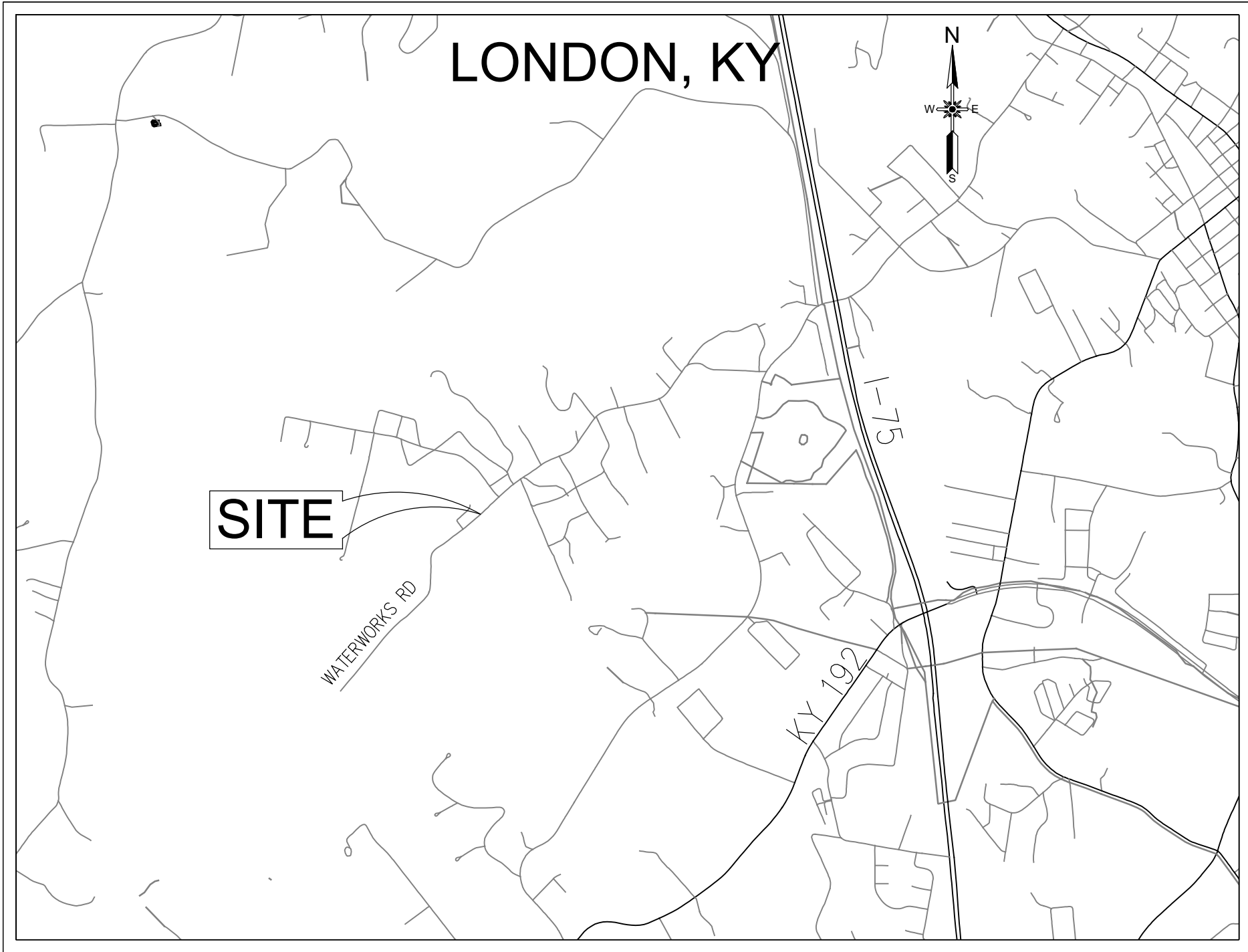


LONDON WATER TREATMENT PLANT IMPROVEMENTS

OCTOBER 2024

Prepared For:
LONDON UTILITY COMMISSION
P.O. BOX 918
801 N. MAIN STREET
LONDON, KENTUCKY 40741

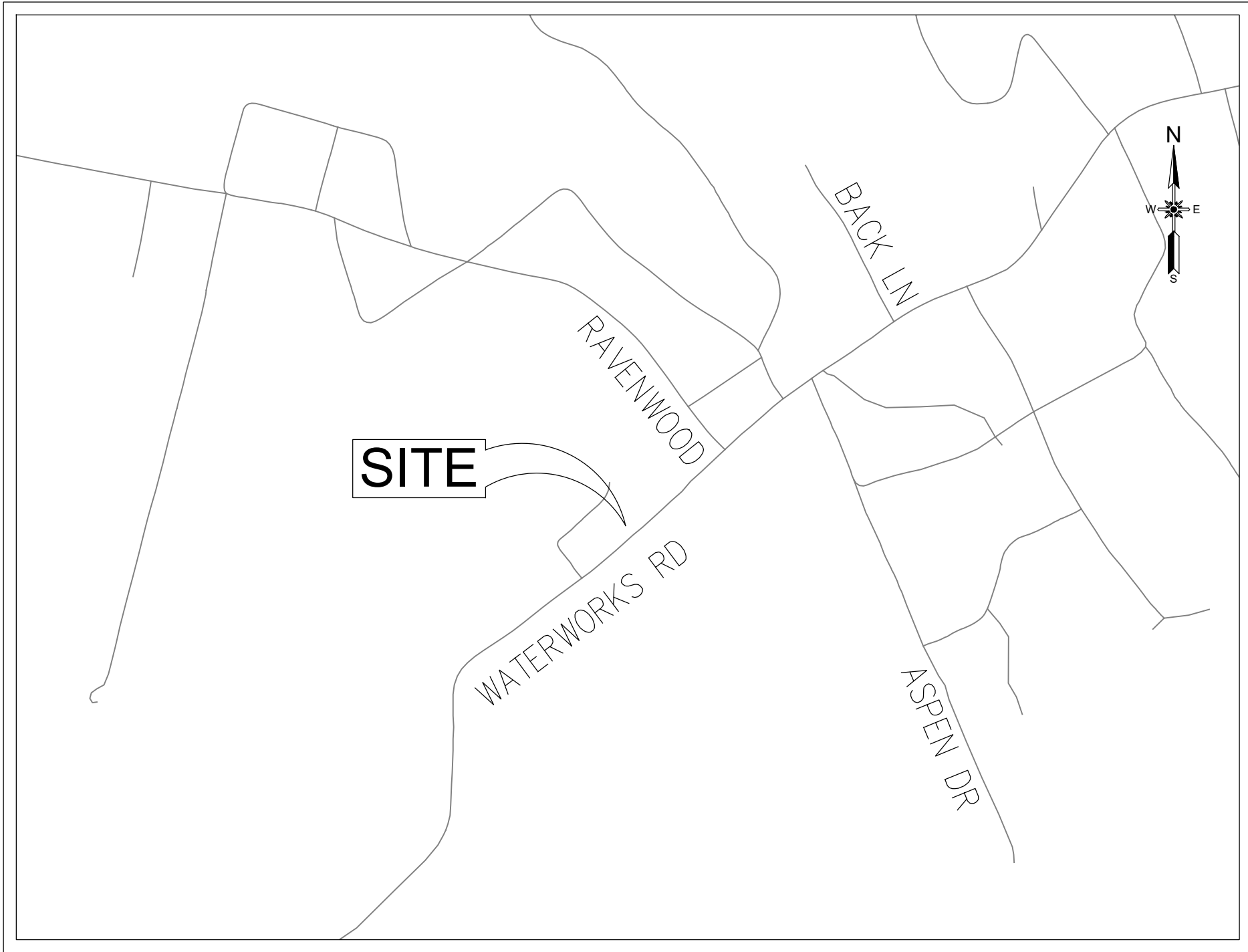
VICINITY



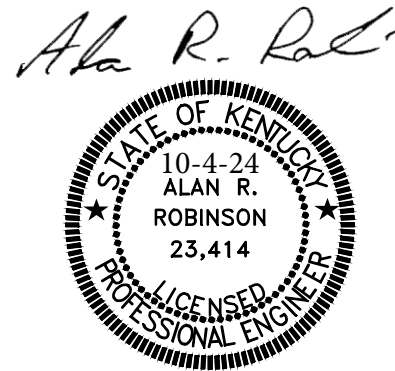
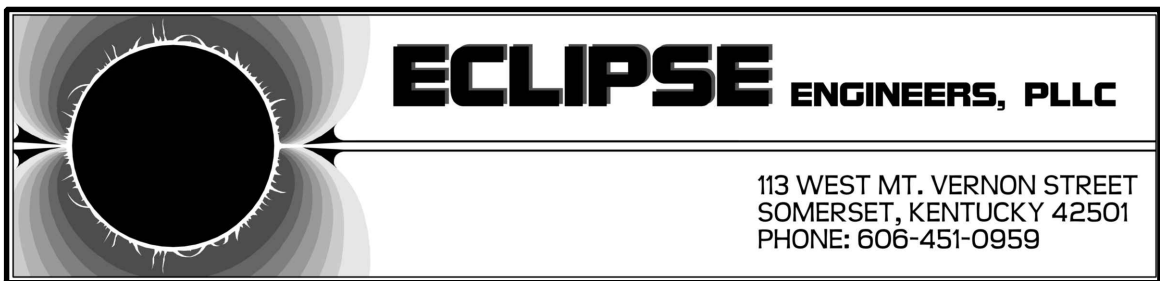
SCALE: 1"=2000'



LOCATION



SCALE: 1"=500'



LEGEND

EXISTING FEATURES	PROPOSED FEATURES
 EX. PROPERTY LINES	 PROP. WATERLINE
 EX. UNDERGROUND ELECTRIC LINE	 PROP. GRAVITY SEWER
 EX. UNDERGROUND TELEPHONE LINE	 PROP. SANITARY SEWER FORCE MAIN
 EX. GAS LINE	 PROP. STORM SEWER PIPE
 EX. WATERLINE	 PROP. FENCE
 EX. GUARDRAIL	 PROP. INTERMEDIATE CONTOUR
 EX. ROAD	 PROP. INDEX CONTOUR
 EX. GRAVITY SEWER	 PROP. SANITARY SEWER MANHOLE
 EX. SANITARY SEWER FORCE MAIN	 PROP. WATER METER
 EX. STORM SEWER PIPE	 PROP. WATER VALVE
 EX. FENCE	 PROP. FIRE HYDRANT
 EX. INTERMEDIATE CONTOUR	 PROP. REDUCER
 EX. INDEX CONTOUR	 PROP. LINE CAP
 EX. STREAM	
 BENCHMARK/CONTROL POINT	
 EX. SANITARY SEWER MANHOLE	
 EX. SANITARY SEWER CLEANOUT	
 EX. HEADWALL	
 EX. TREES	
 EX. POWER POLE	
 EX. GUY WIRE	
 EX. GAS METER	
 EX. GAS VALVE	
 EX. WATER METER	
 EX. WATER VALVE	
 EX. FIRE HYDRANT	

ABBREVIATIONS

B	AIR/VACUUM VALVE	MH	MANHOLE
B	BOTTOM	MAX.	MAXIMUM
C.I.	CAST IRON	M.J.	MECHANICAL JOINT
C	CENTERLINE	MIN.	MINIMUM
CMP	CORRUGATED METAL PIPE	OC	OPEN CUT
CO	CLEAN OUT	O.D.	OUTSIDE DIAMETER
CONC.	CONCRETE	P.E.	POLYETHYLENE
CONST.	CONSTRUCT	PROP.	PROPOSED
CPP	CORRUGATED PLASTIC PIPE	PV	PLUG VALVE
D	DRAIN	PVC	POLYVINYL CHLORIDE
DB	DIRECTIONAL BORE	RCP	REINFORCED CONC. PIPE
DIA, Ø	DIAMETER	REINF.	REINFORCE(D)
D.I.	DUCTILE IRON	REQ.	REQUIRED
D.I.P.	DUCTILE IRON PIPE	R.J.	RESTRAINT JOINT
DIST.	DISTURBED	RW	RAW WATER
EL., ELEV.	ELEVATION	SCHED.	SCHEDULE
EOP	EDGE OF PAVEMENT	S.S.	SANITARY SEWER
EX., EXIST.	EXISTING	ST	SEPTIC TANK
FH	FIRE HYDRANT	STL.	STEEL
FLH	FLUSHING HYDRANT	T	TOP
FM	FORCE MAIN	T.B.A.	TO BE ABANDONED
F.V.	FIELD VERIFY	T.B.R.	TO BE REMOVED
FC	FLUSHING CONNECTION	T.R.	TO REMAIN
GAL.	GALLON	TS & V-TAPPING SLEEVE AND VALVE	
GALV	GALVANIZED	Typ.	TYPICAL
GL	GAS LINE	U.N.O.	UNLESS NOTED OTHERWISE
GM	GAS METER	VCP	VITRIFIED CLAY PIPE
GS	GAS SERVICE LINE	VERT.	VERTICAL
GV	GATE VALVE	VV	VALVE VAULT
HDPE	HIGH-DENSITY POLYETHYLENE	W	WATER LINE
I.E.	INVERT ELEVATION	WLM	WATER LINE MARKER
INV.	INVERT	WM	WATER METER
KDOH	KENTUCKY DEPARTMENT OF HIGHWAYS	WS	WATER SERVICE LINE
		UE	UNDERGROUND ELECTRIC
LA	LATERAL ASSEMBLY	DB	DIRECTIONAL BORE

