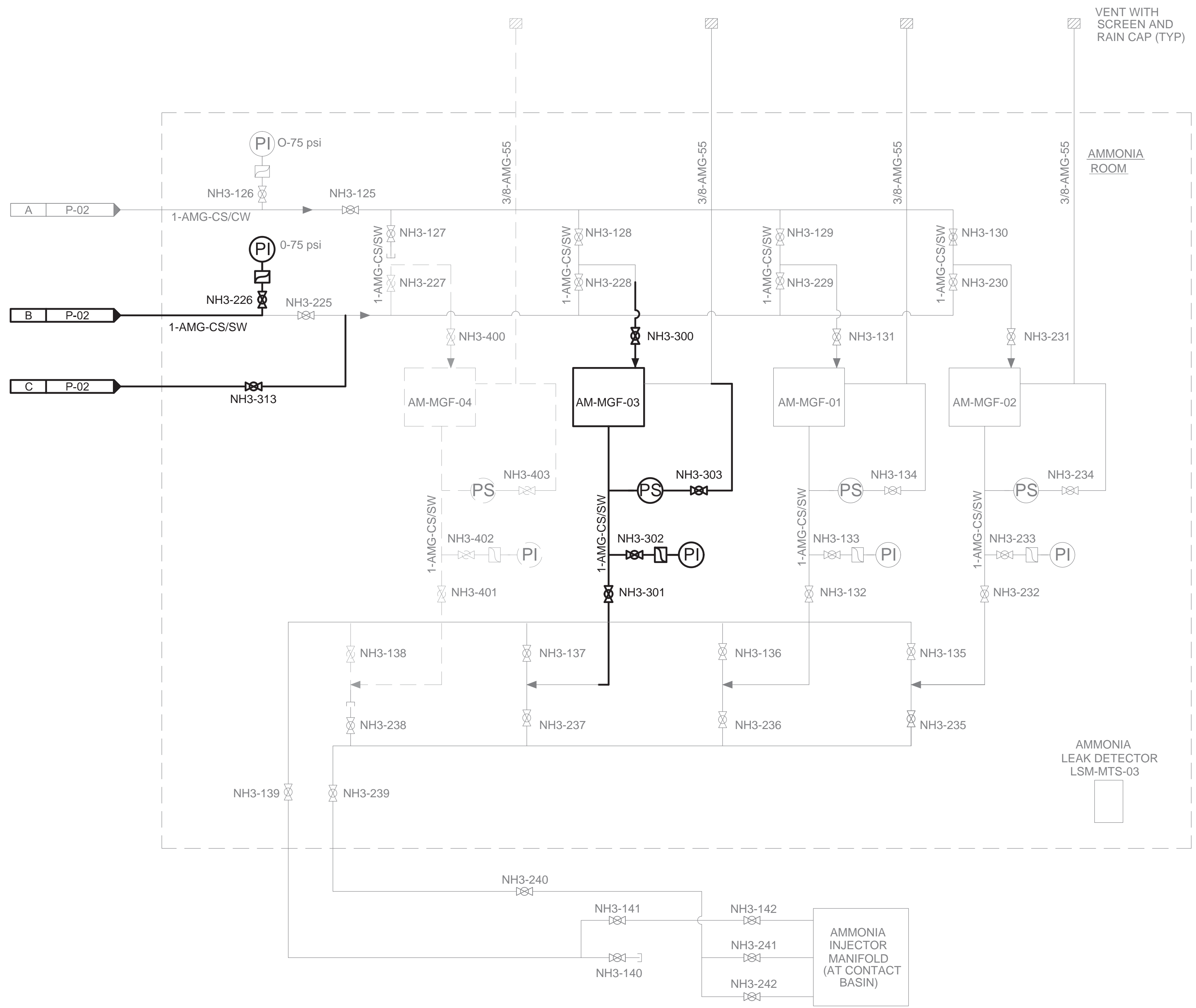
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 FEED SYSTEM IMPROVEMENTS**
 AMMONIA SYSTEM P&ID
 CHEMICAL TANK FARM

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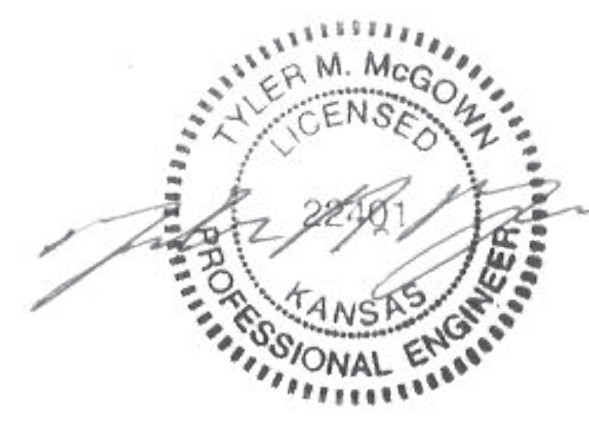
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**WTP DISINFECTION
FEED SYSTEM IMPROVEMENTS**
AMMONIA SYSTEM P&ID
GAS FEED BUILDING

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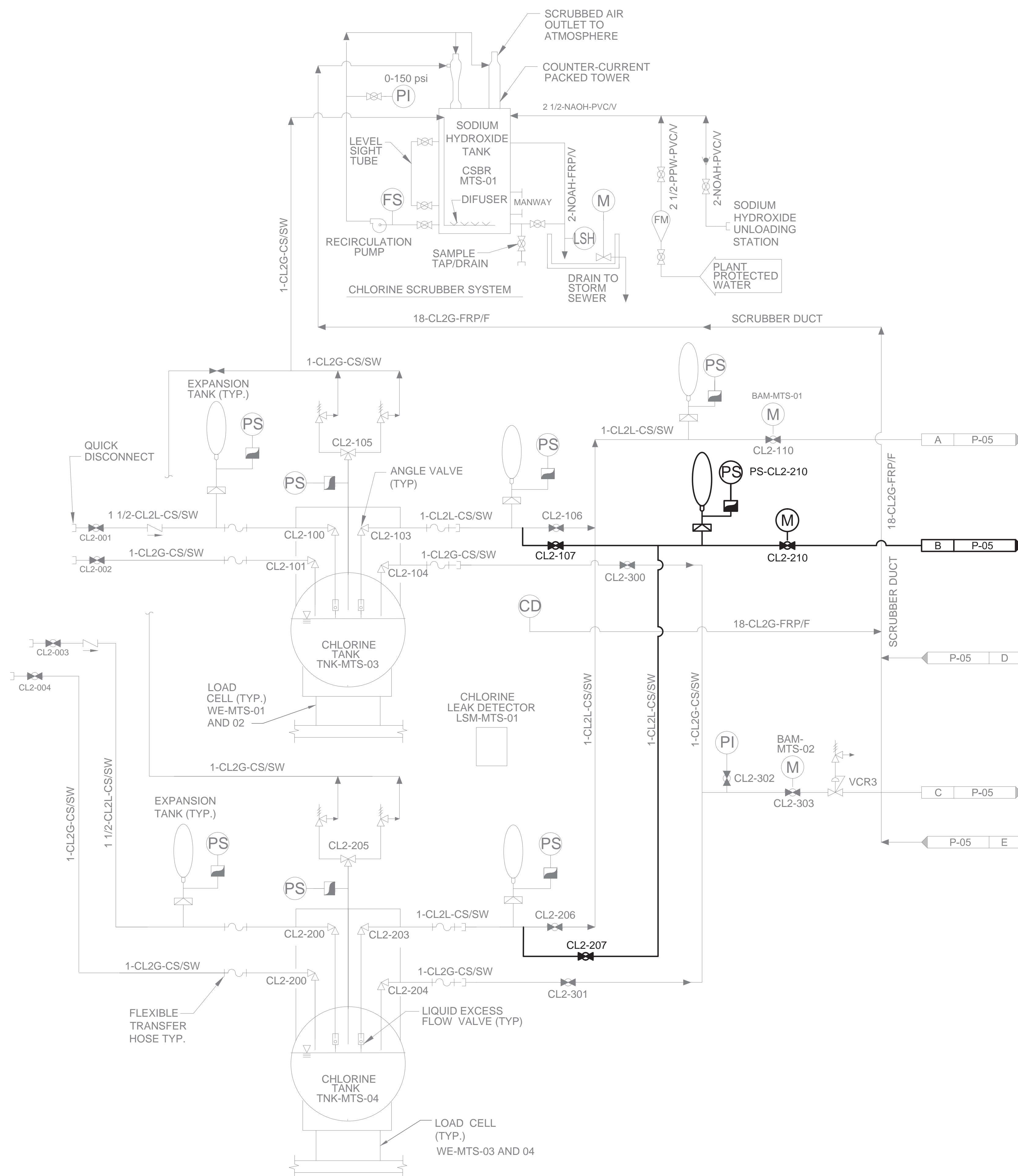
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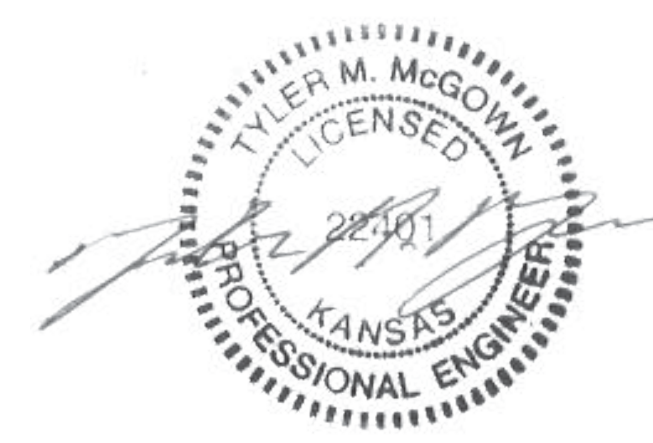
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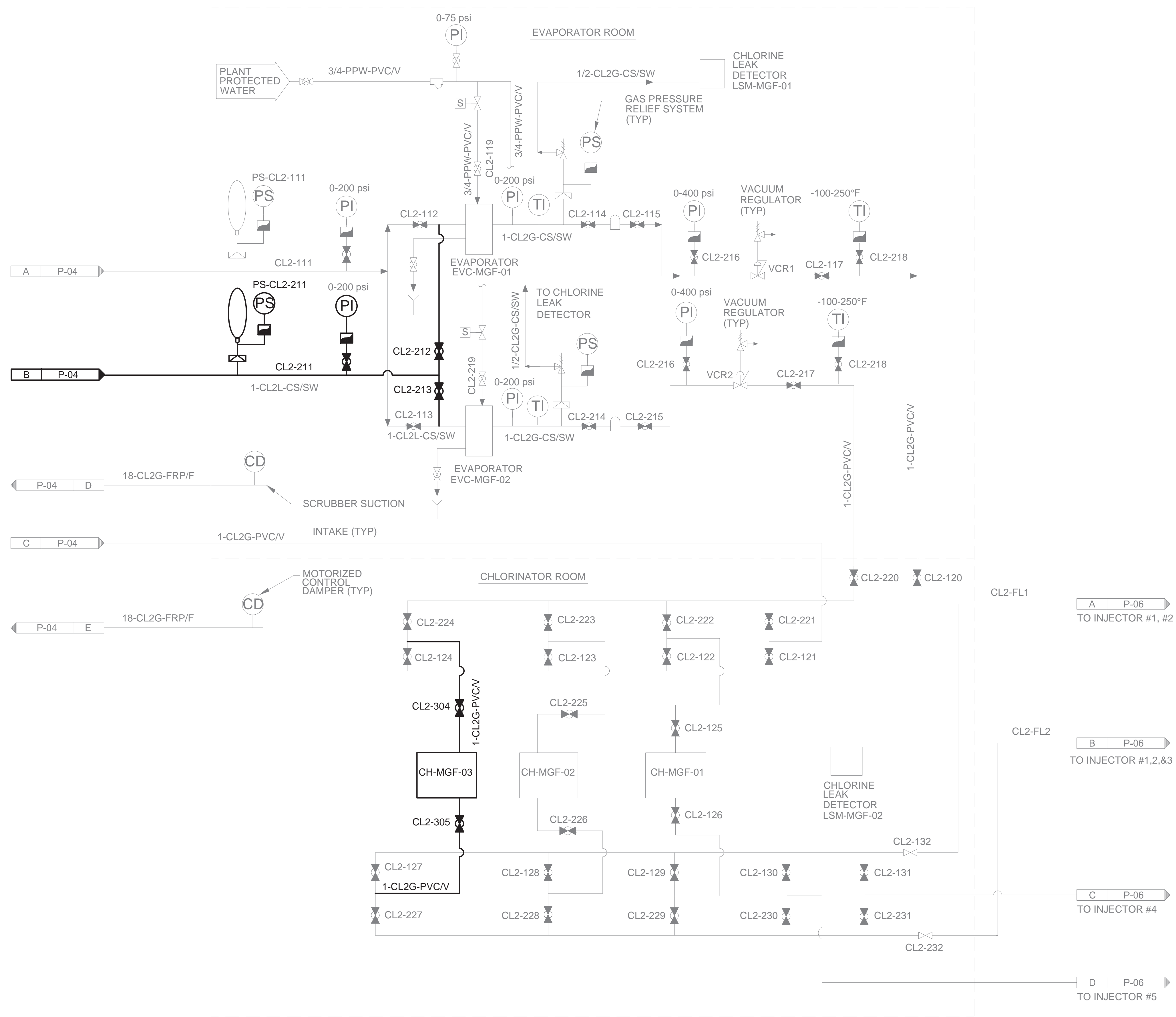
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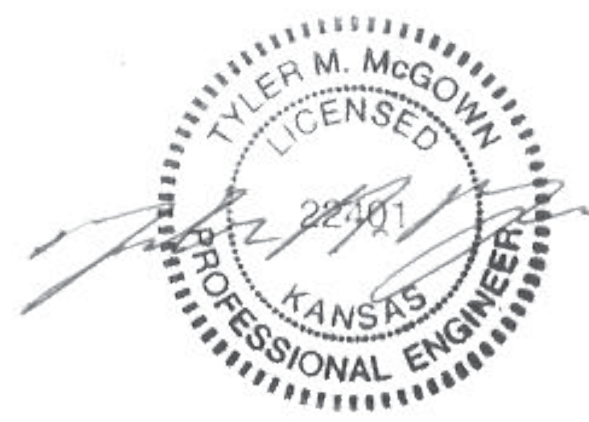
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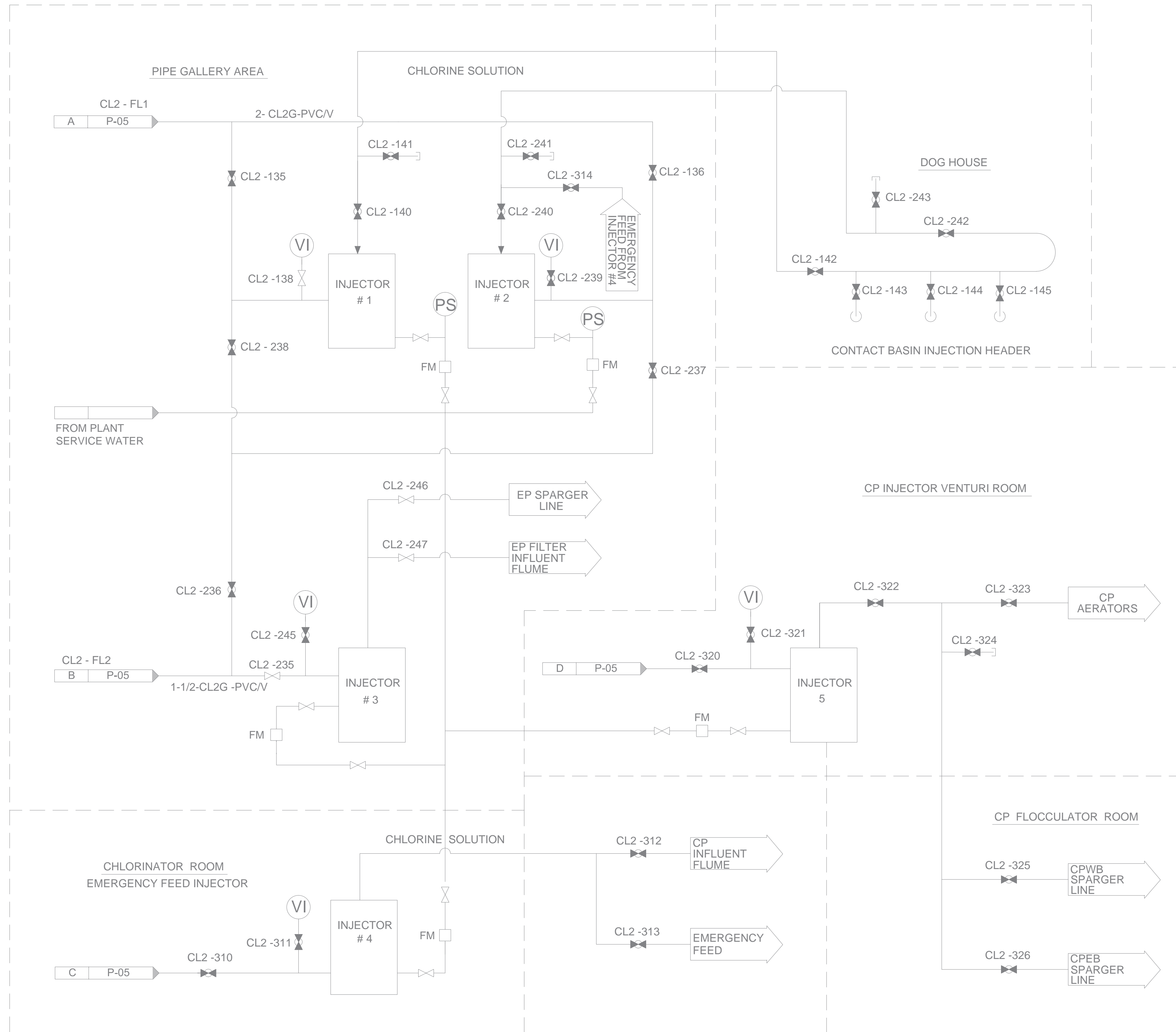
**WTP DISINFECTION
FEED SYSTEM IMPROVEMENTS**
CHLORINE SYSTEM P&ID
GAS FEED BUILDING

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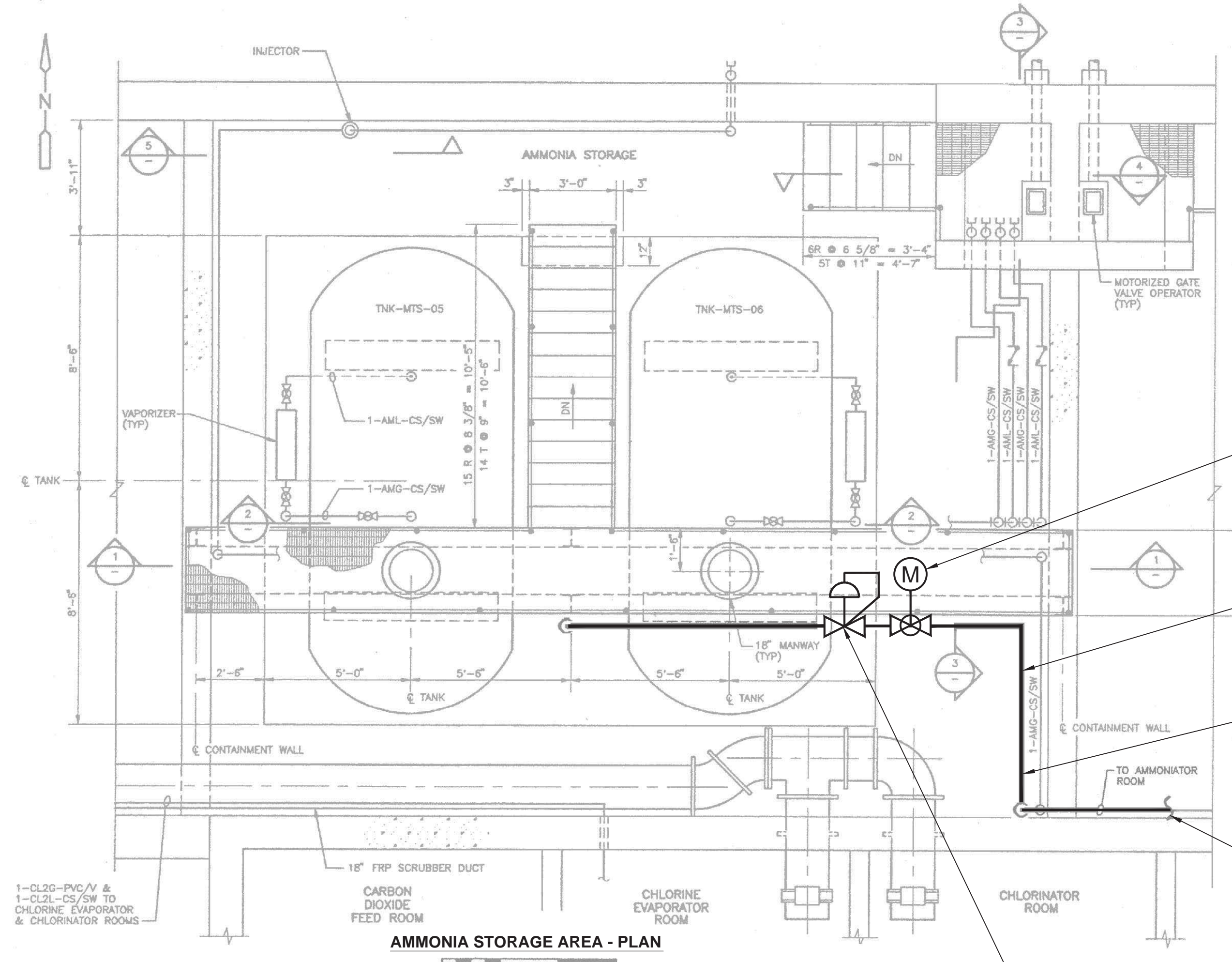
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FEED SYSTEM IMPROVEMENTS
CHLORINE SYSTEM P&ID**

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- NOTES:**
1. NOT ALL PIPING SHOWN AT STORAGE TANKS FOR CLARITY.
 2. ROUTE NEW AMMONIA SUPPLY PIPING FROM STORAGE TANKS TO AMMONIATOR ROOM. FOLLOW ROUTING OF EXISTING SUPPLY PIPING.
 3. LOCATE VALVES TO AVOID CONFLICT WITH EXISTING EQUIPMENT AND TO PROVIDE ACCESSIBILITY FOR OPERATION AND MAINTENANCE.
 4. TIE-INS TO EXISTING SYSTEM SHALL BE COORDINATED WITH OWNER AND DISRUPTION OF SERVICE SHALL BE MINIMIZED. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.



NEW 1" CONTROL VALVE NH3-220

NOTE 2

NEW AMMONIA SUPPLY PIPING 1-AMG-CS/SW

TO AMMONIATOR ROOM SEE DWG D-02 FOR CONTINUATION

NEW 1" PRESSURE REGULATOR VALVE NH3-215

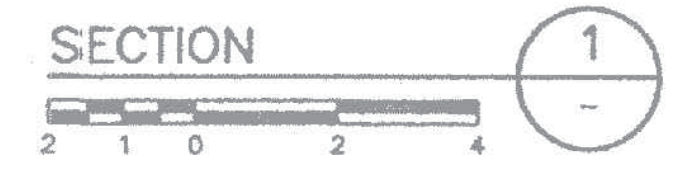
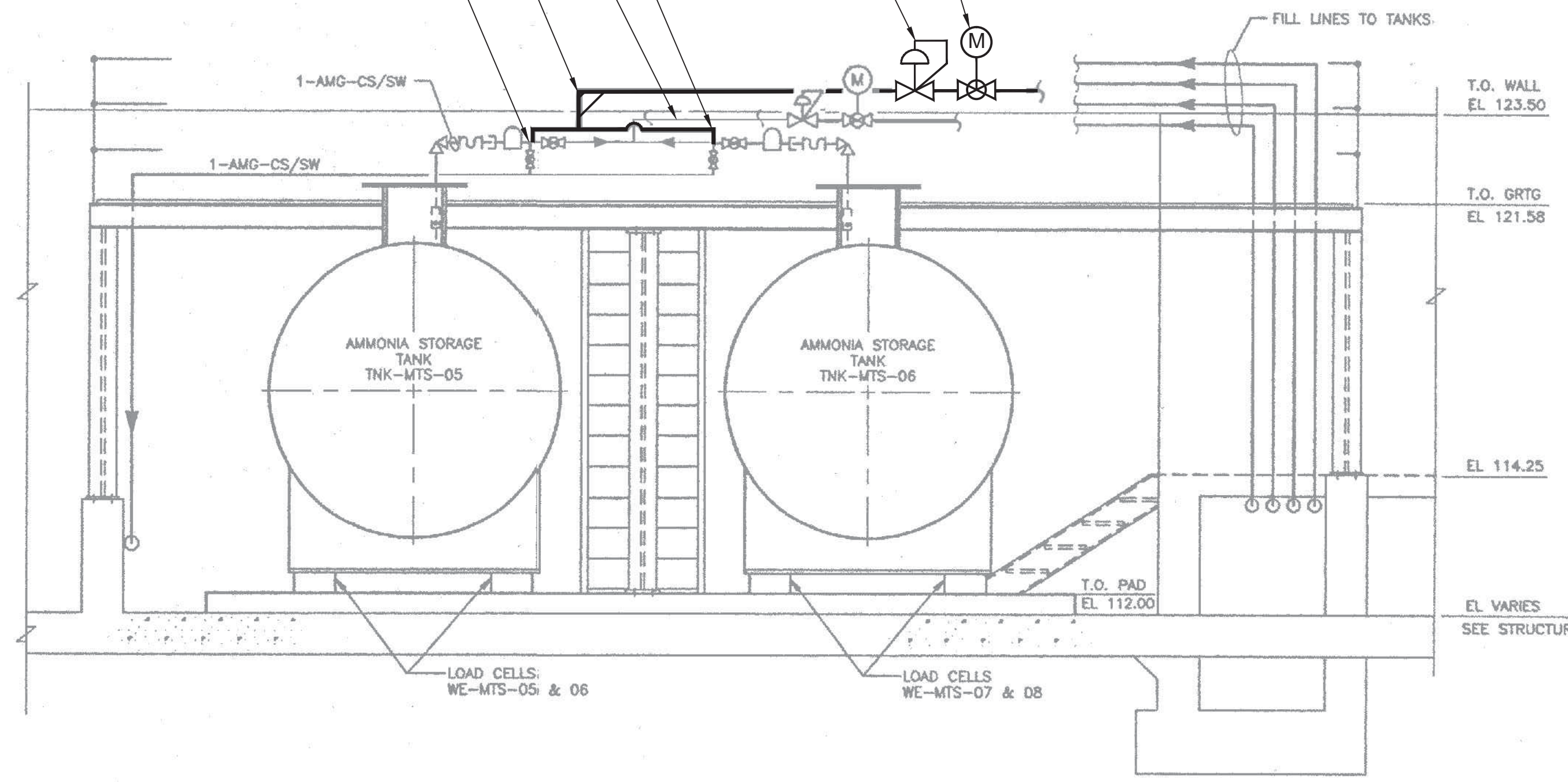
NEW 1" PRESSURE REGULATOR VALVE NH3-215

NEW 1" CONTROL VALVE NH3-220

EXISTING AMMONIA SUPPLY PIPING 1-AMG-CS/SW

TP-5

TP-6



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**WTP DISINFECTION
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AMMONIA STORAGE**



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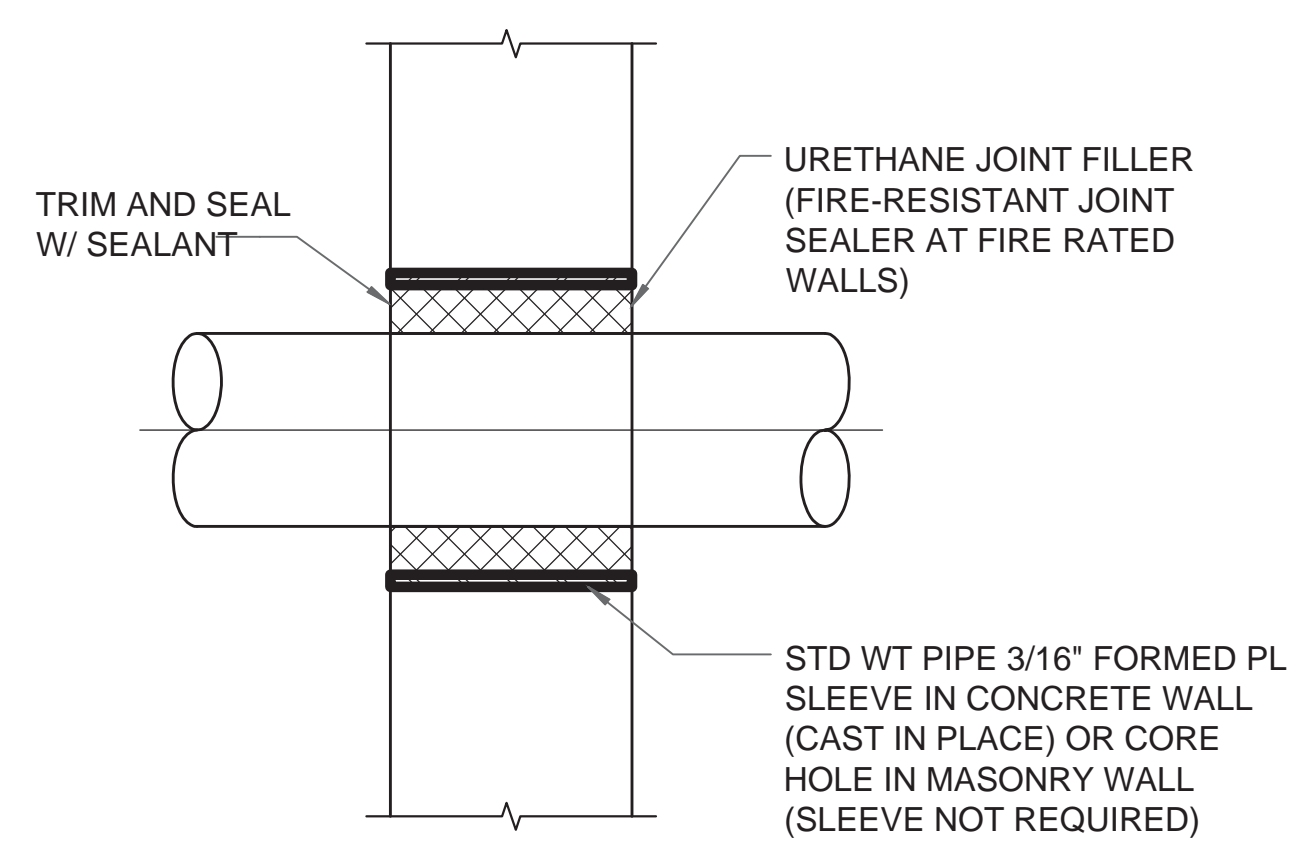
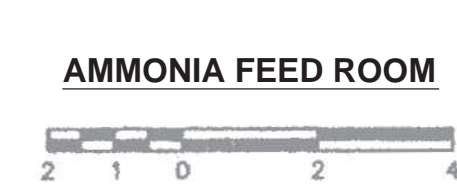
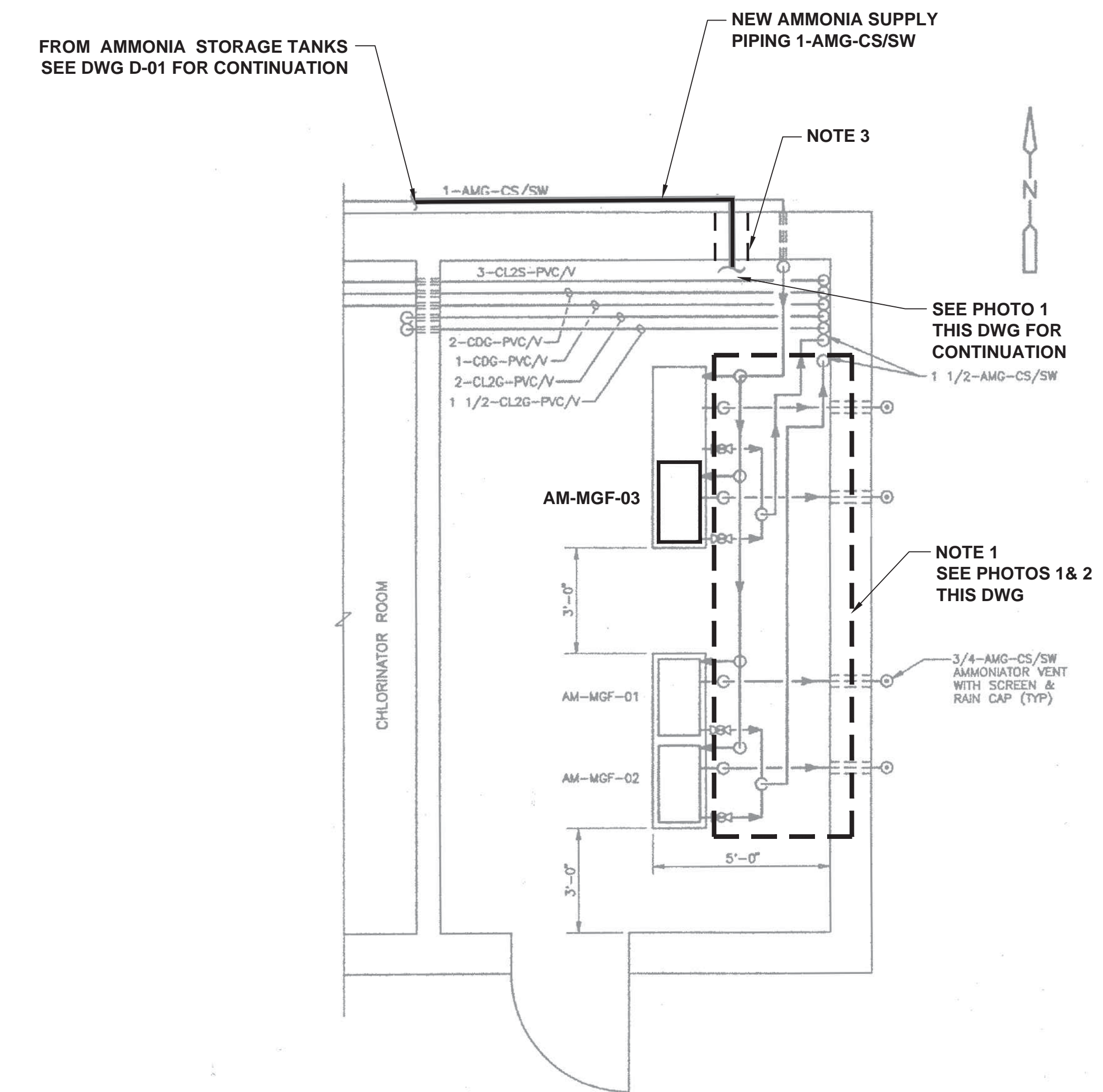
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DETAIL - WALL PENETRATION

- NOTES:**
1. PIPING HAS BEEN MODIFIED BY PLANT STAFF. SEE PHOTOS 1&2 FOR CURRENT PIPING CONFIGURATION.
 2. LOCATE VALVES TO ALLOW ACCESS FOR OPERATION AND MAINTENANCE.
 3. CORE DRILL THROUGH EXISTING WALL. SEE PENETRATION DETAIL ON THIS SHEET.
 4. FIELD ROUTE PIPING TO AVOID CONFLICTS WITH EXISTING EQUIPMENT. SUPPORT AS REQUIRED AND INSTALL PIPING AT ANGLES PARALLEL TO WALLS, CEILING, AND FLOOR. SEE P&ID'S AND SPECIFICATIONS VALVES AND INSTRUMENTATION TO BE INSTALLED.