UTILITIES

<u>TELEPHONE :</u> WINDSTREAM 719 NORTH MAIN STREET LONDON, KENTUCKY 40741 MR. BOWMAN HAIL PHONE (606) 878-3258	<u>POWER :</u> KENTUCKY UTILITIES 180 SUBSTATION STREET LONDON, KENTUCKY 40741 MR. DAVID OSBORNE PHONE (606) 864-2821 EXT. 13	<u>GAS :</u> DELTA NATURAL GAS 3617 LEXINGTON ROAD WINCHESTER, KENTUCKY 40391 MR. STEVE LEWIS PHONE (859) 744-6171 EXT. 1167
<u>FIBER OPTIC :</u> AT&T 131 AMESBURY AVE. MIDDLESBORO, KENTUCKY 41965 MR. ODELL KEENE PHONE (606) 248-7243	<u>WATER :</u> LONDON UTILITY COMMISSION P.O. BOX 918 801 NORTH MAIN STREET LONDON, KENTUCKY 40743 MR. ZACH CREECH PHONE (606) 864-2103	
<u>CABLE :</u> SPECTRUM 5026 SOUTH HIGHWAY 27 SOMERSET, KENTUCKY 42501 MR. DARRELL NAVE OFFICE (606) 678-9215, EXT. 404 CELL : (606) 271-2501	<u>SANITARY SEWER :</u> LONDON UTILITY COMMISSION P.O. BOX 918 801 NORTH MAIN STREET LONDON, KENTUCKY 40743 MR. ZACH CREECH PHONE (606) 864-2103	

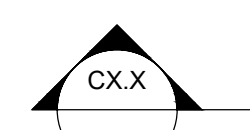
INDEX OF DRAWINGS

L-0	COVER – LOCATION & VICINITY MAPS, INDEX OF DRAWINGS	P-1	ADMINISTRATION/PROCESS BUILDING PLUMBING ENLARGED PLANS
L-1	GENERAL NOTES, ABBREVIATIONS, LEGEND AND UTILITIES	P-2	PLUMBING DETAILS AND SCHEDULES
C-1	PROCESS FLOW SCHEMATIC		
C-2	STANDARD DETAILS	M-1	ADMINISTRATION/PROCESS BUILDING MECHANICAL ENLARGED PLANS
C-3	STANDARD DETAILS	M-2	ADMINISTRATION/PROCESS BUILDING MECHANICAL ENLARGED PLANS
C-4	STANDARD DETAILS	M-3	MECHANICAL SCHEDULES AND DETAILS
C-5	STANDARD DETAILS		
C-6	STANDARD DETAILS		
C-7	STANDARD DETAILS	E-1	ELECTRICAL SYMBOLS
C-8	ADMINISTRATION / PROCESS BUILDING FIRST FLOOR (EAST) – PLAN	E-2	ONE-LINE DIAGRAMS
C-9	ADMINISTRATION / PROCESS BUILDING SECOND FLOOR (EAST) – PLAN	E-3	CONTROL CIRCUITS
C-10	ADMINISTRATION / PROCESS BUILDING SECOND FLOOR (WEST) – PLAN	E-4	ADMINISTRATION/PROCESS BUILDING FIRST FLOOR (EAST) – ELECTRICAL DEMOLITION PLAN
C-11	ADMINISTRATION / PROCESS BUILDING FIRST FLOOR (EAST) – DEMOLITION PLAN	E-5	ADMINISTRATION/PROCESS BUILDING FIRST FLOOR (EAST) – ELECTRICAL PLANS
C-12	ADMINISTRATION / PROCESS BUILDING FIRST FLOOR (EAST) – IMPROVEMENTS PLAN	E-6	ADMINISTRATION/PROCESS BUILDING SECOND FLOOR (EAST) – ELECTRICAL DEMOLITION PLAN
C-13	MIXED OXIDANT GENERATION LEGEND AND SYMBOLS	E-7	ADMINISTRATION/PROCESS BUILDING SECOND FLOOR (EAST) – ELECTRICAL PLANS
C-14	MIXED OXIDANT GENERATION PROCESS AND PIPING DIAGRAM 1	E-8	ADMINISTRATION/PROCESS BUILDING ELECTRICAL ENLARGED PLANS
C-15	MIXED OXIDANT GENERATION PROCESS AND PIPING DIAGRAM 2	E-9	ADMINISTRATION/PROCESS BUILDINGELECTRICAL ENLARGED PLANS
C-16	MIXED OXIDANT GENERATION PROCESS AND PIPING DIAGRAM 3	E-10	FINISHED WATER – VALVE VAULT ELECTRICAL PLANS
C-17	ADMINISTRATION / PROCESS BUILDING GRAVITY FILTERS – PIPE GALLERY – PLAN AND SECTIONS – DEMOLITION	I-1	INSTRUMENTATION SYMBOLS
C-18	ADMINISTRATION / PROCESS BUILDING GRAVITY FILTERS – PIPE GALLERY – PLAN AND SECTIONS – IMPROVEMENTS	I-2	SCADA NETWORK DIAGRAM
C-19	FILTER NO. 5 – PLAN AND SECTIONS	I-3	FILTER 5 PROCESS AND INSTRUMENTATION DIAGRAM
C-20	FINISHED WATER VALVE VAULT IMPROVEMENTS	I-4	I/O SCHEDULES 1
		I-5	I/O SCHEDULES 2
		I-6	INSTRUMENTATION DETAILS 1
		I-7	INSTRUMENTATION DETAILS 2
A-1	ADMINISTRATION / PROCESS BUILDING LABORATORY SECOND FLOOR (EAST) – PLAN AND ELEVATIONS		

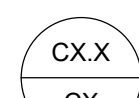
GENERAL NOTES

- | | | | | | |
|-----|--|-----|---|-----|--|
| 1. | MINIMUM COVER OVER PROPOSED WATER AND SANITARY SEWER LINES SHALL BE 36". UNDERNEATH PROPOSED DITCHES SHALL BE 42" MIN. | 15. | MAPPING AND ELEVATION DATA IS BASED ON USGS CONTOURING AND/OR OBTAINED ELEVATIONS ON NAVD 88. | 29. | PRESSURE PIPING SHALL BE PLACED USING UNIFORM SLOPE EXCEPT WHERE NECESSARY TO AVOID EXISTING PIPING. THE CONTRACTOR SHALL EXPOSE EXISTING PIPING TO VERIFY ELEVATION(S) PRIOR TO PLACEMENT OF NEW PIPING. CONTACT ENGINEER PRIOR TO NEW PIPE PLACEMENT FOR APPROVAL OF PROPOSED DEVIATION INSTANCES. HORIZONTAL AND VERTICAL ALIGNMENT OF PIPING TO REMAIN CONSTANT UNLESS APPROVED BY ENGINEER. |
| 2. | MINIMUM COVER OVER VALVE NUT TO BE 12". MAXIMUM COVER OVER VALVE NUTS TO BE 48". WHERE VALVES ARE BURIED DEEPER THAN 48", A 3/4" OR 1" SOLID STEEL VALVE OPERATING NUT EXTENSION SHALL BE REQUIRED AND SECURED TO VALVE OPERATING NUT. | 16. | PROPERTY LINE AND RIGHT-OF-WAY INFORMATION WAS TAKEN FROM THE COUNTY PVA UNLESS NOTED OTHERWISE. | 30. | PIPE TRENCHES IN ROADS SHALL BE BACKFILLED WITH NO. 9 CRUSHED STONE COMPACTED IN 6" LIFTS. |
| 3. | CONTRACTOR SHALL HAVE THE OWNER'S PERSONNEL ON SITE WHEN DIGGING OVER OR AROUND THE OWNER'S UTILITY LINES. CONTRACTOR SHALL SCHEDULE EXCAVATION WITH RESIDENT OBSERVER. | 17. | EXCAVATION IS UNCLASSIFIED; NO SEPARATE PAYMENT SHALL BE MADE FOR ROCK REMOVAL. | 31. | ALL PIPING SHALL BE TESTED IN ACCORDANCE WITH THE SPECIFICATIONS. |
| 4. | EXACT SIZES, DEPTHS, MATERIALS AND LOCATIONS OF EXISTING UTILITIES ARE UNKNOWN. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT LOCATION OF THESE FAR ENOUGH IN ADVANCE OF THE PIPELINE OPERATION SO AS NOT TO CAUSE ANY UNNECESSARY DELAYS. RELOCATION OF EXISTING UTILITIES FOUND TO BE IN DIRECT CONFLICT AND UNAVOIDABLE PER THE ENGINEER'S DISCRETION WITH THIS CONTRACT SHALL BE ACCOMPLISHED BY THE OWNER OF THE UTILITIES INVOLVED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING UTILITY COMPANIES HAVING UTILITIES IN THE AREA PRIOR TO EXCAVATION. CONTINUOUS COMMUNICATIONS ON A DAY TO DAY BASIS WILL BE REQUIRED. THE UTILITY COMPANIES ARE LISTED BELOW. | 18. | THE CONTRACTOR SHALL MAINTAIN CONTINUOUS ACCESS TO ALL COMMERCIAL ESTABLISHMENTS AND RESIDENTIAL DWELLINGS. | 32. | SEQUENCING OF CONSTRUCTION AND START UP TO BE COORDINATED WITH ENGINEER TO ENSURE:

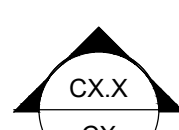
OPERATION OF EXISTING FACILITIES DURING CONSTRUCTION. |
| 5. | KENTUCKY STATUTES (KRS 367.4901 THRU 367.4917) REQUIRE THAT ALL EXCAVATORS PLANNING EXCAVATION OR DEMOLITION WORK SHALL CALL ALL UTILITY COMPANIES IN THE AREA AND AN UNDERGROUND PROTECTION SERVICE SUCH AS "BUD" (1-800-752-6007) AT LEAST TWO (2) WORKING DAYS BEFORE COMMENCING WORK TO NOTIFY UTILITY COMPANIES IN THE AREA WITH UNDERGROUND UTILITIES OF THE PLANNED EXCAVATION OR DEMOLITION ACTIVITIES. | 19. | BENCHMARKS/CONTROL POINTS ARE SHOWN ON THE PLANS. THE CONTRACTOR SHALL USE THESE POINTS FOR LAYOUT OF THE PROPOSED WORK IN COORDINATION WITH THE ENGINEER. | 33. | ALL GRAVITY LINES TO BE CONSTRUCTED BY LASER ACCORDING TO GRADES SET BY MH SCHEDULE, OR AS LISTED. |
| 6. | FITTINGS SHALL BE RESTRAINED JOINT (RJ) WHERE NOTED ON PLANS. | 20. | NO SEPARATE PAY ITEM HAS BEEN ESTABLISHED FOR FITTINGS AND NO DETERMINATION OF THE NUMBER OF FITTINGS REQUIRED ON THE JOB HAS BEEN MADE. THE CONTRACTOR, DURING THE BIDDING PHASE, SHALL DETERMINE THE NUMBER OF FITTINGS REQUIRED ON THE JOB AND INCLUDE THE COST OF THE FITTINGS AND INSTALLATION IN THE CONTRACT UNIT PRICE PER LF OF PIPE. | 34. | THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION/COORDINATION/PENETRATIONS AND OPENINGS (WITH ALL TRADES AND MANUFACTURERS). |
| 7. | WHEREVER POSSIBLE, FIRE HYDRANTS SHALL BE LOCATED FOR MINIMUM DEPTH OF BURY. EXTENSIONS SHALL BE REQUIRED FOR DEEPER INSTALLATIONS. | 21. | SILT CHECKS/FENCES SHALL BE PROVIDED TO PREVENT SEDIMENT RUNOFF FROM ENTERING DRAINAGE SYSTEMS. SILT CHECKS SHALL BE INSTALLED PER SPECS. | 35. | ADDRESS OF WATER TREATMENT PLANT:
1036 WATERWORKS ROAD
LONDON, KY 40741 |
| 8. | ALL TIE-IN LOCATIONS SHALL BE UNCOVERED PRIOR TO CONSTRUCTION TO MAINTAIN PROPER ALIGNMENT AND ELEVATION OF NEW CONNECTIONS. | 22. | CONTRACTOR SHALL REPAIR OR REPLACE AREAS OF ROADS AND DRIVEWAYS DAMAGED DURING CONSTRUCTION. | | |
| 9. | CONTRACTOR SHALL INVENTORY REQUIRED MATERIALS, TRENCH DEWATERING EQUIPMENT, AND ASSEMBLE IF NECESSARY ALL REQUIRED FITTINGS PRIOR TO CUT-INS SO TO ENSURE MINIMUM DOWN TIME FOR CONNECTION. | 23. | ALL NON-PAVED DISTURBED AREAS SHALL BE REVEGETATED AFTER WORK IN THE IMMEDIATE VICINITY HAS BEEN COMPLETED IN ACCORDANCE WITH THE SPECIFICATIONS. REVEGETATION SHALL BE COMPLETED NO LATER THAN TWO (2) WEEKS FOLLOWING COMPLETION OF WORK IN THE IMMEDIATE VICINITY. | | |
| 10. | SURFACE DRAINAGE SHALL BE MAINTAINED ON A DAY-BY-DAY BASIS. | 24. | ANY ADJUSTMENT OR RELOCATIONS OF EXISTING UTILITIES, OUTSIDE THE SCOPE OF THIS WORK SHALL BE PERFORMED BY OTHERS. THE CONTRACTOR SHALL TAKE SPECIAL CARE TO PROTECT EXISTING UTILITIES TO THE MAXIMUM EXTENT PRACTICABLE. THE CONTRACTOR SHALL COORDINATE WORK WITH THE OWNER TO MINIMIZE DISRUPTION OF EXISTING SERVICES. THE CONTRACTOR SHALL NOTIFY THE OWNER AND ENGINEER 2 DAYS IN ADVANCE OF ANY WORK WHICH REQUIRES EXISTING UTILITIES TO BE TAKEN OUT OF SERVICE. | | |
| 11. | THE CONTRACTOR WILL BE REQUIRED TO DISPOSE OF OR REGRADE ALL EXCESS EXCAVATED MATERIAL FROM WATER LINE AND SERVICE LINE CONSTRUCTION THAT IS NOT PERMITTED TO BE BACKFILLED OVER THE PIPE. | 25. | MUD, SEDIMENT, AND OTHER CONSTRUCTION DEBRIS TRACKED FROM ACTIVE CONSTRUCTION AREAS ONTO ROADWAYS ARE TO BE SWEEPED FROM THE ROADWAY AT THE END OF EACH WORK DAY. | | |
| 12. | EXCAVATION IN ALL STREETS, DRIVEWAYS AND PAVED PARKING AREAS SHALL BE BACKFILLED PER THE SPECIFIED TOP OF TRENCH SURFACE. | 26. | BOUNDARY SURVEYS WERE PERFORMED BY OTHERS. | | |
| 13. | ALL ROCKS, EARTH CLODS AND OTHER LARGE MATERIAL SHALL BE | 27. | PROVIDE STEPS IN SIDEWALKS WHERE SURFACE SLOPES WOULD EXCEED 5% WITHOUT STEPS. SEE STANDARD DETAIL. | | |
| | | 28. | NOTE: PIPING INDICATED ON SITE PLAN(S) IS TO AN EXTENT SCHEMATIC IN NATURE. PIPING INDICATED MAY REQUIRE SHIFTING TO AVOID CONFLICT WITH EXISTING PIPING, UTILITIES AND/OR SITE FEATURES. FITTINGS ARE NOT SHOWN - THE CONTRACTOR SHALL PROVIDE ALL FITTINGS REQUIRED (INCLUDING FITTINGS REQUIRED TO TRANSITION OVER NEW AND EXISTING PIPING. | | |



SECTION



DETAIL

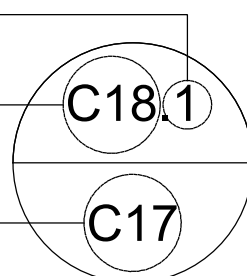


ELEVATION

the INDIVIDUAL NUMBER of each
detail, elevation or section
(WITHIN THE SHEET IT IS DRAWN ON)

the SHEET NUMBER detail, elevation
or section is DRAWN on _____

the SHEET NUMBER detail,
elevation or section is CUT,
INDICATED or CALLED OUT on



DETAIL, ELEVATION AND SECTION NOMENCLATURE



SCALE:	N/A	REVISION:	BY:	DATE:
DESIGNED BY:	ARR			
DRAWN BY:	CMB			
CHECKED BY:	ARR			
PROJECT NO:	19008			
DATE:	OCTOBER 2024			
CAD DWG ID:	19008 LONDON UTILITY.			

LONDON UTILITY
COMMISSION
P.O. BOX 918
801 N. MAIN STREET
LONDON, KENTUCKY 40741

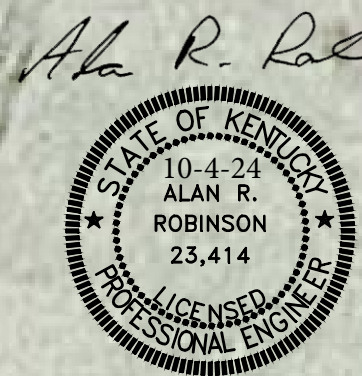
INGS, GENERAL NOTES, ABBREVIATIONS LEGEND AND UTILITIES

LONDON WATER TREATMENT PLANT IMPROVEMENTS



KEYNOTES:

- ① 4-INCH PVC SDR35 TO EXTEND TO EX. MANHOLE WITH CLEANOUT
- ② 8' DIA. BRINE TANK
- ③ 12'X11' 12-INCH THICK CONCRETE EQUIPMENT PAD, EL=1269.00, PLACED UPON 6-INCH OF NO.57 CRUSHED STONE.
- ④ 2"W TO BRINE SILO
- ⑤ 2" BRINE FROM BRINE SILO



ECLIPSE ENGINEERS, PLLC

113 WEST MT. VERNON STREET
KANSAS, MISSOURI 64501
PHONE: 800-451-0959

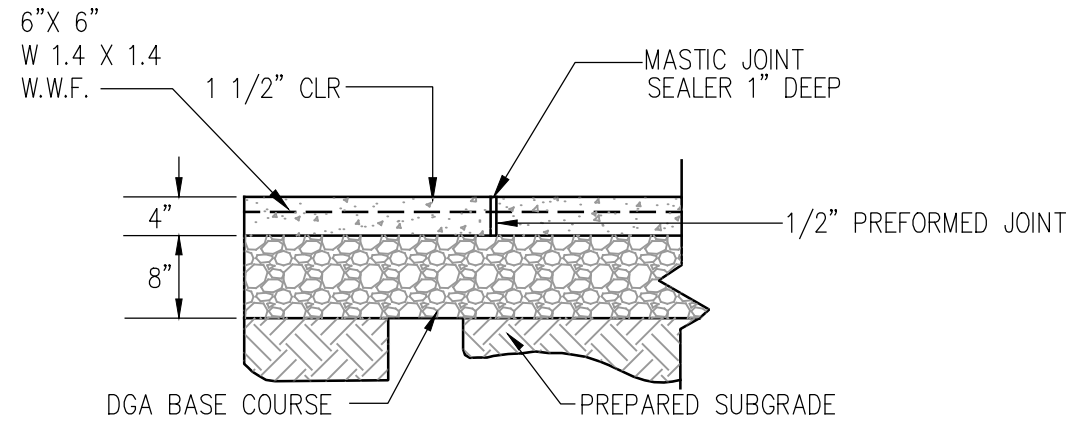
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1" = 30'	ARR			
DRAWN BY:	WBD			
CHECKED BY:	ARR			
PROJECT NO:	19008			
DATE:	OCTOBER 2024			
CAD DWG ID:	JOB 19008 WTP SITE			