PHOTO 1 - AMMONIA SUPPLY PIPING

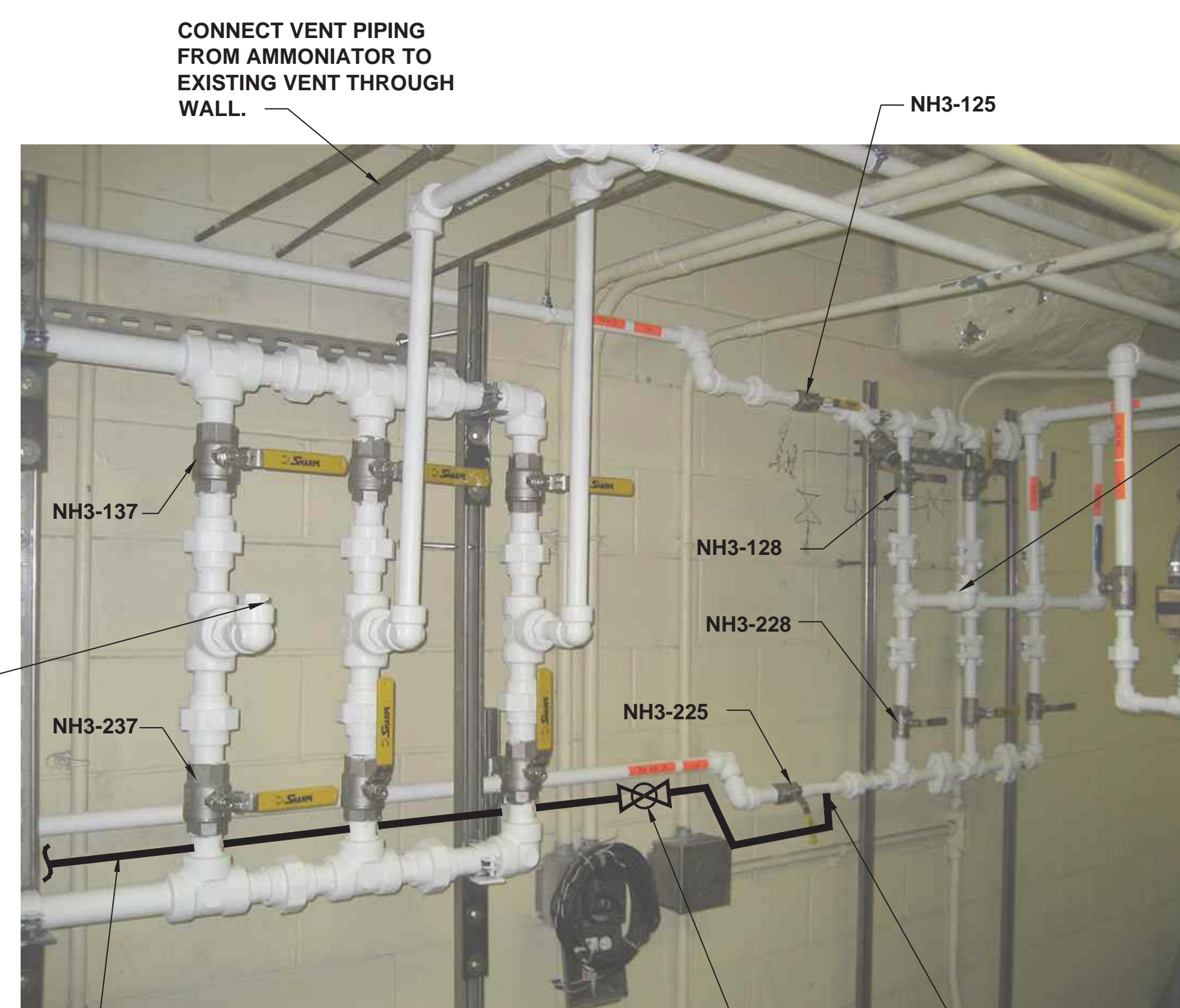


PHOTO 2 - AMMONIA SUPPLY PIPING MANIFOLD



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WTP DISINFECTION FEED SYSTEM IMPROVEMENTS
 AMMONIA FEED SYSTEMS

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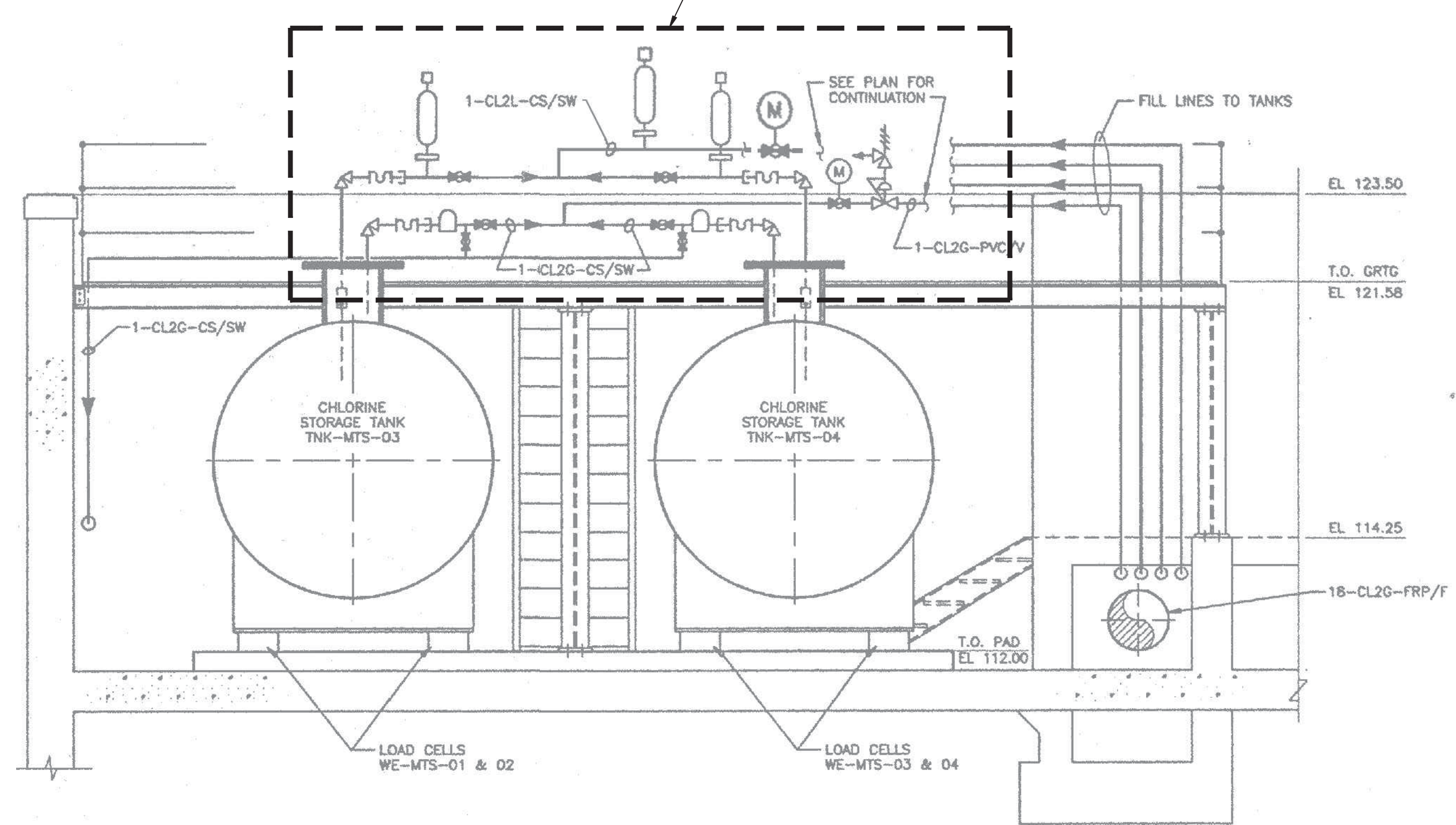
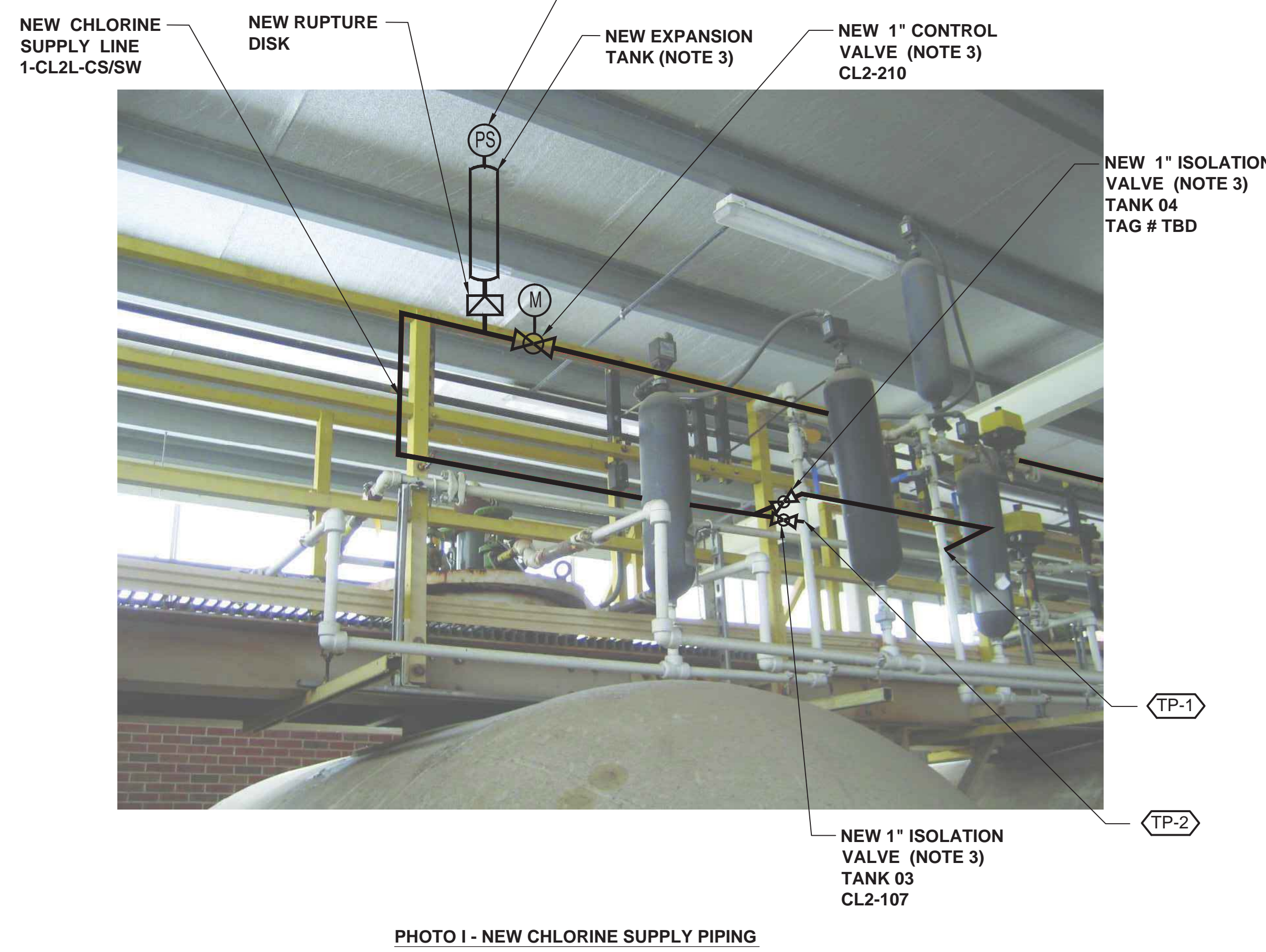
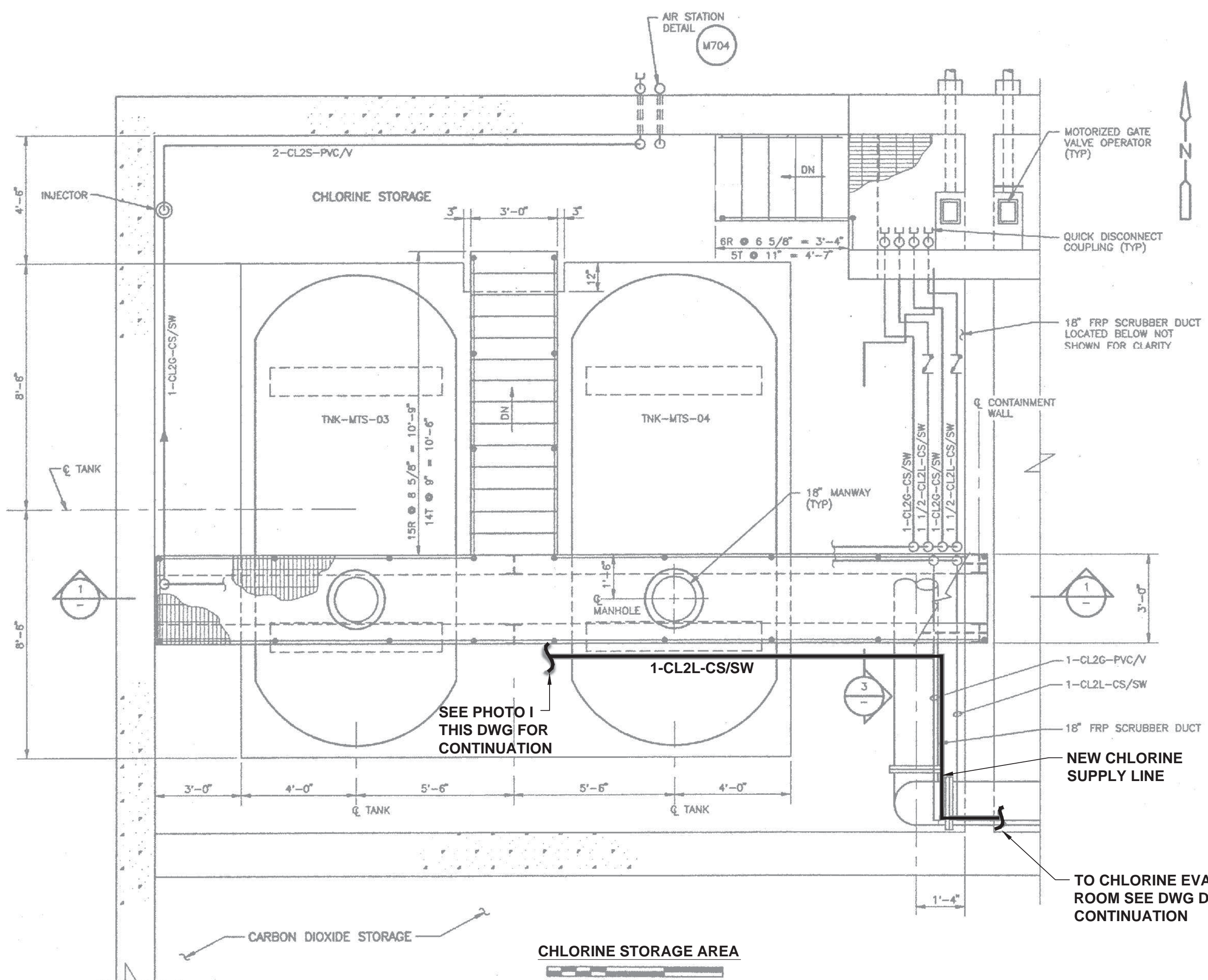
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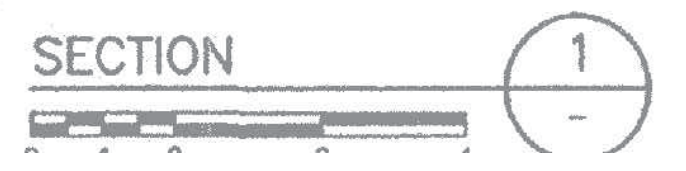
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- NOTES:**
1. NOT ALL PIPING SHOWN AT TANKS FOR CLARITY.
 2. ROUTE NEW CHLORINE SUPPLY PIPING FROM STORAGE TANKS TO CHLORINE EVAPORATOR ROOM. FOLLOW ROUTING OF EXISTING SUPPLY PIPING.
 3. LOCATE VALVES AND EXPANSION TANK TO AVOID CONFLICT WITH EXISTING EQUIPMENT AND TO PROVIDE ACCESSIBILITY FOR OPERATION AND MAINTENANCE.
 4. TIE-INS TO EXISTING SYSTEM SHALL BE COORDINATED WITH OWNER AND DISRUPTION OF SERVICE SHALL BE MINIMIZED. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.



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LICENSEE NO. 000165

date	detailed
APRIL 13 2015	M. ZUNIGA
designed	checked
R. THOMPSON	J. KLEIN

City of
Wichita, Kansas

SEDGWICK, KANSAS

**WTP DISINFECTION
FEED SYSTEM IMPROVEMENTS
CHLORINE STORAGE**

project	contract	
82747		
drawing	rev.	
D-03	0	
sheet	of	sheets
file 82747-D-03.DWG		

Scale For Microfilming

Inches



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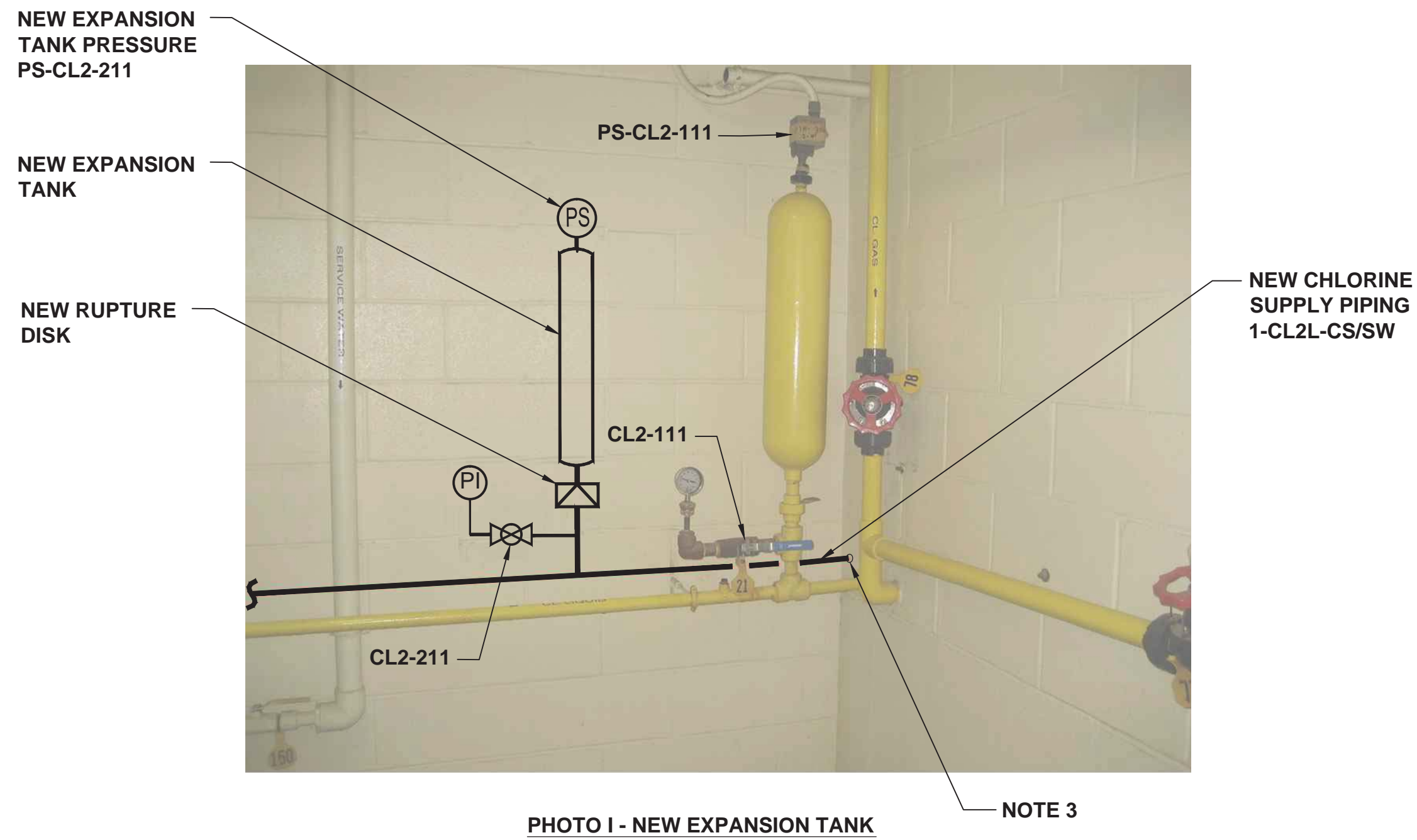
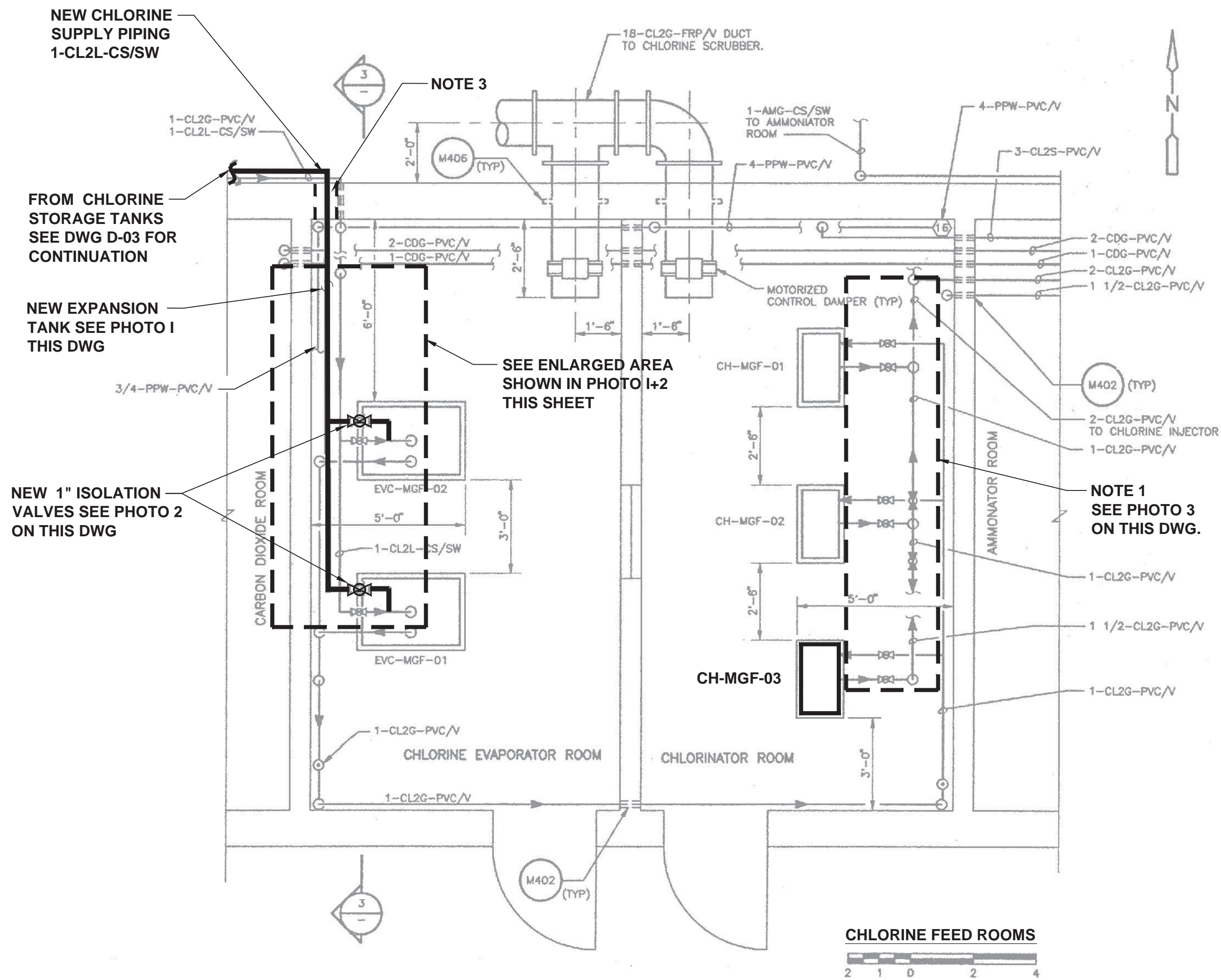


PHOTO 1 - NEW EXPANSION TANK

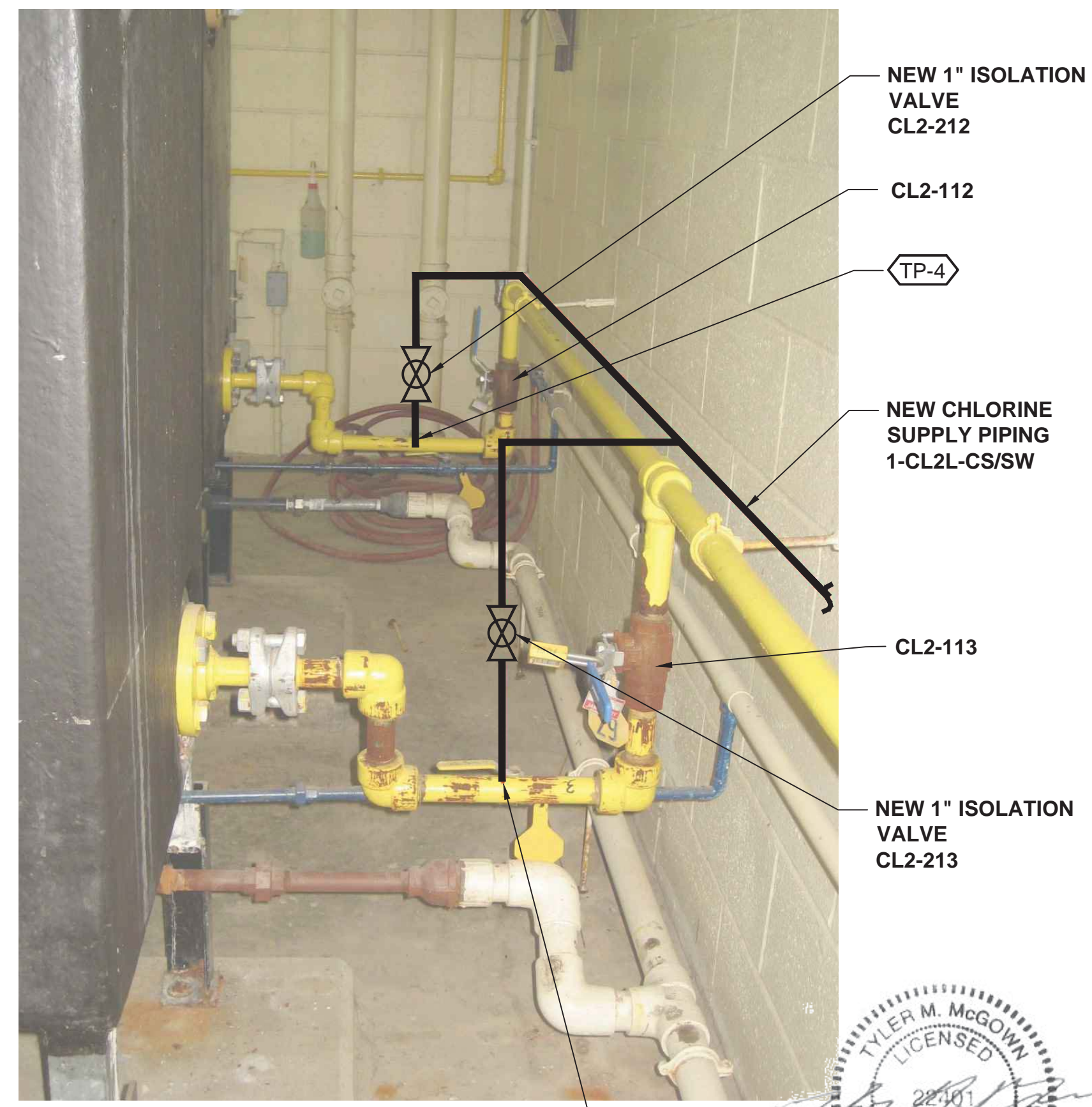


PHOTO 2 - NEW CHLORINE PIPING AT EVAPORATORS

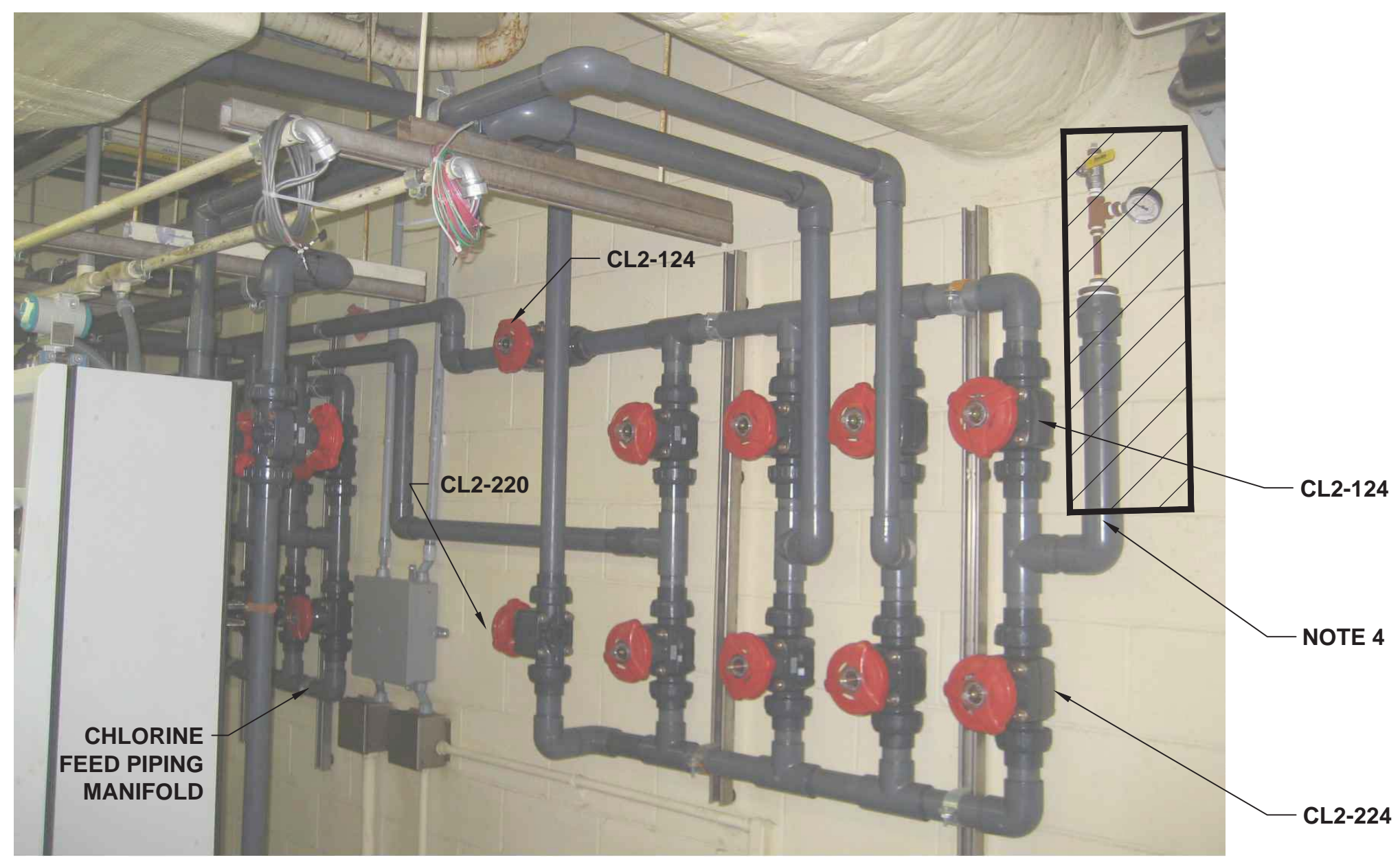


PHOTO 3 - CHLORINE GAS SUPPLY PIPING

- NOTES:**
1. PIPING IN CHLORINATOR ROOM DOES NOT SHOW RECENT MODIFICATIONS MADE BY PLANT STAFF.
 2. TIE-INS TO EXISTING SYSTEM SHALL BE COORDINATED WITH OWNER AND DISRUPTION OF SERVICE SHALL BE MINIMIZED. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
 3. CORE DRILL THROUGH EXISTING WALL. SEE PENETRATION DETAIL ON SHEET D-02.
 4. REMOVE AS INDICATED AND CONNECT GAS INLET PIPING FOR CH-MGF-03.
 5. CONNECT FEED PIPING FROM CH-MGF-03 TO APPROPRIATE LOCATION ON CHLORINE FEED PIPING MANIFOLD.
 6. FIELD ROUTE PIPING TO AVOID CONFLICTS WITH EXISTING EQUIPMENT. SUPPORT AS REQUIRED AND INSTALL PIPING AT ANGLES PARALLEL TO WALLS, CEILING, AND FLOOR. SEE PIDS AND SPECIFICATIONS FOR VALVES AND INSTRUMENTATION TO BE INSTALLED.