LONDON UTILITY
COMMISSION
P.O. BOX 918
801 N. MAIN STREET
LONDON, KENTUCKY 40741

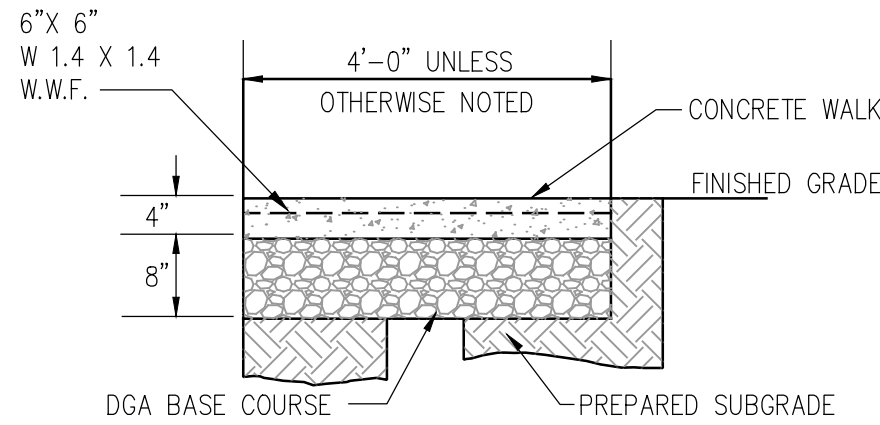
SITE PLAN IMPROVEMENTS

LONDON WATER TREATMENT PLANT IMPROVEMENTS

SHEET NUMBER:
C-2



LONGITUDINAL SECTION



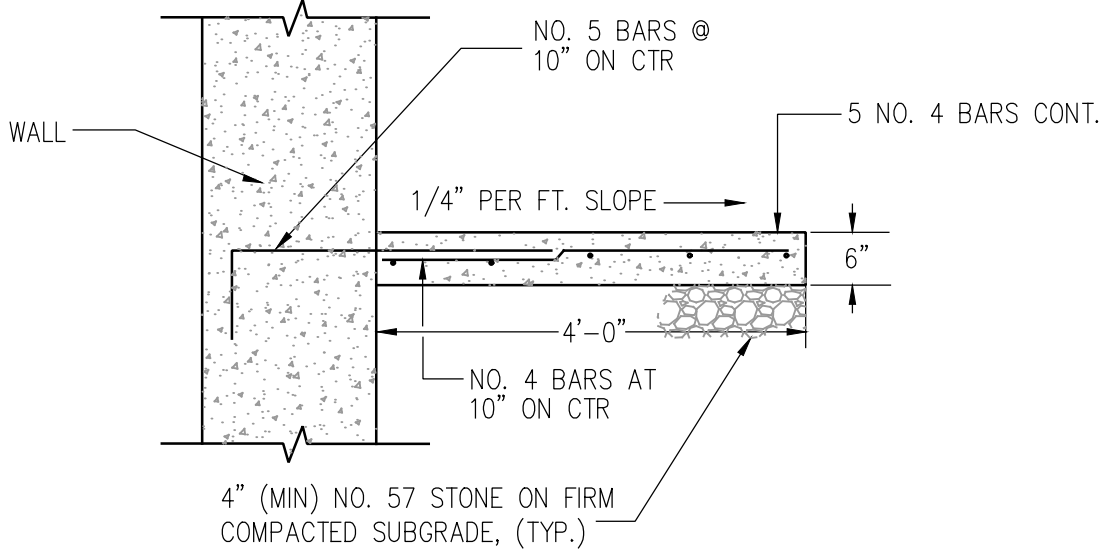
TRANSVERSE SECTION

- NOTES:
- EXPANSION JOINTS TO BE 25'-0" MAX. C-C.
 - SCORE AT 5'-0" INTERVALS

CONCRETE SIDEWALK

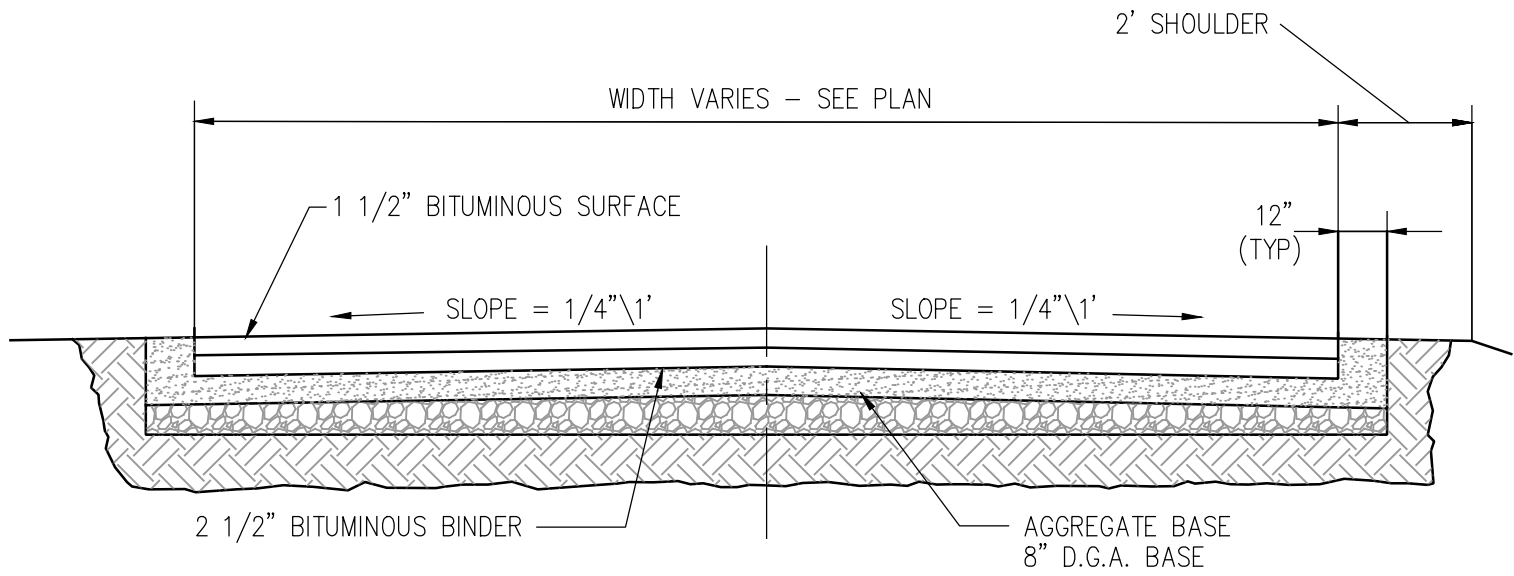
NOT TO SCALE

NOTE:
CONTRACTOR SHALL HAVE THE OPTION TO USE
DOWEL BAR REPLACEMENTS IN PLACE OF THE
NO. 5 DWLS. DBRS NEED TO PROVIDE 125.
THE SPECIFIED YIELD STRENGTH OF GRADE 60
REINFORCING BARS.



CONCRETE SIDEWALK AT STRUCTURES

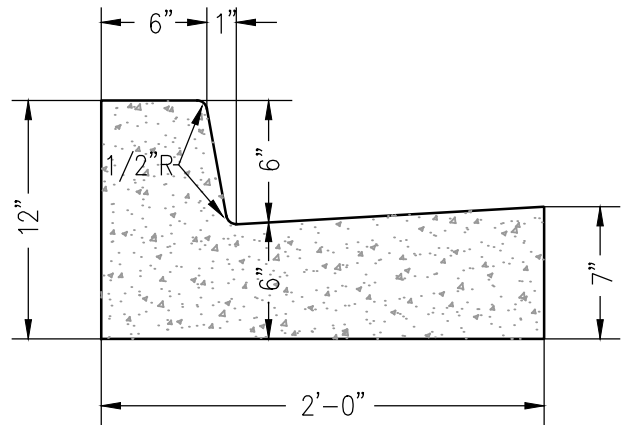
NOT TO SCALE



- NOTES:
- SUBGRADE - COMPACT TOP 10" AT 95% PROCTOR
 - SUBGRADE - FILL BELOW TOP 10" IN 5" LIFTS AT 95% COMPACTION PER AASHTO-180-D

TYPICAL ASPHALT ROAD SECTION

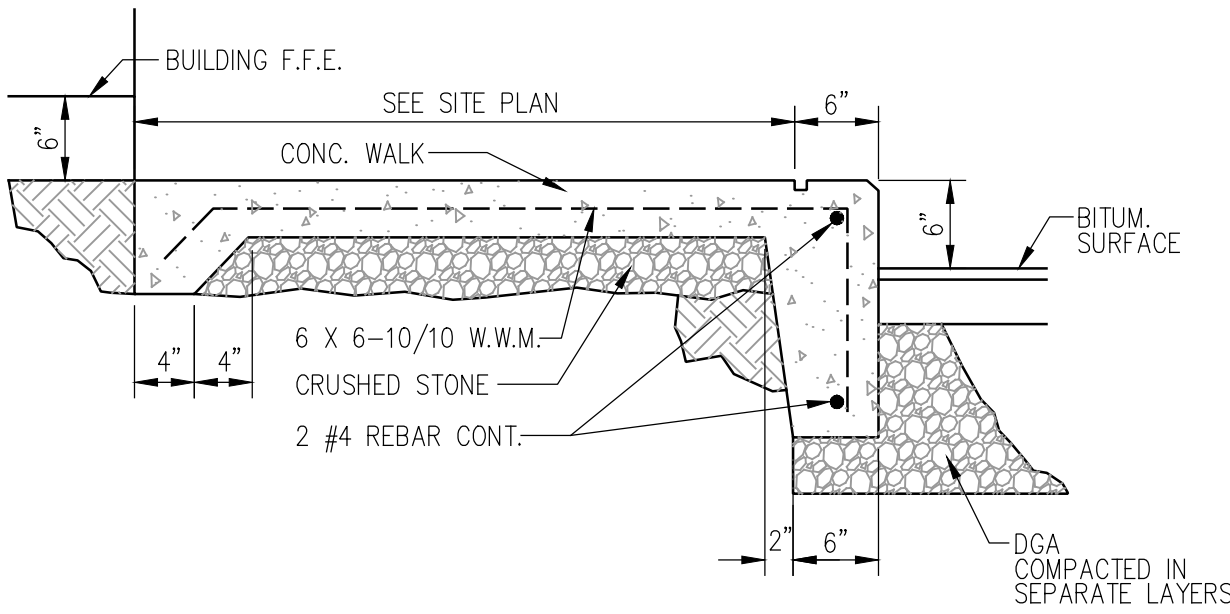
NOT TO SCALE



- CONCRETE SHALL BE CLASS "A" WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4500 P.S.I.
- ALL CONCRETE SHALL BE CURED WITH WHITE PIGMENTED MEMBRANE CURING COMPOUND (AASHTO M 148, TYPE 2)
- SAWED CONSTRUCTION JOINTS SHALL BE CUT EVERY 20 FEET.
- EXPANSION JOINTS SHALL BE CONSTRUCTED AT ALL BREAKS IN ALIGNMENT, AT ALL DRAINAGE INLETS, AT THE BEGINNING AND ENDING POINTS OF CURVES, AND NOT TO EXCEED 300' MAXIMUM SPACING.