Scale For Microfitting
Millimeters
Inches

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designed	R. THOMPSON	checked	J. KLEIN

City of Wichita, Kansas
 SEDGWICK, KANSAS

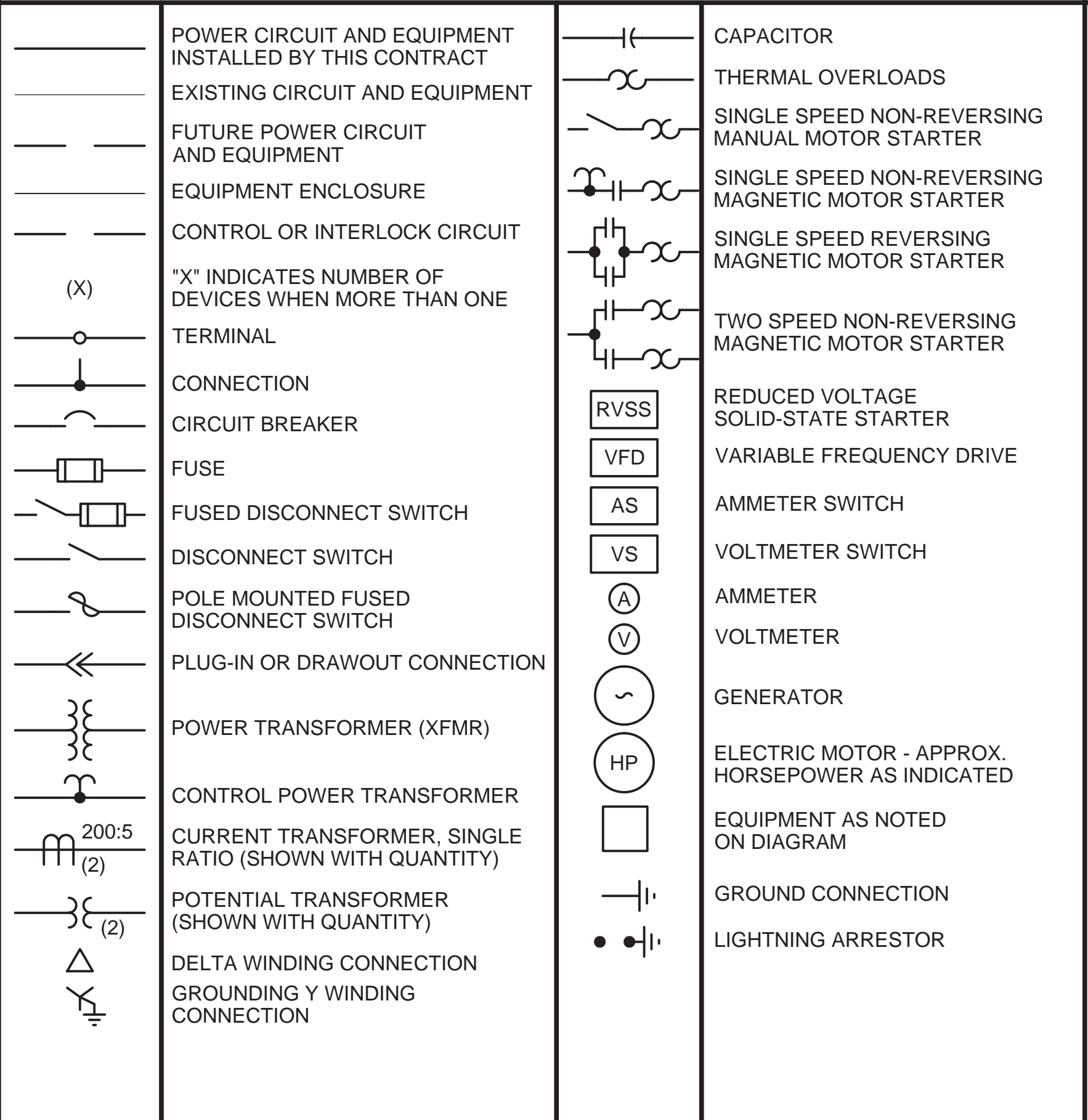
WTP DISINFECTION FEED SYSTEM IMPROVEMENTS CHLORINE FEED SYSTEM

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sheet	0	of	sheets
file	82747-D-04.DWG		

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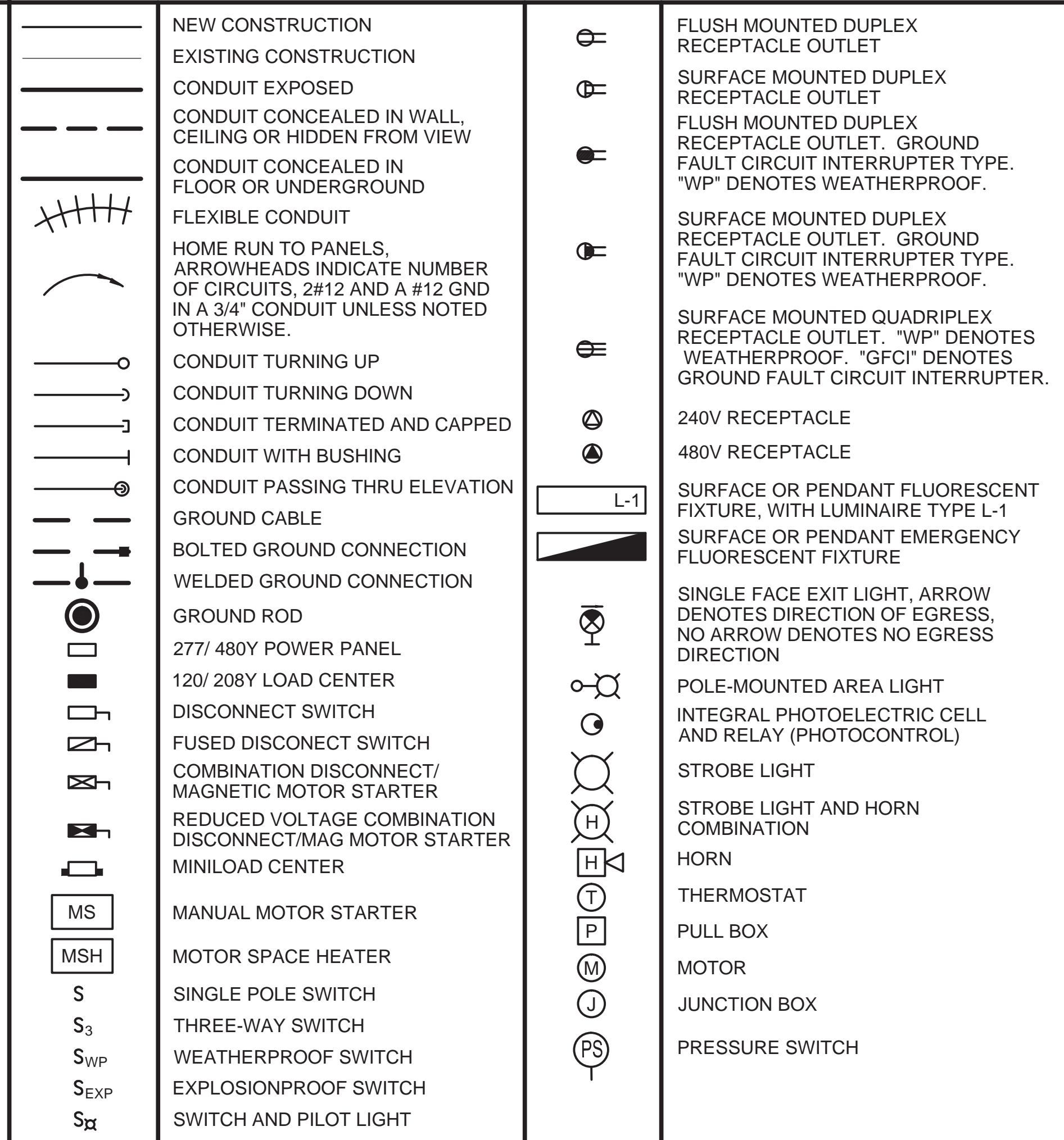
ONE-LINE AND CONTROL DIAGRAMS



SCHEMATIC DIAGRAM DEVICE DESIGNATIONS

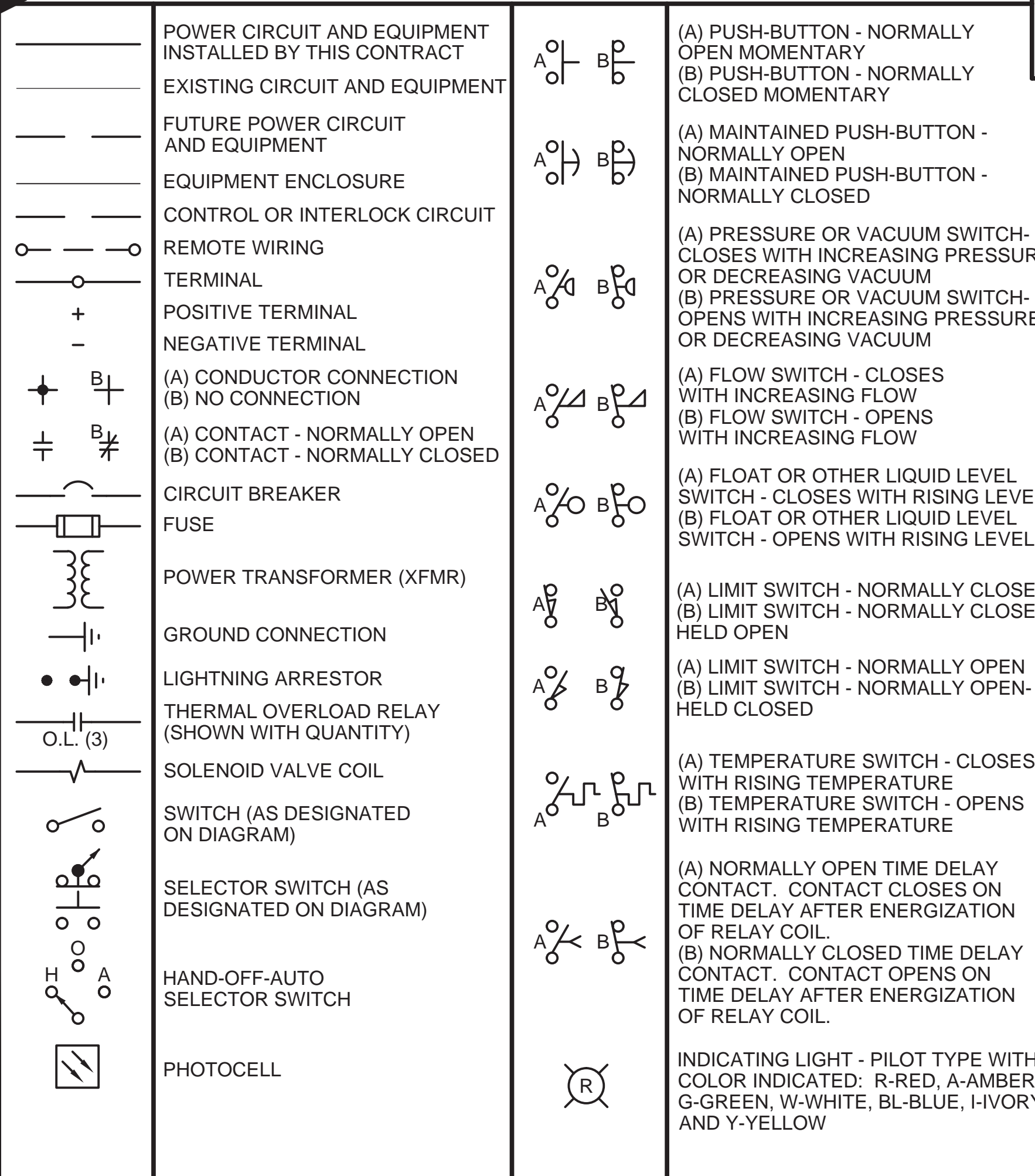
DESIGNATIONS DESCRIBING DEVICE OPERATION OR FUNCTION	DEVICE DESIGNATIONS
A AUTO	AL ALARM RELAY OR ALARM TIMER
ACK ACKNOWLEDGE	ANN ANNUNCIATOR
CL CLOSE	CB CIRCUIT BREAKER
FWD FORWARD	CNTOR CONTACTOR
H HAND	CPT CONTROL POWER TRANSFORMER
HI HIGH	CR CONTROL RELAY
HR HAND RESET	CS CONTROL SWITCH
HS HIGH SPEED	EP ELECTRIC - PNEUMATIC
INST INSTANTANEOUS	ES ELECTRONIC SWITCH
L LOW	ETM ELAPSED TIME METER
LCL LOCAL	F/FI FREQUENCY TO CURRENT TRANSDUCE
LS LOW SPEED	F/MV FREQUENCY TO MILLIVOLT TRANSDUCE
NC NORMALLY CLOSED	FD FLUID DETECTOR
NO NORMALLY OPEN	FLS FLOW SWITCH
O OFF	FS FLOAT SWITCH
OP OPEN	FSR FREQUENCY TO SHIFT TONE TRANSDUCE
REV REVERSE	FST FREQUENCY SHIFT TONE TRANSMITTER
RMT REMOTE	FU FUSE
	I/F CURRENT TO FREQUENCY TRANSDUCE