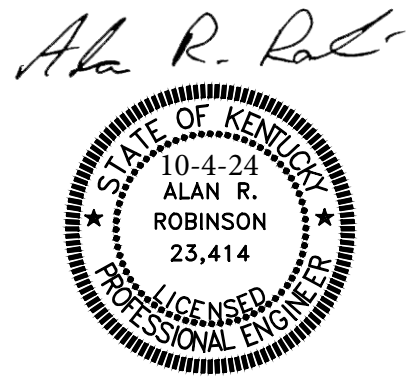
TYPICAL CONCRETE CURB

NOT TO SCALE

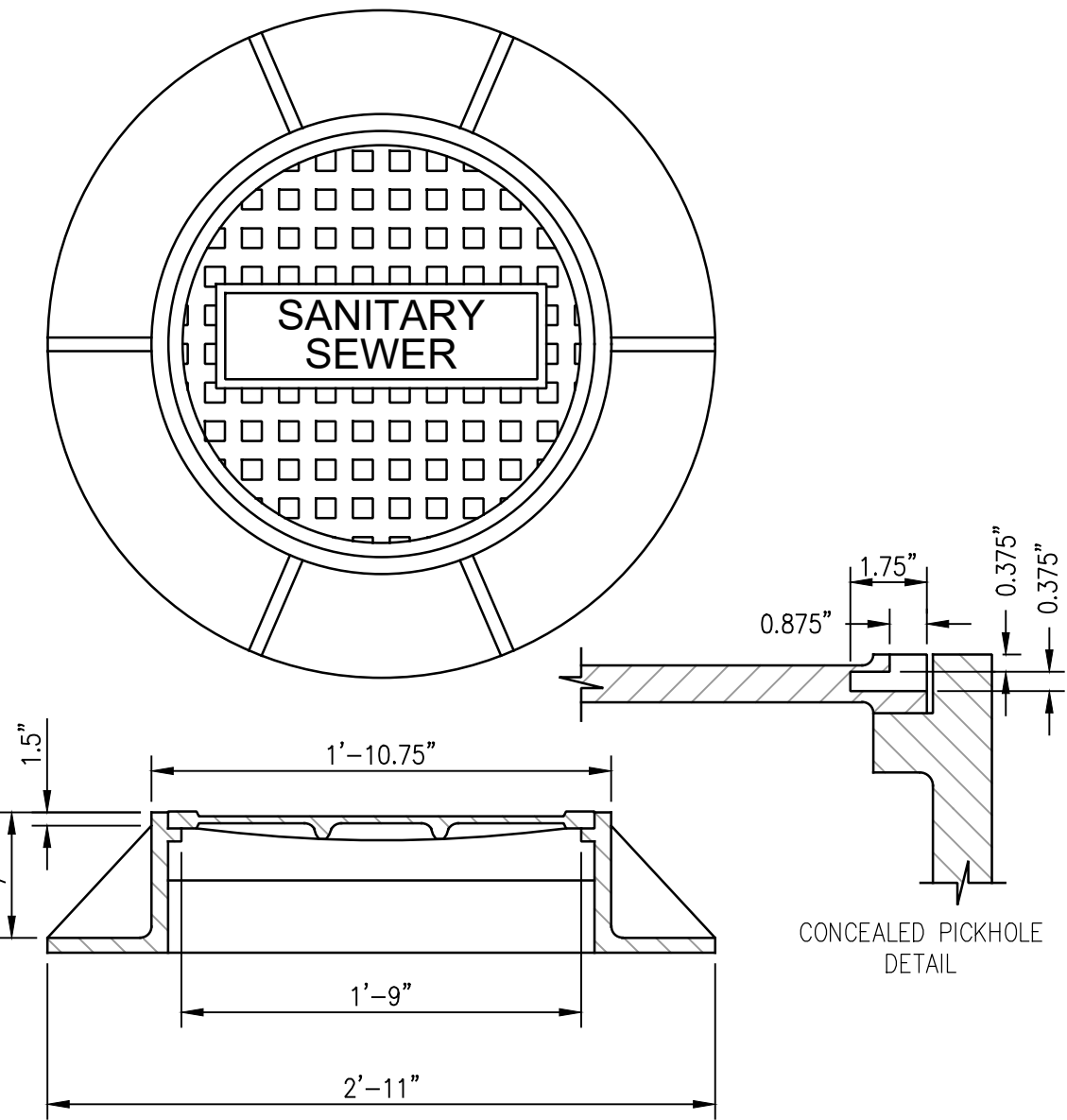


DETAIL - INTEGRAL WALK AND CURB

NOT TO SCALE

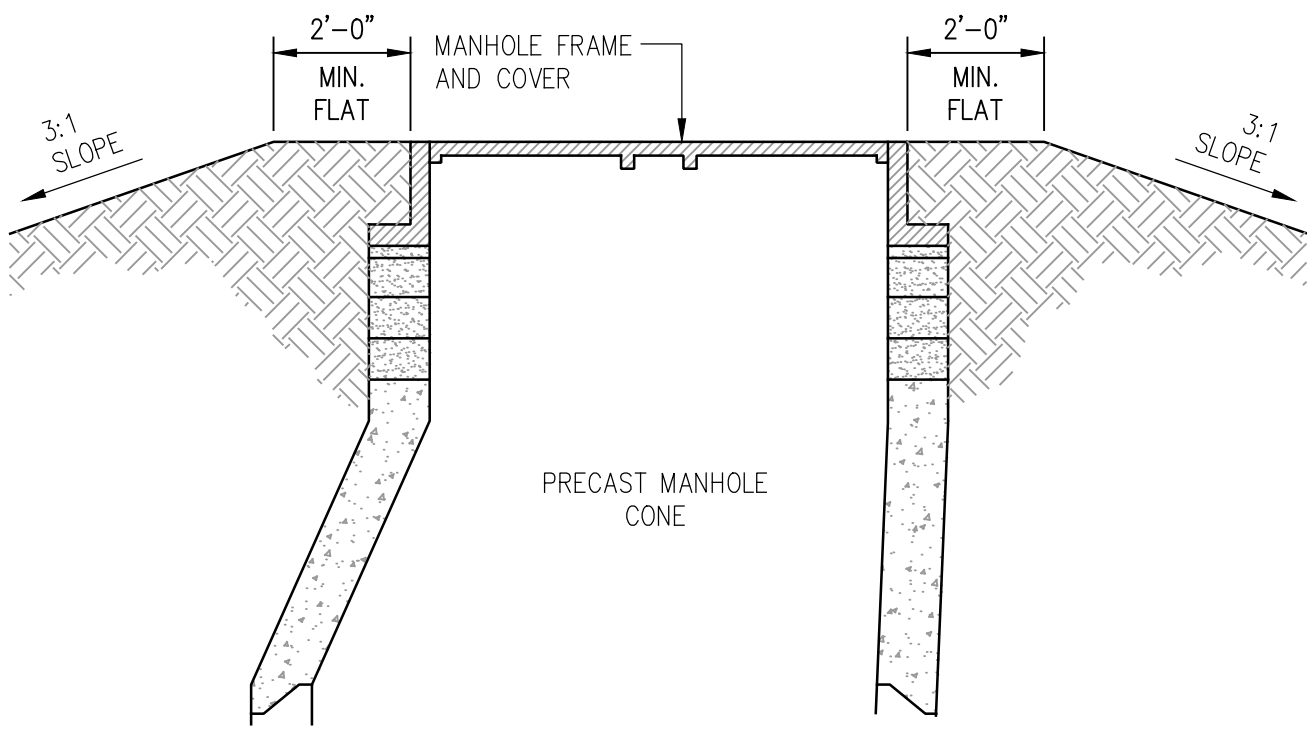


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AS SHOWN	ARR	WBD	ARR	19008	OCTOBER 2024	19008 LONDON UTILITY...
REVISION:	BY:	DATE:				



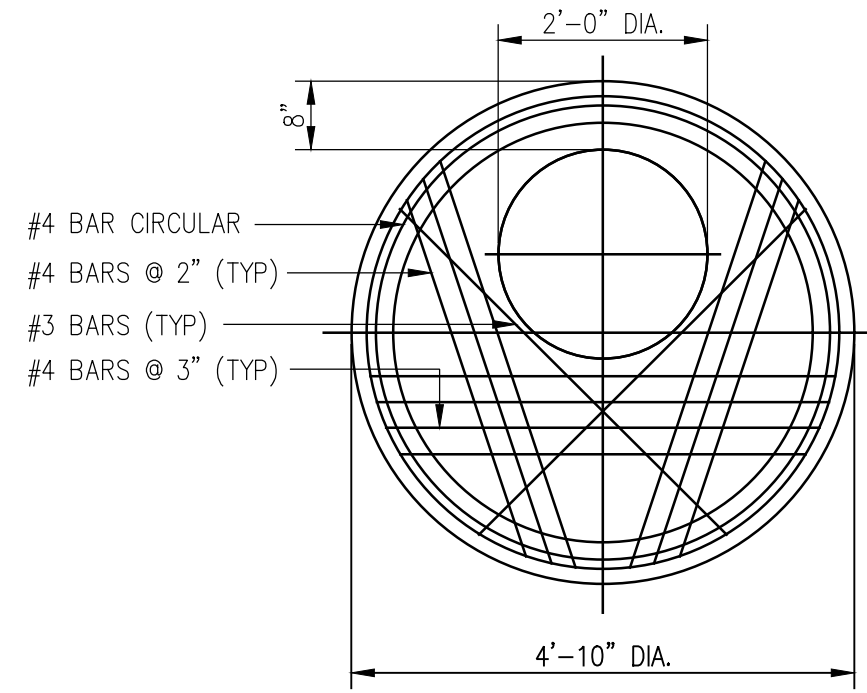
DETAIL - MANHOLE FRAME AND COVER

NOT TO SCALE



DETAIL - EARTH MOUND 3:1 SLOPE

NOT TO SCALE

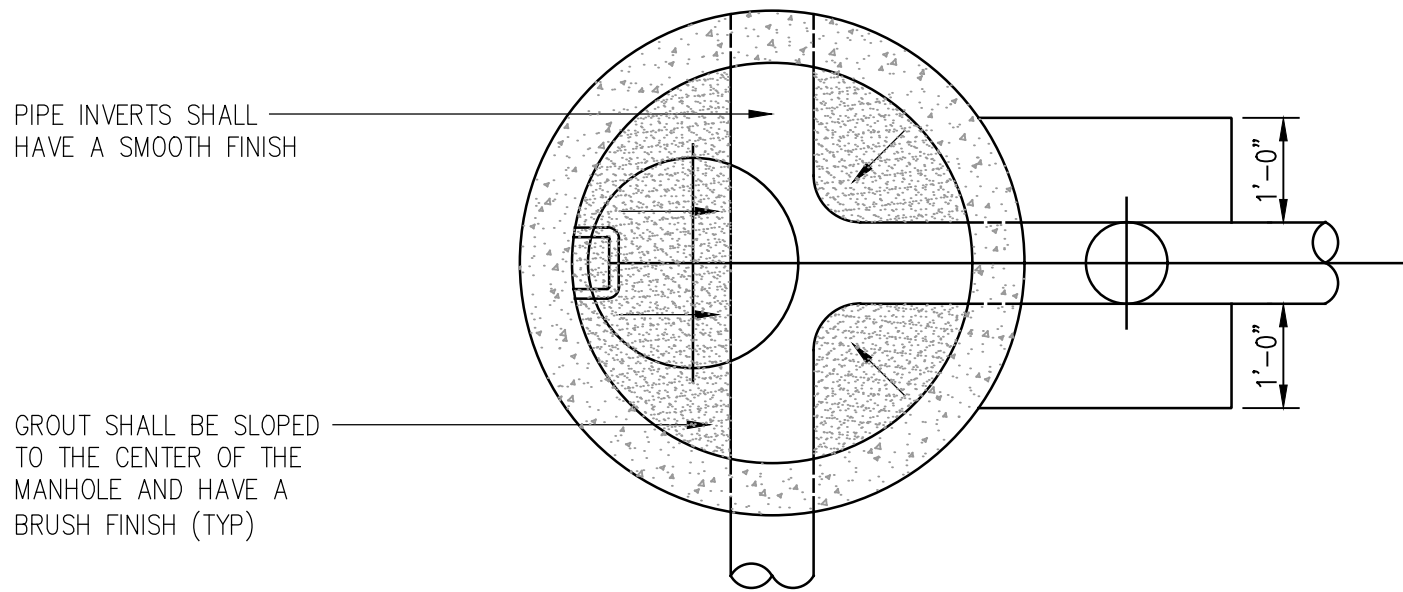


DETAIL - CONCRETE TOP SLAB

NOT TO SCALE

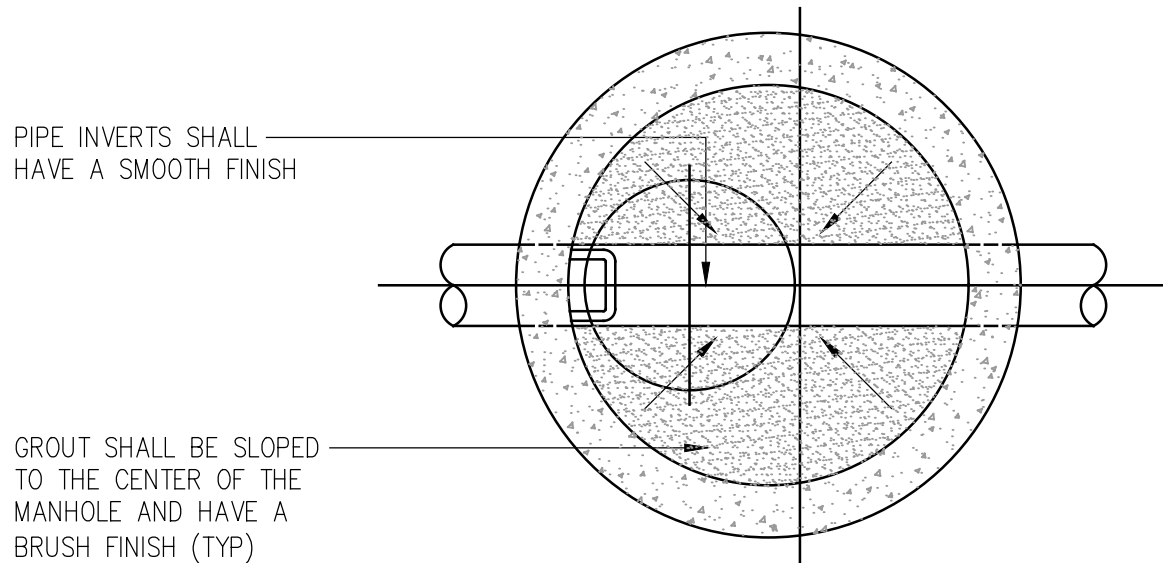
NOTES FOR ALL MANHOLE TYPES:

- MANHOLES 5 FEET OR LESS IN DEPTH (RIM TO INVERT) SHALL HAVE A FLAT TOP SLAB IN LIEU OF AN ECCENTRIC CONE SECTION (SEE SHALLOW MANHOLE DETAIL).
- COAT OUTSIDE OF ADJUSTING RINGS WITH ASPHALT DAMPROOFING COMPOUND APPLIED BY BRUSHING OR SPRAY.
- PROVIDE A MINIMUM FALL OF 0.1 FOOT FROM DROP INLET TO MANHOLE OUTLET.
- MANHOLE STEPS SHALL BE ALIGNED WITH STRAIGHT SIDE OF ECCENTRIC CONE SECTION, AND ALIGNED OVER THE OUTLET PIPE.
- MANHOLE STEPS SHALL BE POLYETHYLENE W/ REBAR REINFORCEMENT AND EMBEDDED MINIMUM 1-3/8" BEYOND STEEL MAT (MINIMUM DEPTH INTO CONCRETE SHALL BE 3-3/8").
- MANHOLE CASTING TO BE SET IN FULL MORTAR BED.
- ALL SEAMS AND ANY LIFTING HOLES SHALL BE GROUTED IN.