PLANS



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SCHEMATIC DIAGRAMS



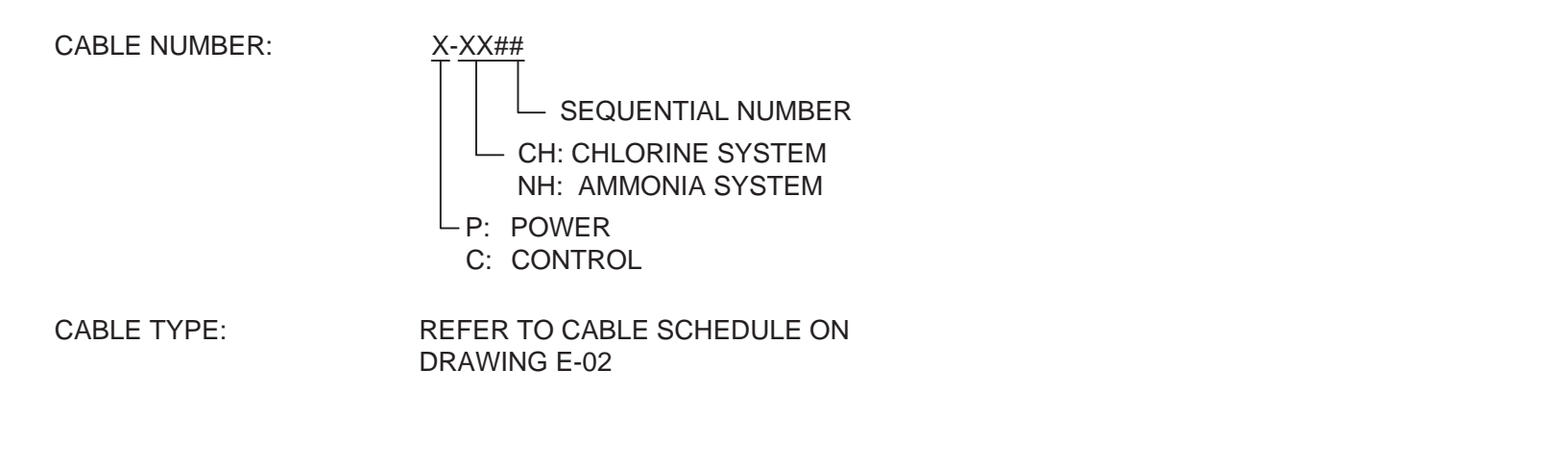
INSTRUMENTATION

MEASURING INSTRUMENT	INSTRUMENT MOUNTED ON PANEL FACE	FIRST LETTER	SUCCEEDING LETTERS
XX	XX	A ANALYSIS	ALARM
XX XX	XX XX	C CONDUCTIVITY	CONTROL
XX XX	XX XX	D DENSITY	DIFFERENTIAL
XX XX	XX XX	E VOLTAGE	PRIMARY ELEMENT
XX XX	XX XX	F FLOW	RATIO (FRACTION)
XX XX	XX XX	H HAND	HIGH INDICATOR
XX XX	XX XX	I CURRENT	LOW
XX XX	XX XX	L LEVEL	TOTALIZE OR INTEGRATE
XX XX	XX XX	M MOISTURE	RECORD SWITCH
XX XX	XX XX	P PRESSURE	TRANSMITTER VALVE
XX XX	XX XX	Q QUANTITY	RELAY OR COMPUTE
XX XX	XX XX	R RADIOACTIVITY	
XX XX	XX XX	S SPEED	
XX XX	XX XX	T TEMPERATURE	
XX XX	XX XX	V VISCOSITY	
XX XX	XX XX	W WEIGHT	
XX XX	XX XX	Y POSITION	
XX XX	XX XX	Z POSITION	

ABBREVIATIONS

ABBREVIATION	MEANING
A	AMPERES
AFG	ABOVE FINISHED GRADE
AFF	ABOVE FINISHED FLOOR
AIC	AMPS INTERRUPTING CURRENT
AWG	AMERICAN WIRE GAUGE
BC	BARE COPPER WIRE
BF	BELOW FLOOR
BG	BELOW GRADE
BKR	BREAKER
C	CONDUIT
CHL	CHLORINE
COND	CONDUCTIVITY
CP	CONTROL PANEL
CPT	CONTROL POWER TRANSFORMER
EL	ELEVATION
EO	ELECTRICALLY OPERATED
EX	EXPOSED
EXP	EXPLOSION-PROOF (CLASS 1, DIV 1, GROUP D)
EXT	EXTERIOR
FACP	FIRE ALARM CONTROL PANEL
INDUST	INDUSTRIAL
LC	LIGHTING CONTACTOR
GND	GROUND
MCC	MOTOR CONTROL CENTER
MUN	MUNICIPAL
NO	NORMALLY OPEN
NC	NORMALLY CLOSED
P	POLE
PP	POWER PANEL
PLC	PROGRAMMABLE LOGIC CONTROLLER
PS	PRESSURE SWITCH
RW	RAW WATER
SP	SPARE
SW	SWITCH
TYP.	TYPICAL
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
UE	UNDERGROUND ELECTRICAL
VFD	VARIABLE FREQUENCY DRIVE
WP	WEATHERPROOF
XFMR	TRANSFORMER

CABLE NUMBER DESIGNATIONS



- GENERAL NOTES:**
- ALL "P" CIRCUITS SHALL BE TYPE "SEV1" CABLE.
 - ALL "C" CIRCUITS SHALL BE TYPE "CEV1" CABLE UNLESS INDICATED OTHERWISE.
 - THIS IS A STANDARD ELECTRICAL LEGEND AND NOT ALL DEVICES AND DEVICE DESIGNATIONS ARE USED ON THIS PROJECT.



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drawing	E-01	rev.	0
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TYPE	DESCRIPTION	FUNCTION	PROCESS CONNECTION(S)	MOUNTING		OUTPUT	RANGE/ SET POINT	ENGINEERING UNIT	XMTR TYPE	POWER	SPECIAL NOTES
				TRANSMITTER	ELEMENT						
LIMIT SWITCH	CHLORINE TANK 1 MANUAL VALVE 1B POSITION SWITCH	MANUAL VALVE POSITION	CHLORINE	VALVE ACCESSORY	N/A	DRY CONTACT	N/A	N/A	N/A	N/A	
LIMIT SWITCH	CHLORINE TANK 2 MANUAL VALVE 2B POSITION SWITCH	MANUAL VALVE POSITION	CHLORINE	VALVE ACCESSORY	N/A	DRY CONTACT	N/A	N/A	N/A	N/A	
PRESSURE SWITCH	RELIEF EXPANSION TANK 2A HI PRESSURE SWITCH	PRESSURE	CHLORINE	INTEGRAL	TANK	DRY CONTACT	N/A	N/A	N/A	N/A	
PRESSURE SWITCH	RELIEF EXPANSION TANK 2B HI PRESSURE SWITCH	PRESSURE	CHLORINE	INTEGRAL	TANK	DRY CONTACT	N/A	N/A	N/A	N/A	
LIMIT SWITCH	CHLORINE LINE ACTUATED VALVE OPEN LIMIT SWITCH	VALVE POSITION	CHLORINE	VALVE ACCESSORY	N/A	DRY CONTACT	N/A	N/A	N/A	N/A	
LIMIT SWITCH	CHLORINE LINE ACTUATED VALVE CLOSE LIMIT SWITCH	VALVE POSITION	CHLORINE	VALVE ACCESSORY	N/A	DRY CONTACT	N/A	N/A	N/A	N/A	
LIMIT SWITCH	AMMONIA TANK 1 MANUAL VALVE POSITION SWITCH	MANUAL VALVE POSITION	AMMONIA	VALVE ACCESSORY	N/A	DRY CONTACT	N/A	N/A	N/A	N/A	
LIMIT SWITCH	AMMONIA TANK 2 MANUAL VALVE POSITION SWITCH	MANUAL VALVE POSITION	AMMONIA	VALVE ACCESSORY	N/A	DRY CONTACT	N/A	N/A	N/A	N/A	
LIMIT SWITCH	AMMONIA LINE ACTUATED VALVE OPEN LIMIT SWITCH	VALVE POSITION	AMMONIA	VALVE ACCESSORY	N/A	DRY CONTACT	N/A	N/A	N/A	N/A	
LIMIT SWITCH	AMMONIA LINE ACTUATED VALVE CLOSE LIMIT SWITCH	VALVE POSITION	AMMONIA	VALVE ACCESSORY	N/A	DRY CONTACT	N/A	N/A	N/A	N/A	

TABLE 1 - INSTRUMENT SCHEDULE

CABLE NUMBER	FROM TAG	FROM DESCRIPTION	SECTION	TO TAG	TO DESCRIPTION	SECTION	CABLE DESCRIPTION	CABLE TYPE
C-CL01	3RIO-I-R	PLC CABINET	RIGHT SIDE	CL2-107	CHLORINE TANK 1 MANUAL VALVE 1B	LIMIT SWITCH	CHLORINE TANK 1 MANUAL VALVE CLOSED LIMIT SWITCH	CEV1, 4/C #14 AWG
C-CL02	3RIO-I-R	PLC CABINET	RIGHT SIDE	CL2-207	CHLORINE TANK 2 MANUAL VALVE 2B	LIMIT SWITCH	CHLORINE TANK 2 MANUAL VALVE CLOSED LIMIT SWITCH	CEV1, 4/C #14 AWG
C-CL03	3RIO-I-R	PLC CABINET	RIGHT SIDE	PS-CL2-210	RELIEF EXPANSION TANK 2A	HIGH PRESSURE	CHLORINE HIGH PRESSURE RELIEF EXPANSION TANK 2A HI PRESSURE SWITCH CHLORINE	CEV1, 4/C #14 AWG
C-CL04	3RIO-I-R	PLC CABINET	RIGHT SIDE	PS-CL2-211	RELIEF EXPANSION TANK 2B	HIGH PRESSURE	CHLORINE HIGH PRESSURE RELIEF EXPANSION TANK 2B HI PRESSURE SWITCH CHLORINE	CEV1, 4/C #14 AWG
C-CL05	3RIO-I-R	PLC CABINET	RIGHT SIDE	CL2-210	CHLORINE LINE ACTUATOR	LIMIT SWITCH	CHLORINE LINE ACTUATED VALVE OPEN/CLOSE LIMIT SWITCH	CEV1, 4/C #14 AWG
C-CL06	3RIO-I-R	PLC CABINET	RIGHT SIDE	CL2-210	CHLORINE LINE ACTUATOR	ACTUATOR	CHLORINE LINE ACTUATED VALVE CONTROL SIGNAL	CEV1, 4/C #12 AWG
C-NH01	3RIO-I-R	PLC CABINET	RIGHT SIDE	NH3-114	AMMONIA TANK 1 MANUAL VALVE 1B	LIMIT SWITCH	AMMONIA TANK 1 MANUAL VALVE CLOSED LIMIT SWITCH	CEV1, 4/C #14 AWG
C-NH02	3RIO-I-R	PLC CABINET	RIGHT SIDE	NH3-214	AMMONIA TANK 2 MANUAL VALVE 2B	LIMIT SWITCH	AMMONIA TANK 1 MANUAL VALVE CLOSED LIMIT SWITCH	CEV1, 4/C #14 AWG
C-NH03	3RIO-I-R	PLC CABINET	RIGHT SIDE	NH3-220	AMMONIA LINE ACTUATOR	LIMIT SWITCH	AMMONIA LINE ACTUATED VALVE OPEN/CLOSE LIMIT SWITCH	CEV1, 4/C #14 AWG
C-NH04	3RIO-I-R	PLC CABINET	RIGHT SIDE	NH3-220	AMMONIA LINE ACTUATOR	ACTUATOR	AMMONIA LINE ACTUATED VALVE CONTROL SIGNAL	CEV1, 4/C #12 AWG
I-CL01	3RIO-I-R	PLC CABINET	RIGHT SIDE	CH-MGF-03	CHLORINATOR	FLOW FEEDBACK	CHLORINATOR FLOW TRANSMITTER	IEV1, 1 PAIR, 16 AWG
I-CL02	3RIO-I-R	PLC CABINET	RIGHT SIDE	CH-MGF-03	CHLORINATOR	FLOW PACING	CHLORINATOR CONTROL	IEV1, 1 PAIR, 16 AWG
I-NH01	3RIO-I-R	PLC CABINET	RIGHT SIDE	AM-MGF-03	AMMONIATOR	FLOW FEEDBACK	AMMONIATOR FLOW TRANSMITTER	IEV1, 1 PAIR, 16 AWG
I-NH02	3RIO-I-R	PLC CABINET	RIGHT SIDE	AM-MGF-03	AMMONIATOR	FLOW PACING	AMMONIATOR CONTROL	IEV1, 1 PAIR, 16 AWG
P-CL01	LC3	120Y/208 V PANELBOARD	BKR 29	CH-MGF-03	CHLORINATOR	120V	CHLORINATOR POWER SUPPLY	SEV1, 3/C #12 AWG
P-NH01	LC3	120Y/208 V PANELBOARD	BKR 14	AM-MGF-03	AMMONIATOR	120V	AMMONIATOR POWER SUPPLY	SEV1, 3/C #12 AWG

TABLE 2 - CABLE SCHEDULE

Scale For Microfitting
Millimeters

Inches

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designed	J. SCHAEFER	checked	V. SCHROER



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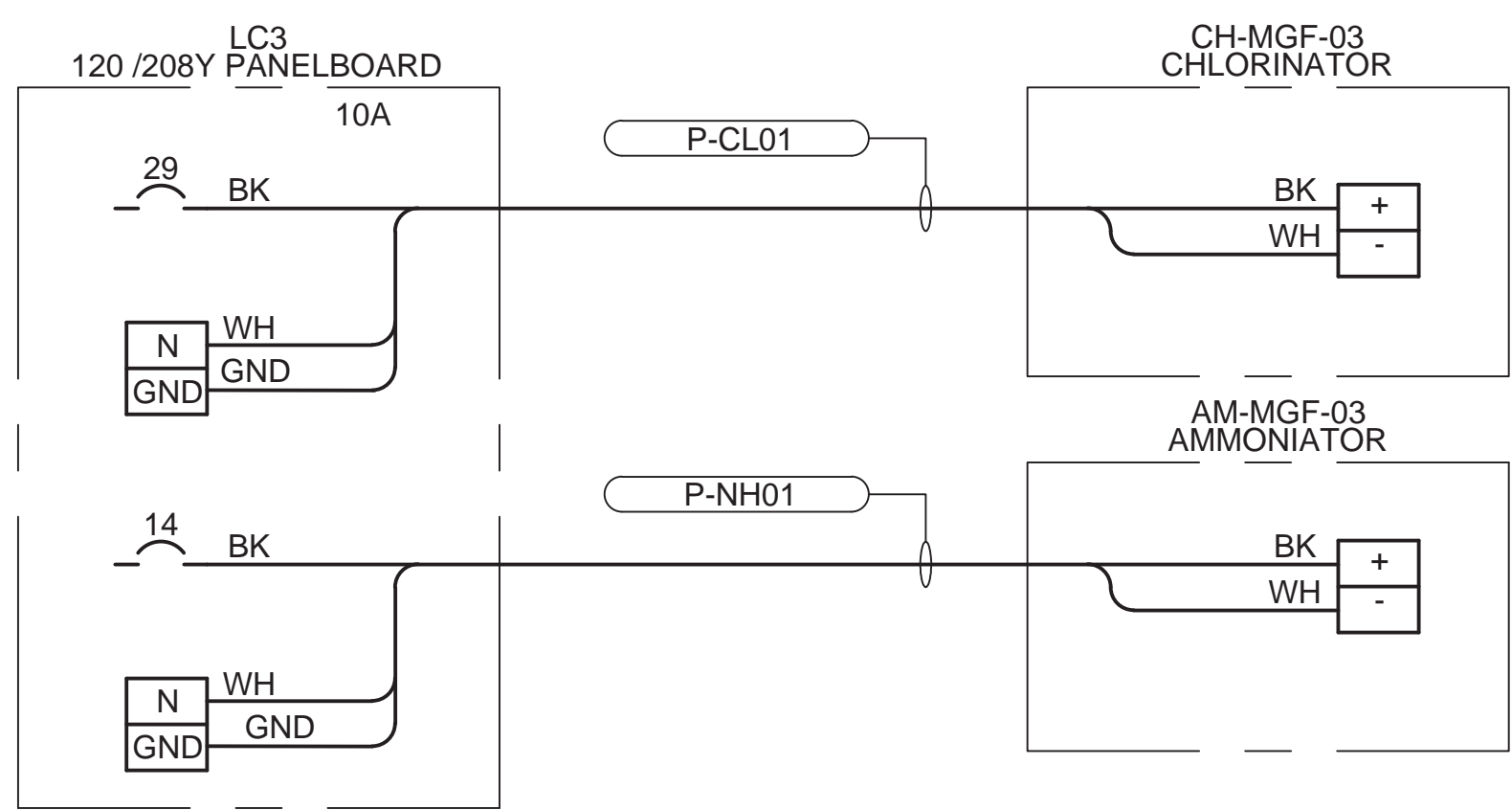
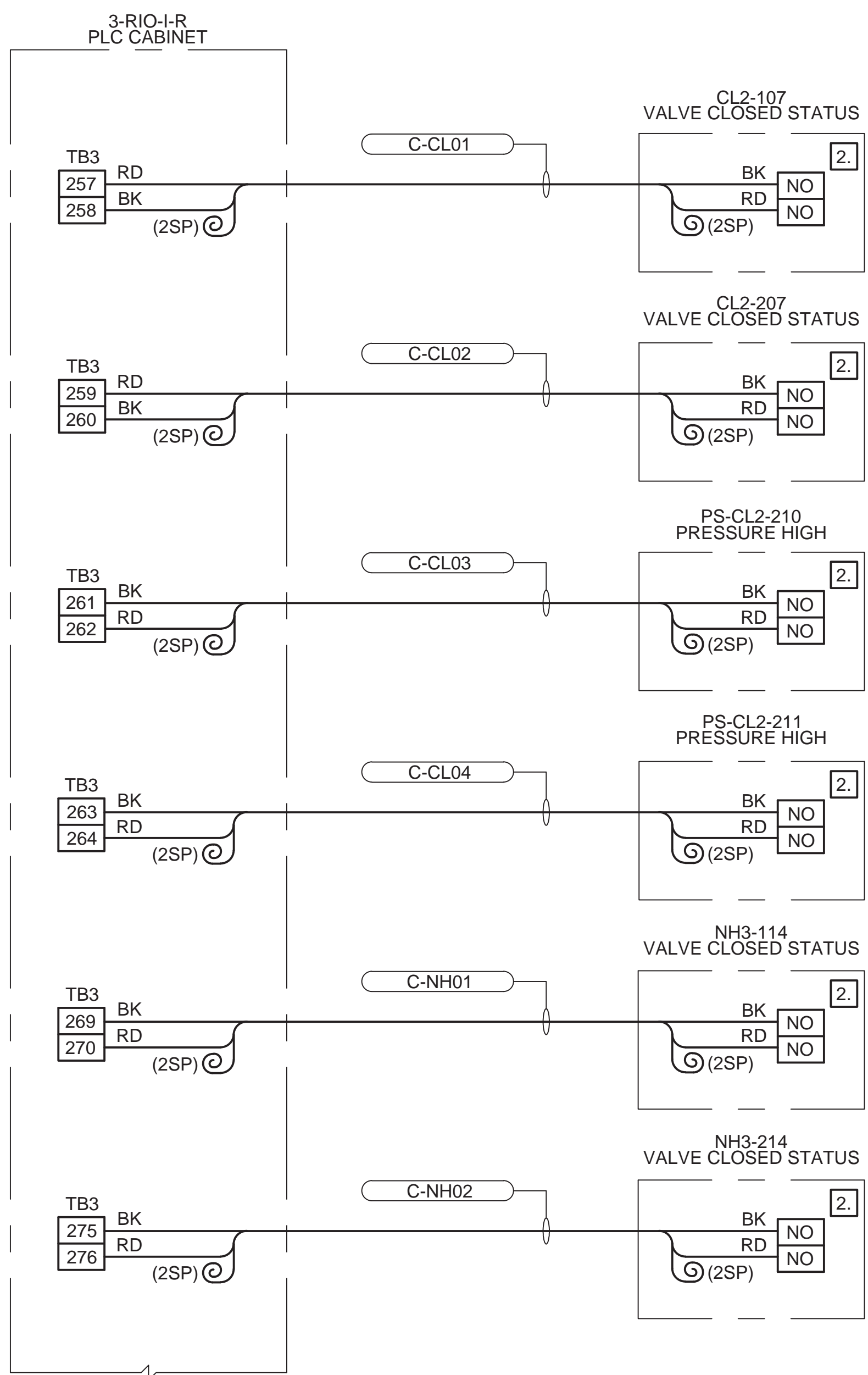
WTP DISINFECTION
ELECTRICAL
INSTRUMENTATION
AND CABLE SCHEDULES