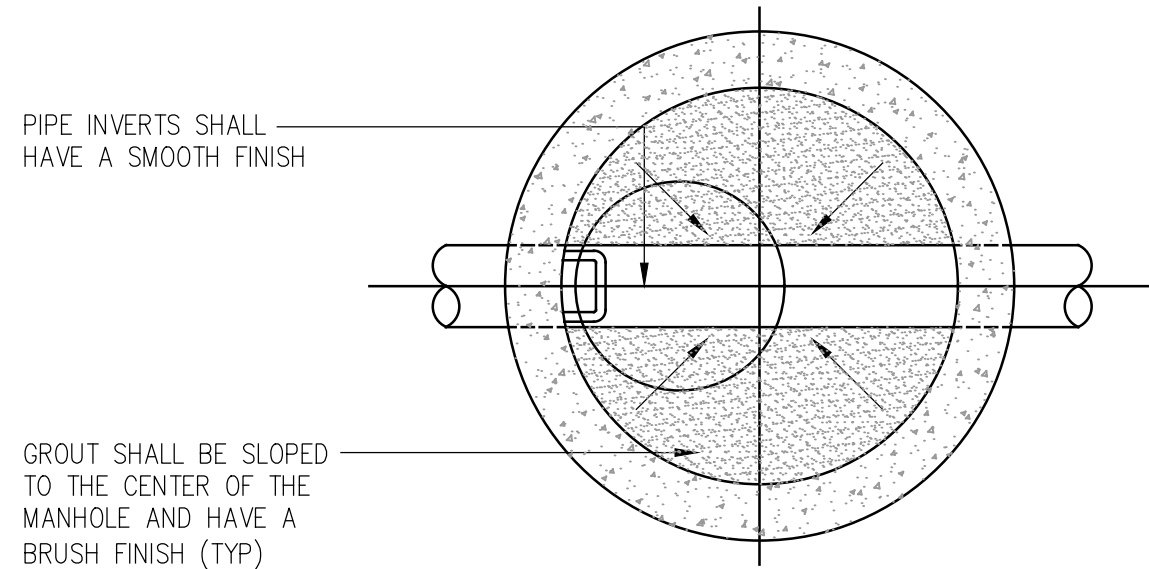
PLAN - DROP MANHOLE

NOT TO SCALE



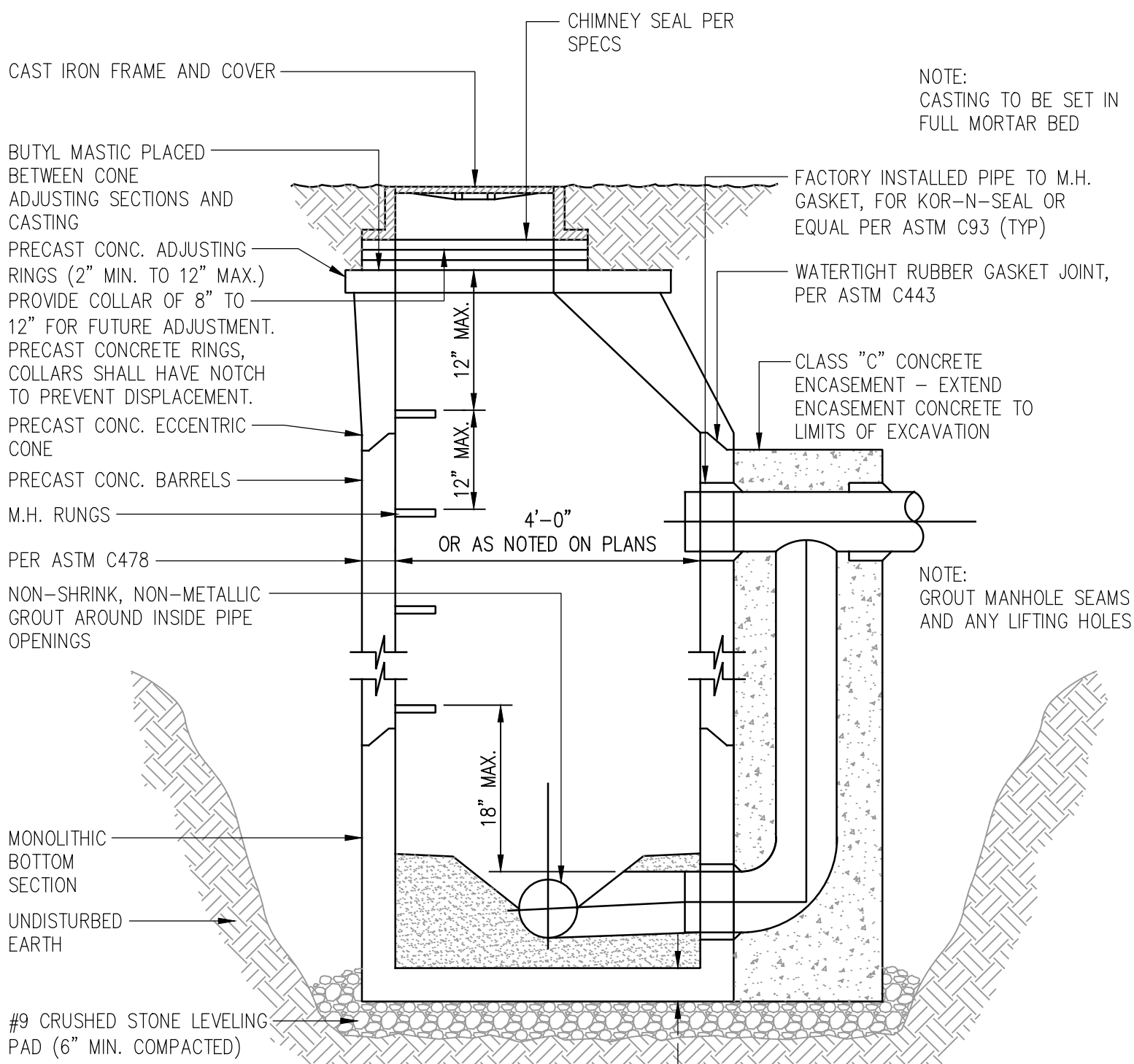
PLAN - SHALLOW MANHOLE

NOT TO SCALE



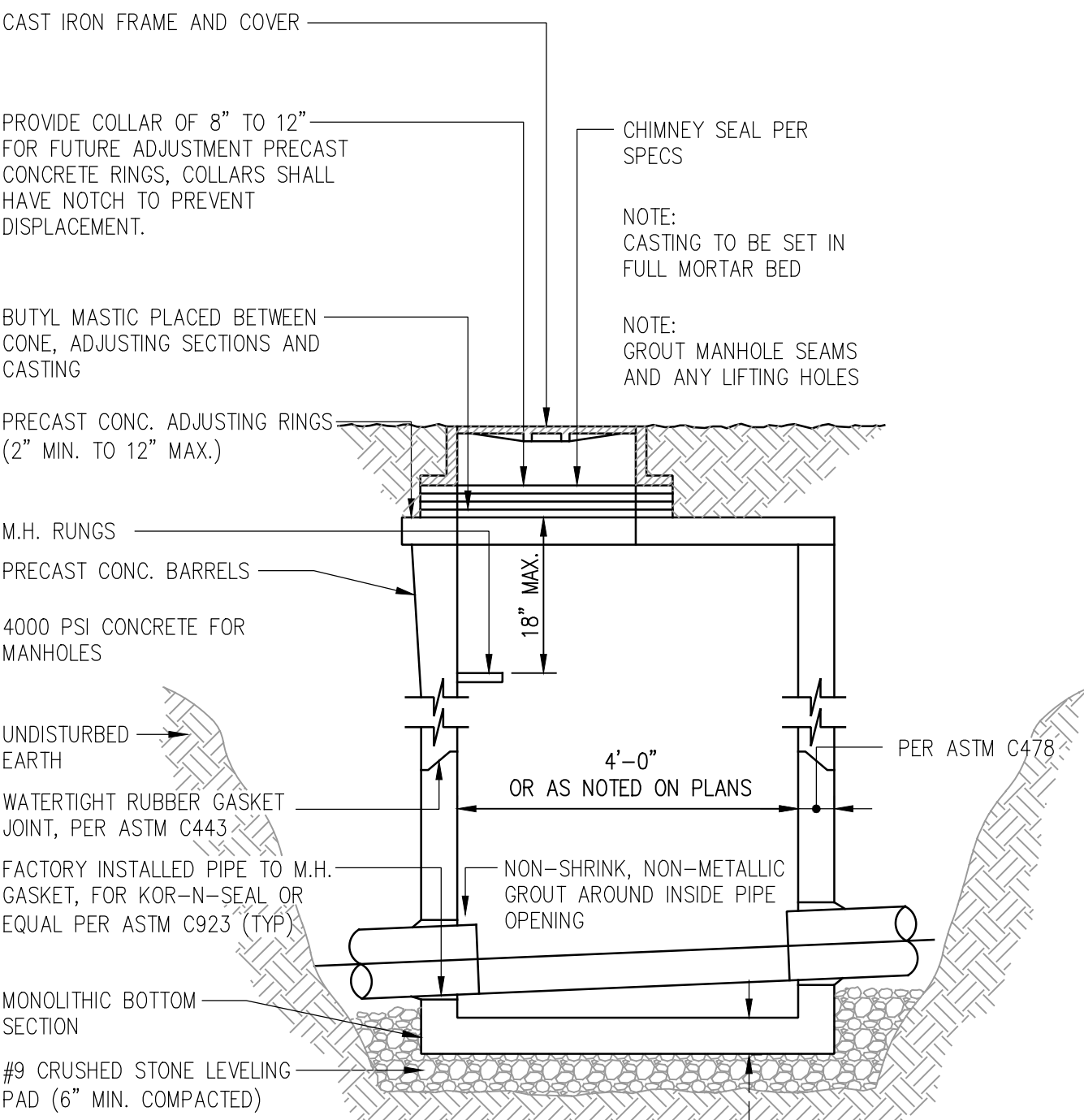
PLAN - STANDARD MANHOLE

NOT TO SCALE



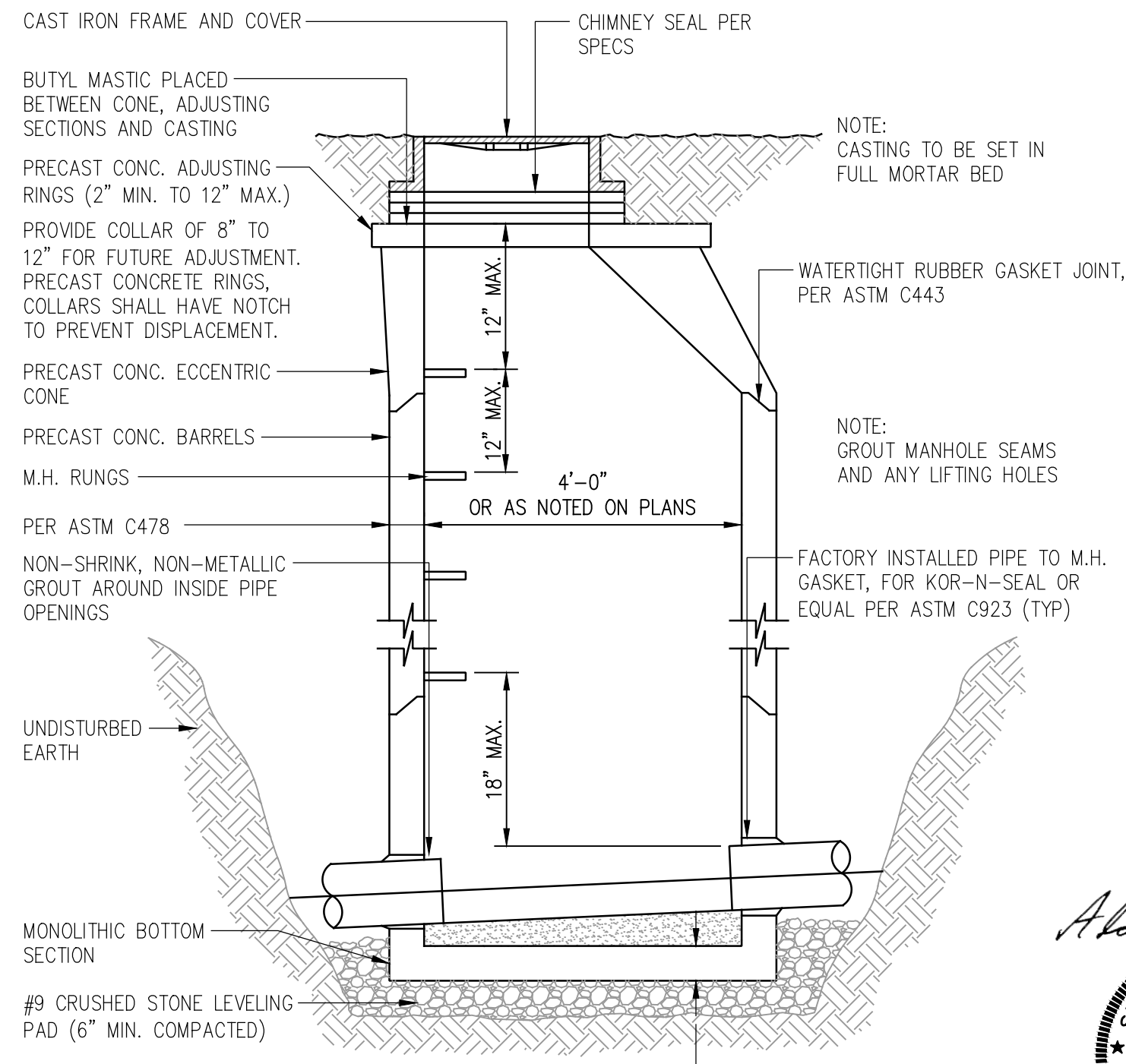
SECTION - DROP MANHOLE

NOT TO SCALE



SECTION - SHALLOW MANHOLE

NOT TO SCALE



SECTION - STANDARD MANHOLE

NOT TO SCALE

ECLIPSE ENGINEERS, PLLC

113 WEST MT. VERNON STREET
SOMERSET, KENTUCKY 40501
PHONE: 606-451-0555

DATE:

BY:

REVISION:

AS SHOWN

ARR

WBD

ARR

19008

DATE:

CAD DWG ID: 19008 LONDON UTILITY...

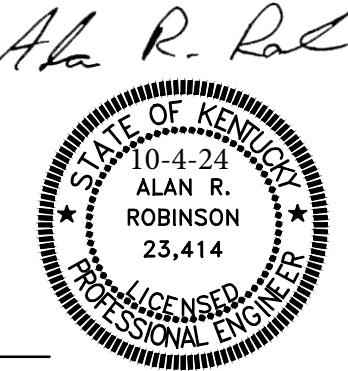
LONDON UTILITY
COMMISSION
P.O. BOX 918
801 N. MAIN STREET
LONDON, KENTUCKY 40741

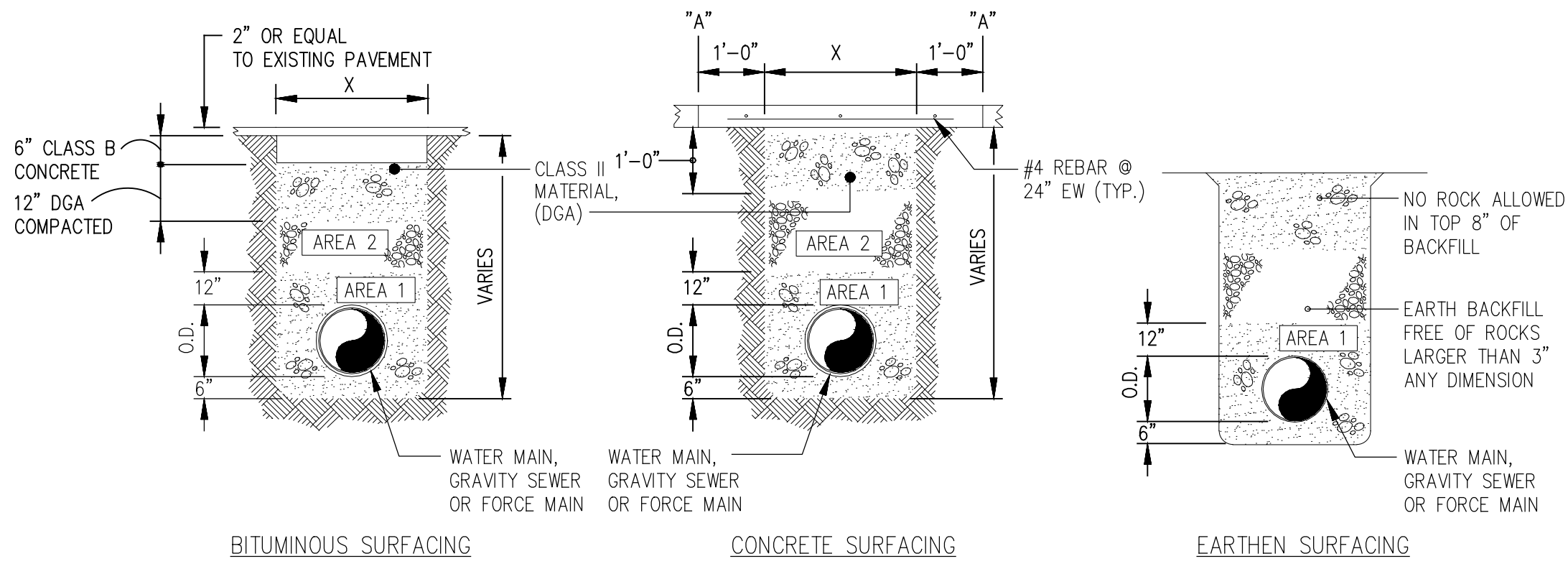
STANDARD DETAILS

LONDON WATER TREATMENT PLANT IMPROVEMENTS

SHEET NUMBER:

C-4

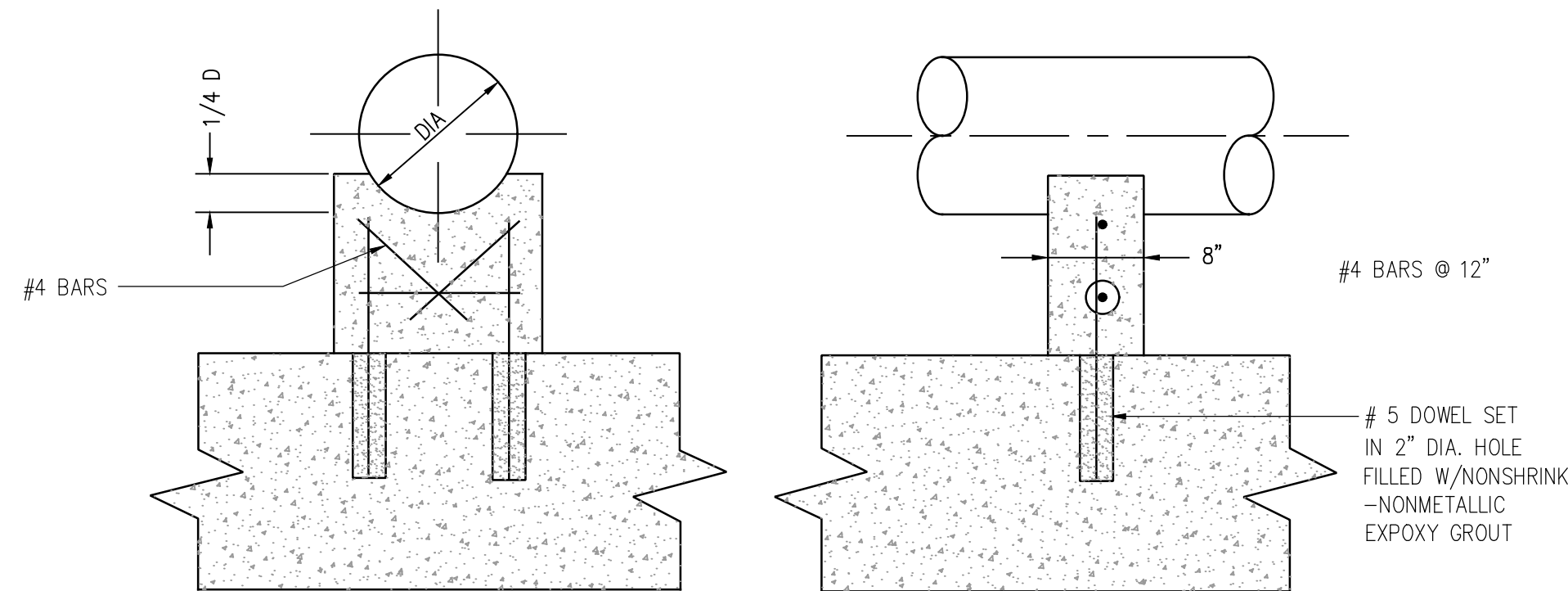




- NOTES:
- AREA 1 MATERIAL: WATER MAIN, GRAVITY SEWER AND FORCE MAIN = NO. 9 CRUSHED STONE.
 - AREA 2 = NO. 9 CRUSHED STONE. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE TRENCH SURFACE IN A CONDITION SUITABLE FOR VEHICULAR TRAFFIC.
 - REPLACE BITUMINOUS PAVEMENT WITH SAME TYPE AND THICKNESS (2" MIN.) AS EXISTING PAVEMENT.
 - IF ROCK IS ENCOUNTERED, A MINIMUM OF 6" NO. 9 CRUSHED STONE MUST BE PLACED UNDER THE ENCASEMENT PIPE (IF OPEN CUT).
 - X = MAX. WIDTH OF TRENCH AT SURFACE UNDER NORMAL CONDITIONS (2' + PIPE O.D.).
 - FROM POINTS "A" TO NEAREST JOINT OR BREAK IN PAVEMENT MUST BE AT LEAST SIX (6) FEET OR MORE, IF LESS THAN SIX (6) FEET REMOVE PAVEMENT TO JOINT OR BREAK AND REPLACE ENTIRE SLAB.