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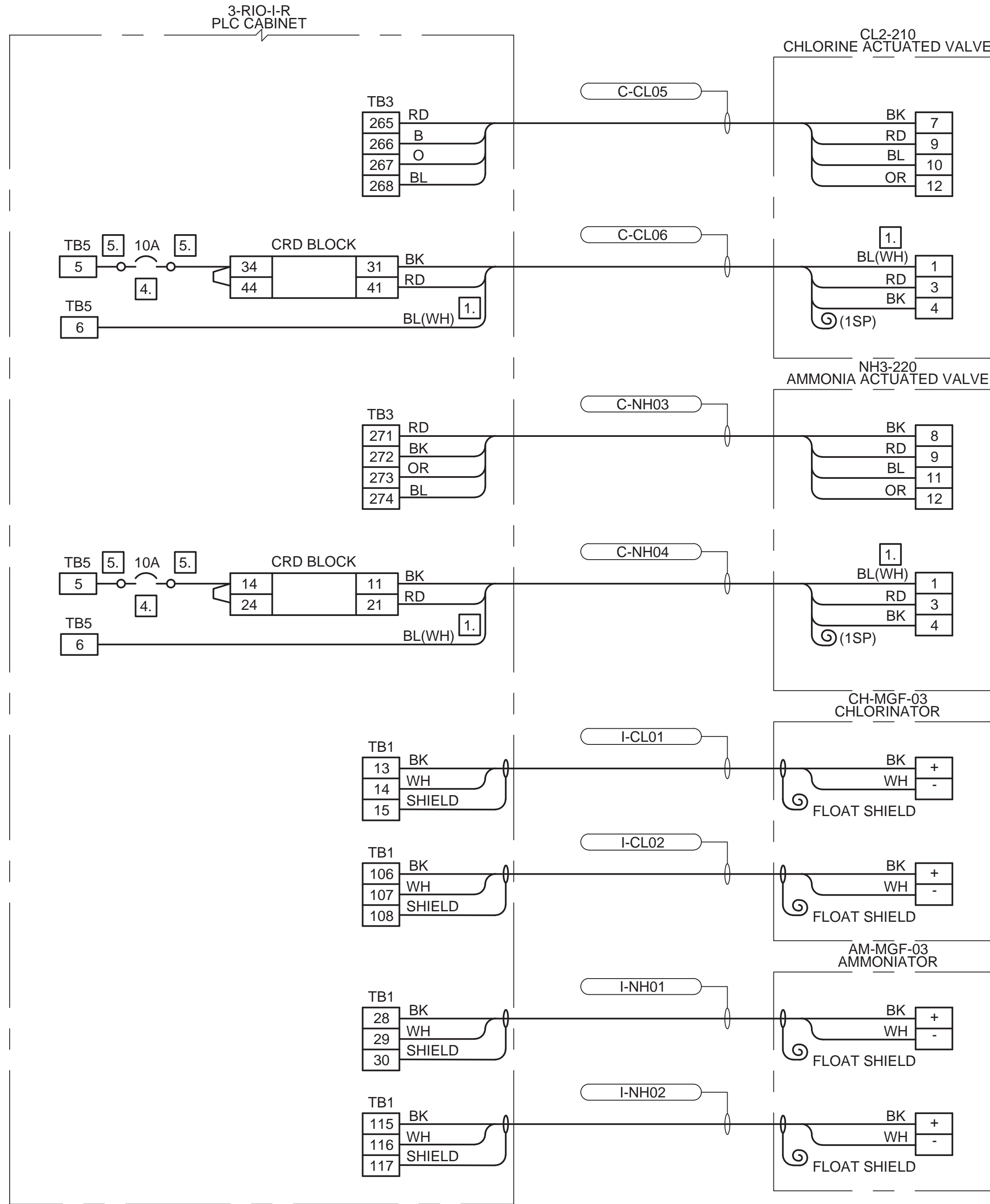


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- REFERENCES**
- 1. 6153LPU3C R.E. PEDROTTI CO., INC, PLC CABINET SCHEMATICS REV. 5
 - 2. WCABR1014 FLOWSERVE WORCESTER ACTUATION SYSTEM SERIES 75 ELECTRIC ACTUATOR
 - 3. A203-1 JAMESBURY VALVCON LCR-SERIES ELECTRIC VALVE ACTUATORS



- NOTES:**
1. CONDUCTORS SHALL BE TAPED USING ELECTRICAL TAPE INDICATED IN PARENTHESIS. CONDUCTORS USED AS A NEUTRAL SHALL BE TAPED AT EACH END USING WHITE ELECTRICAL TO INDICATE IT IS A NEUTRAL CONDUCTOR PER NFPA 70 NATIONAL ELECTRICAL CODE.
 2. THE TERMINAL NUMBERS ON THIS DRAWING FOR LIMIT SWITCHES ARE NO (NORMALLY OPEN) AND NC (NORMALLY CLOSED). IF PURCHASED SWITCHES ARE MARKED DIFFERENTLY, CONTRACTOR SHALL USE THE NORMALLY OPEN AND NORMALLY CLOSED CONTACTS AS INDICATED BY THIS DRAWING.
 3. ANY CONDUCTORS INDICATED AS SPARE SHALL BE COILED BACK FROM TERMINALS TO BE OUT OF THE WAY AND THE END SHALL BE TAPED OVER WITH ELECTRICAL TAPE.
 4. CONTRACTOR SHALL PROCURE AND INSTALL 10A, 22KA MIN, DIN RAIL MOUNTED CIRCUIT BREAKER IN PLC CABINET.
 5. CONDUCTORS SHALL BE SINGLE CONDUCTOR #14 AWG AND ROUTED IN PANDUIT WIRE WAY WITHIN THE PLC CABINET.



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WTP DISINFECTION

ELECTRICAL WIRING DIAGRAM

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file 82747-E-03.DWG			

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PHOTO 1 - 3RIO-I PLC CONTROL CABINET
NOT TO SCALE



PHOTO 2 - PLC CONTROL CABINET INTERIOR
NOT TO SCALE

- NOTES:**
1. PENETRATIONS THROUGH CARBON DIOXIDE ROOM WALL FOR CONDUIT SHALL UTILIZE THE CONDUIT WALL PENETRATION DETAIL SHOWN ON THIS DRAWING. WHERE MULTIPLE CONDUITS PENETRATE THE WALL, CONDUITS SHALL BE NO CLOSER THAN XXX INCHES FROM ADJACENT CONDUITS. CONDUITS SHALL BE ROUTED AT LEAST 6 FEET ABOVE THE FINISHED FLOOR WHEREVER POSSIBLE.
 2. CONTRACTOR SHALL APPLY AN ADHESIVE CAUTION LABEL TO FRONT OF PLC CABINET ON EACH DOOR AT EYE-LEVEL. THE TOP OF THE LABEL SHALL HAVE THE WORD "CAUTION" IN LARGE, BOLD FONT. THE BODY OF THE LABEL SHALL READ: "THIS EQUIPMENT IS SUPPLIED BY MORE THAN ONE POWER SOURCE" OR ENGINEER APPROVED EQUIVALENT. AT MINIMUM, BODY TEXT SHALL BE WRITTEN IN ALL CAPITAL LETTERS AT LEAST 3/8" HEIGHT. THE TEXT COLOR SHALL BE BLACK AND HAVE HIGH CONTRAST AGAINST THE BACKGROUND. LABEL SHALL COMPLY WITH NATIONAL ELECTRICAL CODE REQUIREMENTS FOR MULTIPLE POWER SOURCE LABELING.

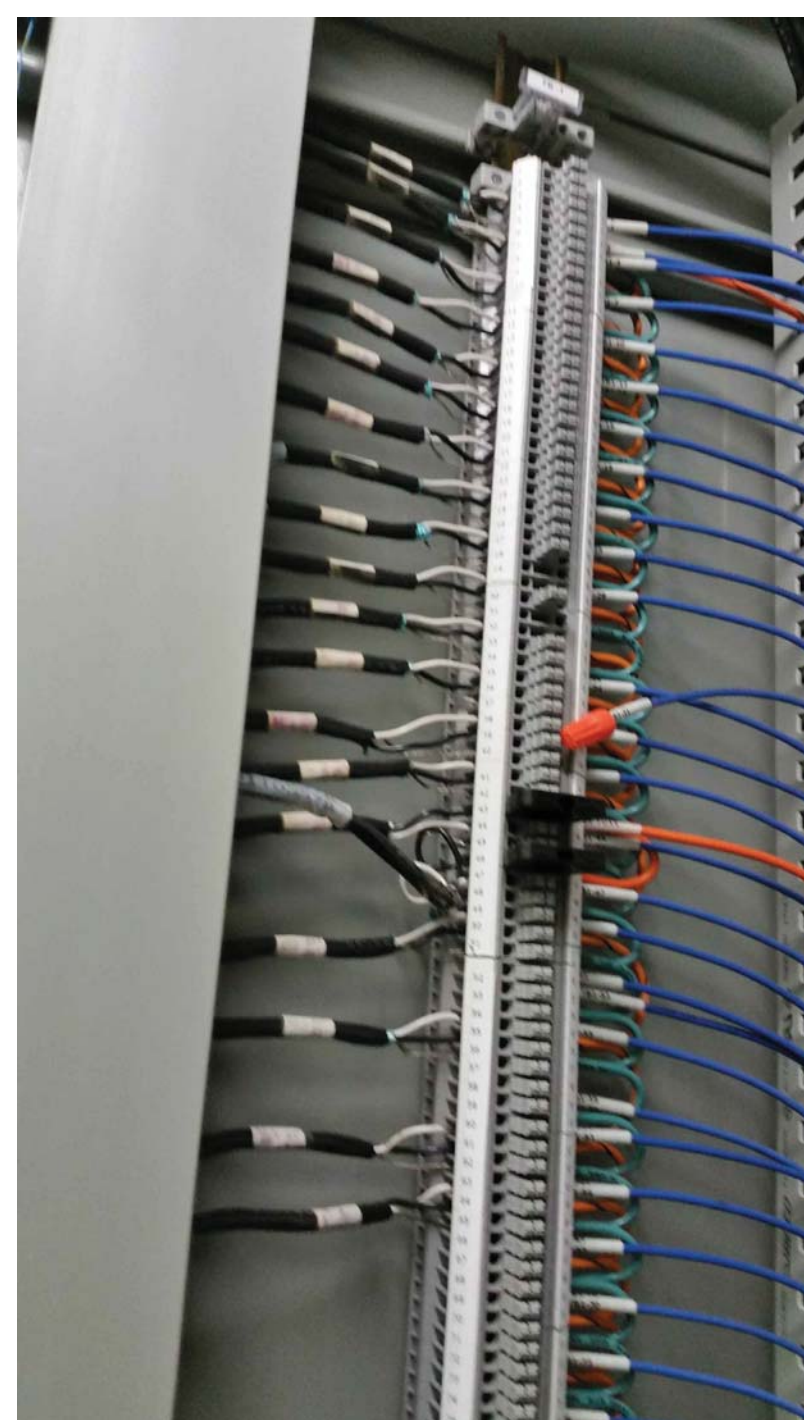


PHOTO 3 - DIGITAL INPUT TERMINAL BLOCK
NOT TO SCALE

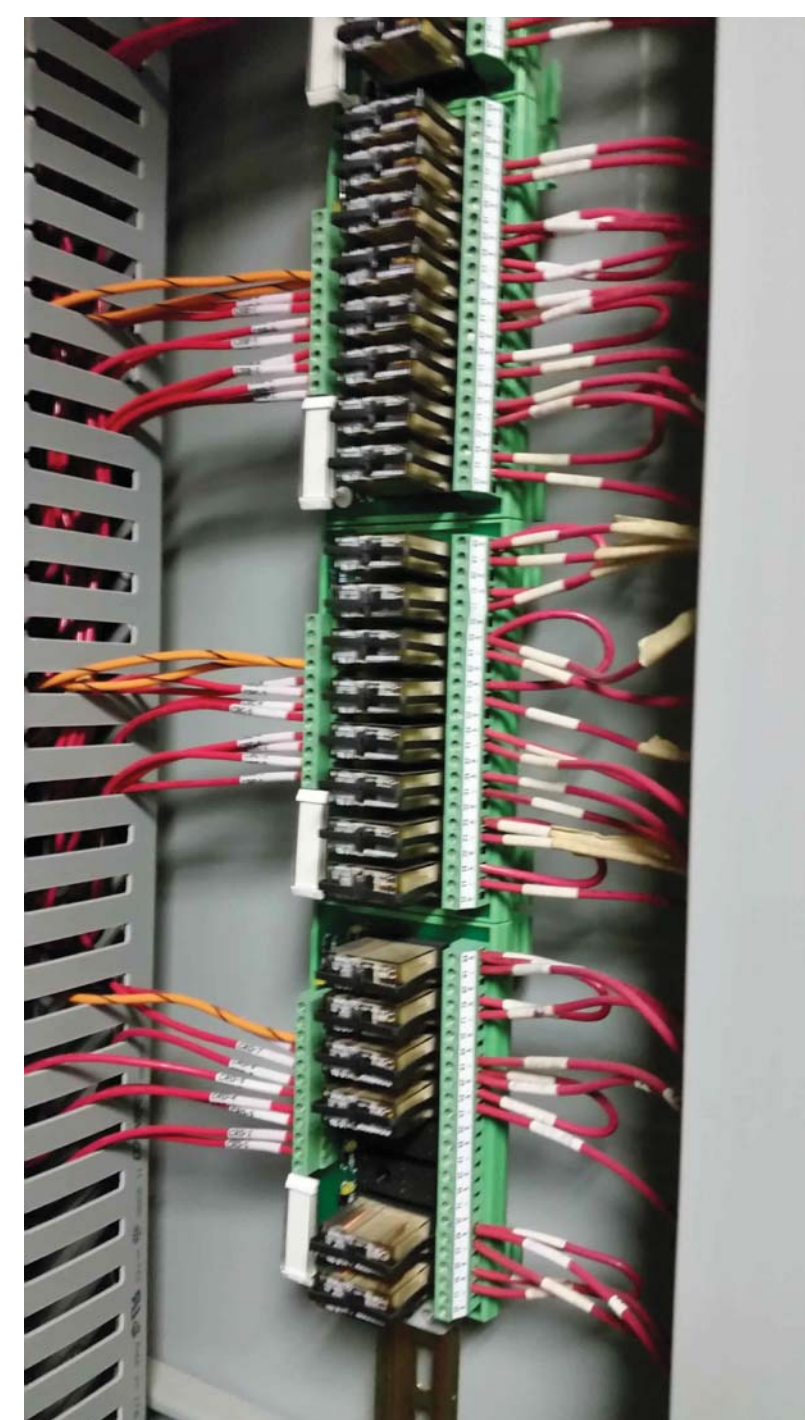
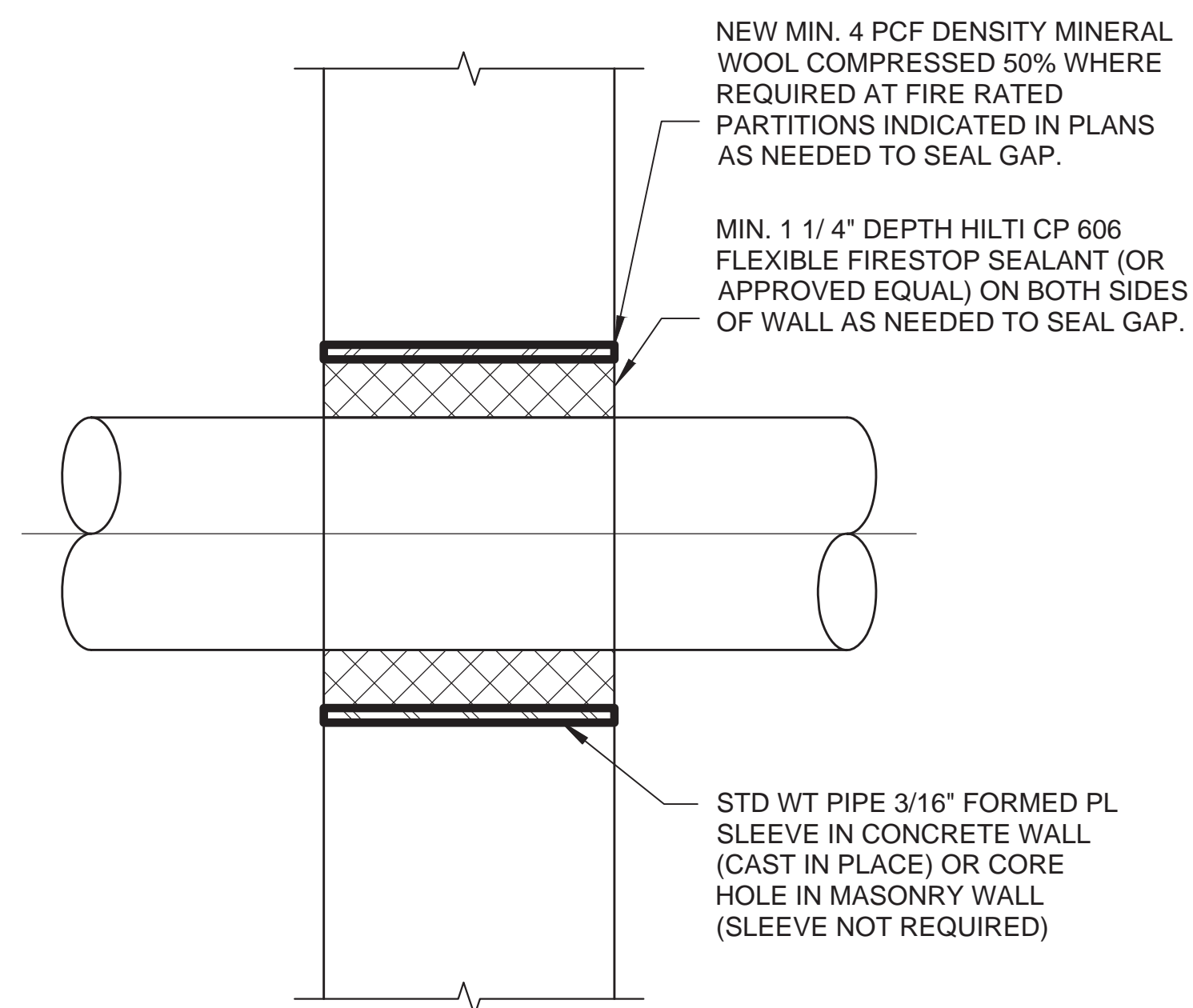


PHOTO 4 - DIGITAL OUTPUT RELAYS
NOT TO SCALE



CONDUIT WALL PENETRATION DETAIL 1.
NOT TO SCALE



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WTP DISINFECTION
ELECTRICAL
PLC CABINET DETAILS

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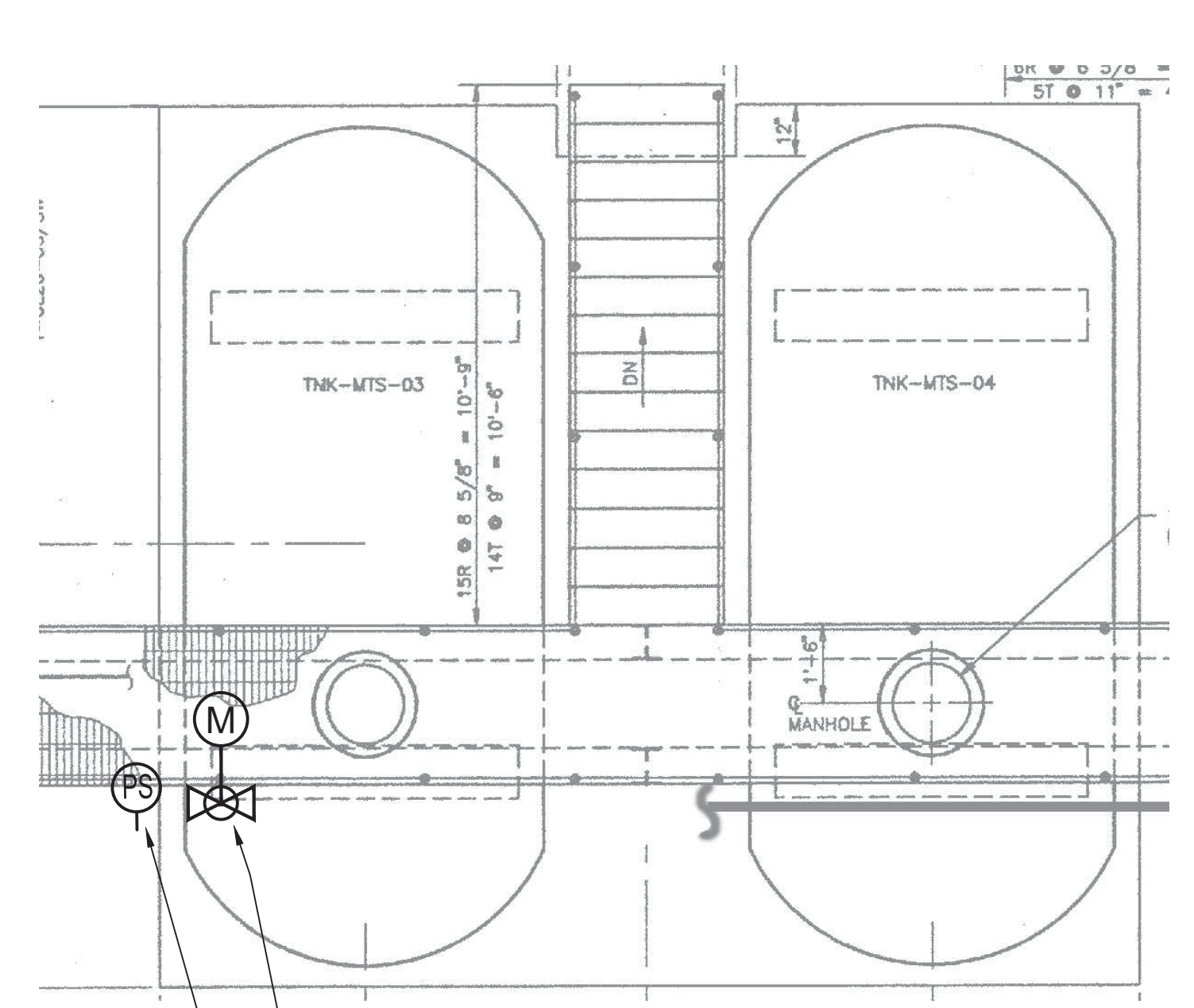
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Millimeters

Inches

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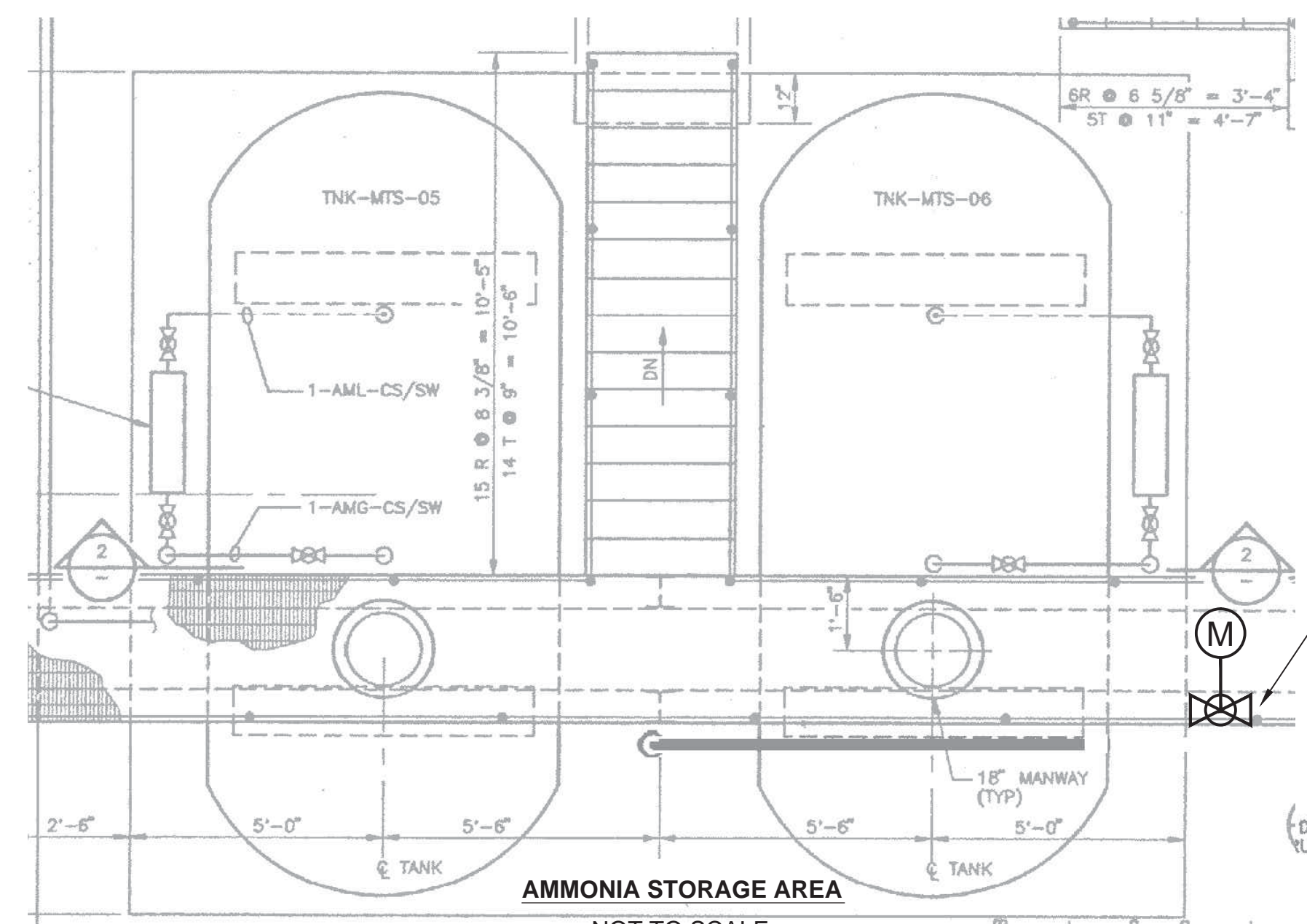
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VALVE
CL2-210
REFER TO 82747-D03 FOR
LOCATION DETAILS

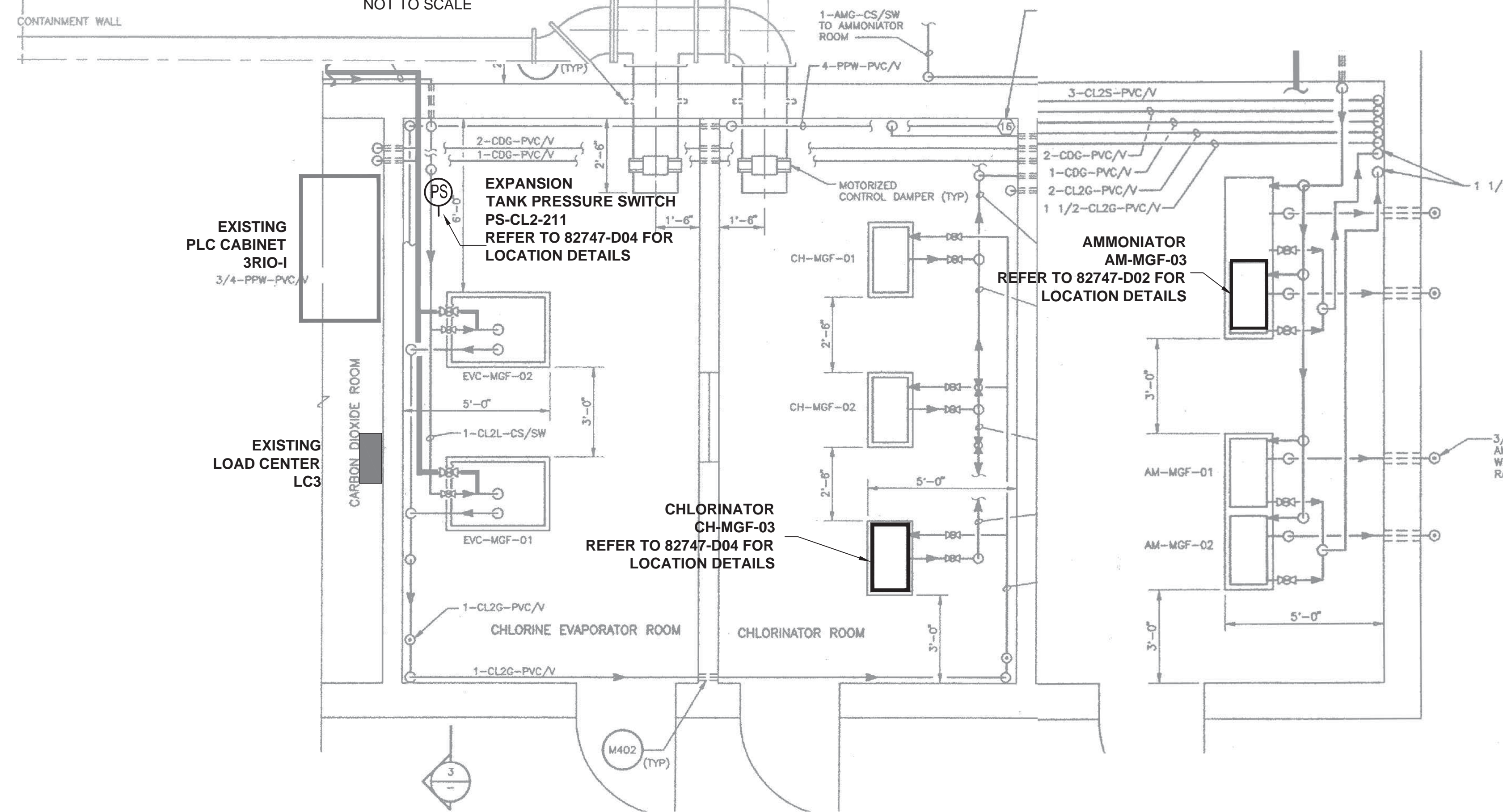
EXPANSION
TANK PRESSURE SWITCH
PS-CL2-210
REFER TO 82747-D03 FOR
LOCATION DETAILS

CHLORINE STORAGE AREA
NOT TO SCALE



VALVE
NH3-220
REFER TO 82747-D01 FOR
LOCATION DETAILS

AMMONIA STORAGE AREA
NOT TO SCALE



EXPANSION
TANK PRESSURE SWITCH
PS-CL2-211
REFER TO 82747-D04 FOR
LOCATION DETAILS

AMMONIATOR
AM-MGF-03
REFER TO 82747-D02 FOR
LOCATION DETAILS

CHLORINATOR
CH-MGF-03
REFER TO 82747-D04 FOR
LOCATION DETAILS

CHEMICAL FEED ROOMS
NOT TO SCALE

NOTES:

- TIE-INS TO EXISTING SYSTEM SHALL BE COORDINATED WITH OWNER AND DISRUPTION OF SERVICE SHALL BE MINIMIZED. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
- LOCATION OF ELECTRICAL EQUIPMENT, INSTRUMENTS, AND VALVES SHOWN ON THIS DRAWING ARE APPROXIMATE. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ACTUAL LOCATION.



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**WTP DISINFECTION
ELECTRICAL LOADS
EQUIPMENT LOCATION PLAN**

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Scale For Microfitting

Inches

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