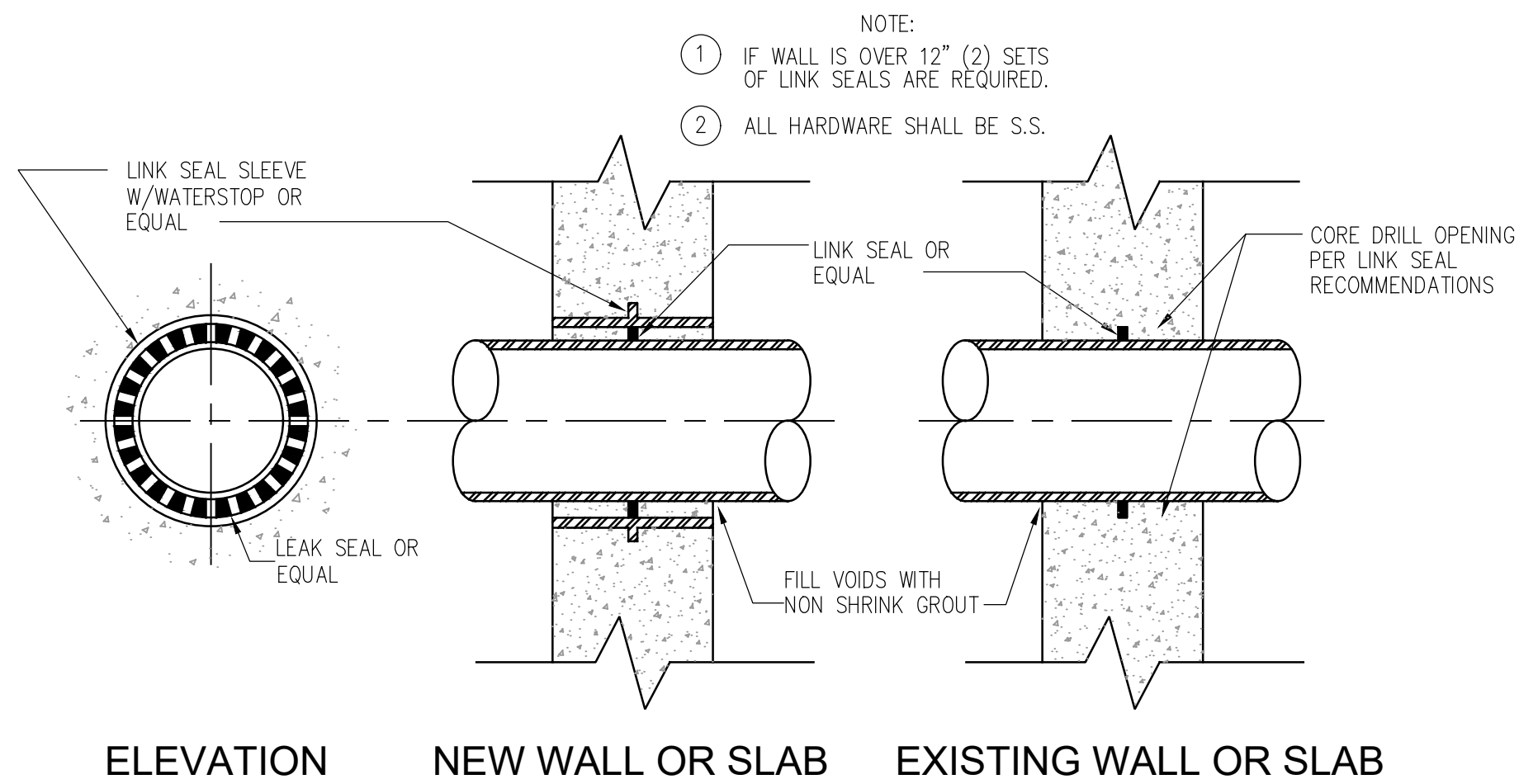
PIPE BEDDING AND BACKFILLING

NOT TO SCALE



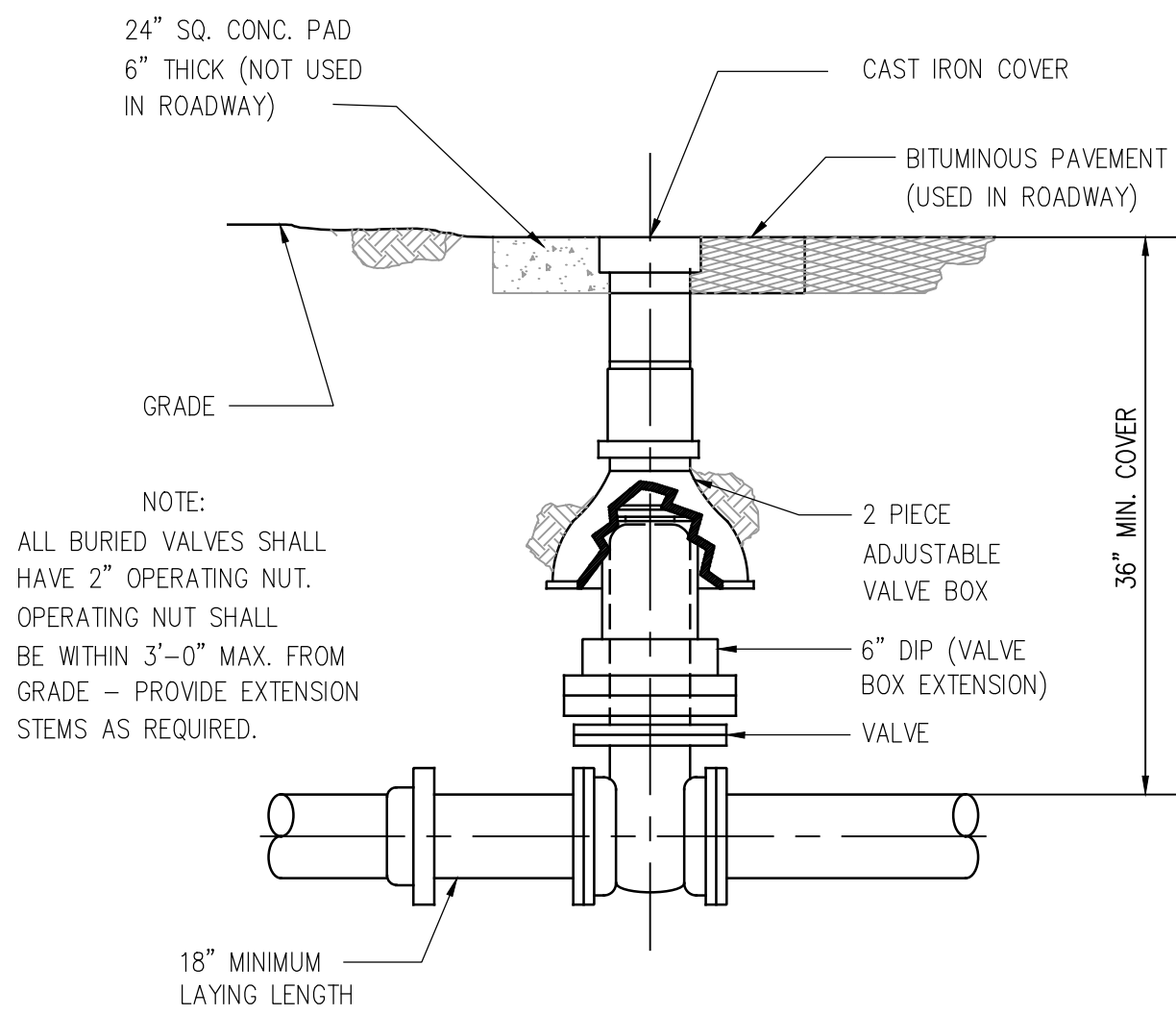
PIPE SUPPORT

NOT TO SCALE



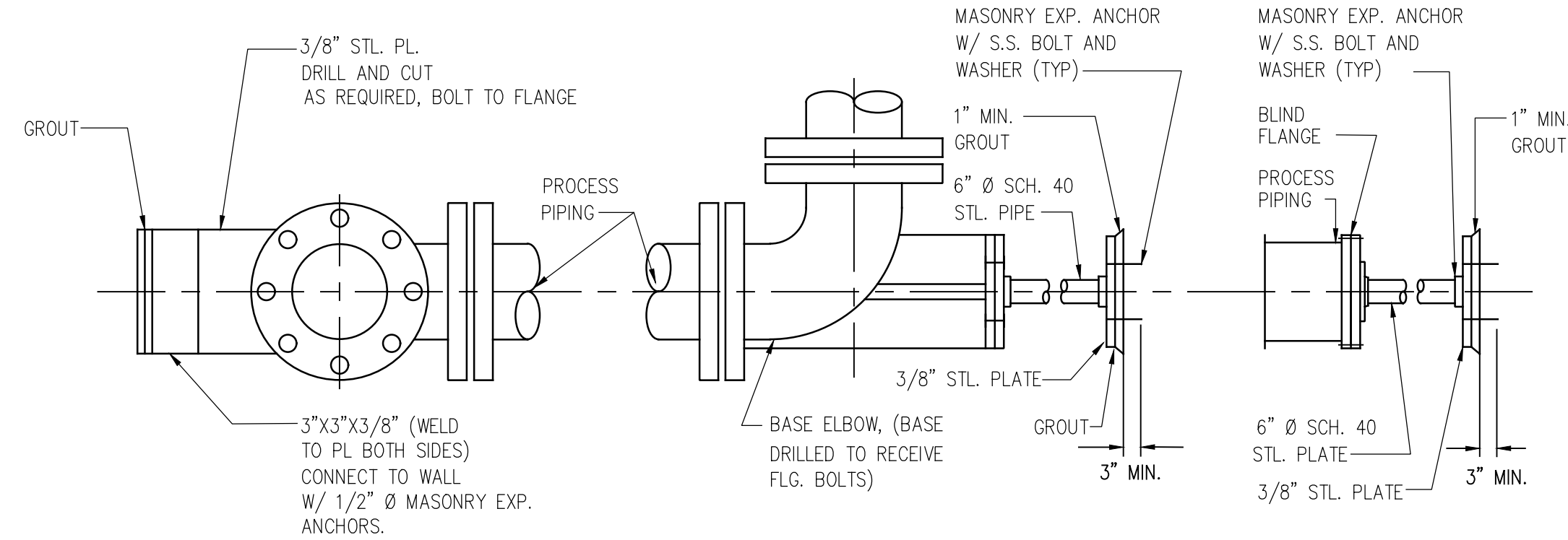
LINK SEAL TYPE WALL / SLAB PENETRATION

NOT TO SCALE



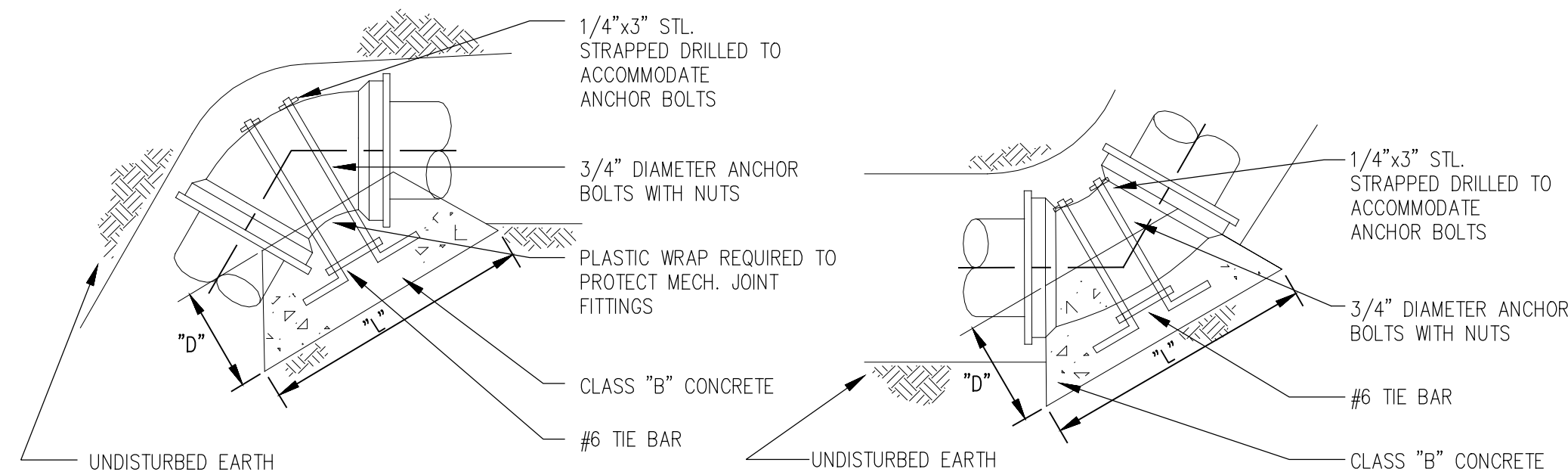
TYPICAL VALVE SETTING

NOT TO SCALE



PIPE BRACE DETAILS

NOT TO SCALE

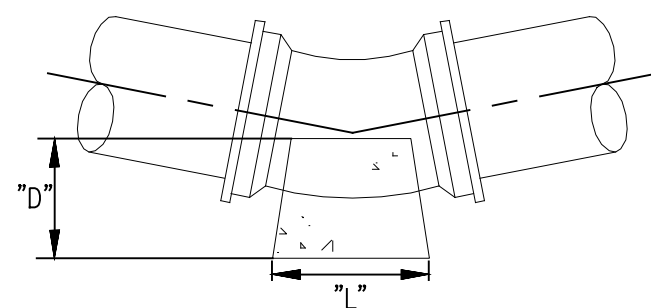


INSIDE VERTICAL BEND

(SEE THRUST BLOCK SCHEDULE FOR DIMENSIONS OF BLOCKING)

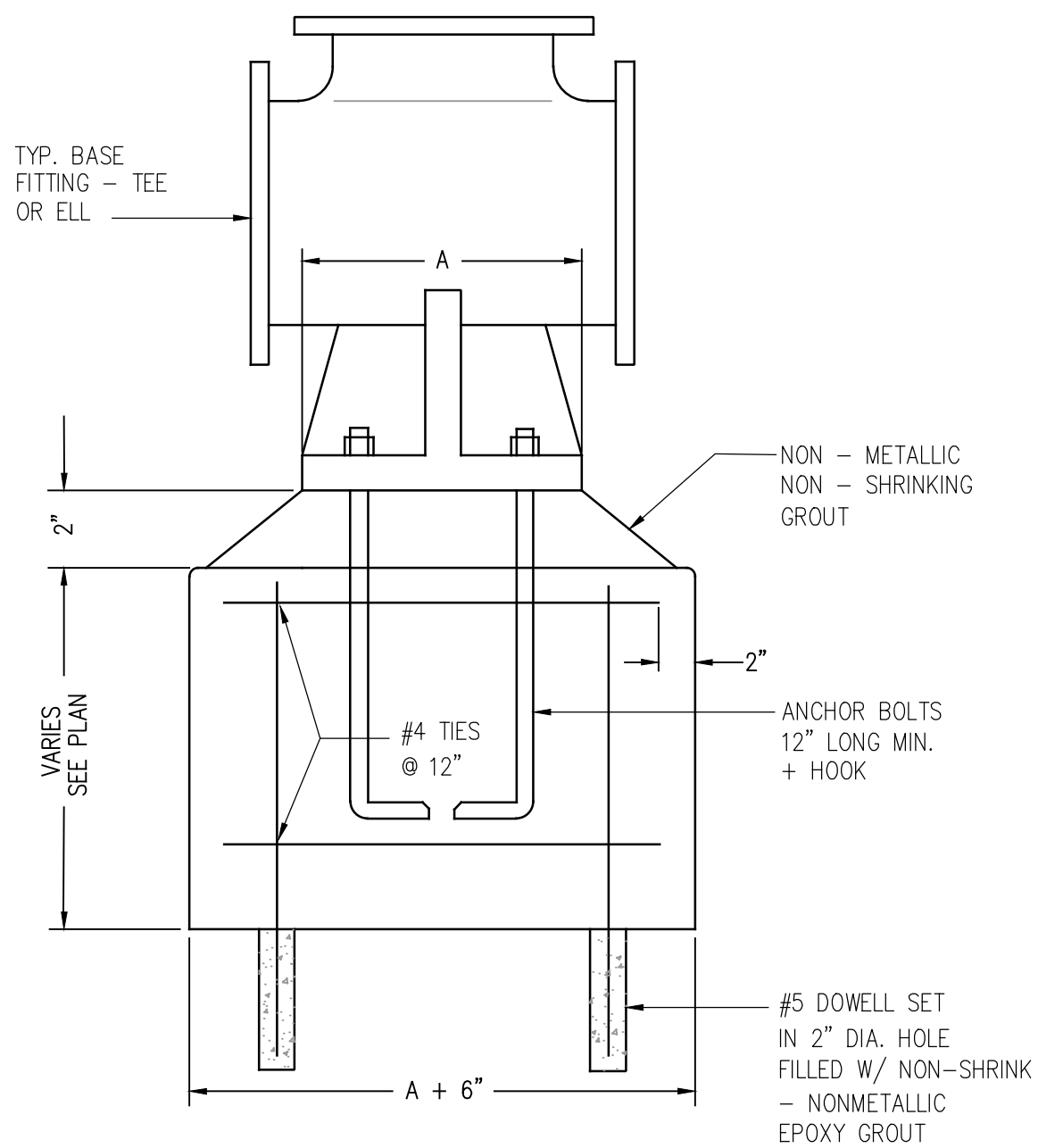
OUTSIDE VERTICAL BEND

(SEE THRUST BLOCK SCHEDULE FOR DIMENSIONS OF BLOCKING)



11 1/4°, 22 1/2°, AND 45° BEND

NOT TO SCALE. (SEE THRUST BLOCK SCHEDULE FOR DIMENSIONS OF BLOCKING)



CONCRETE PEDESTAL

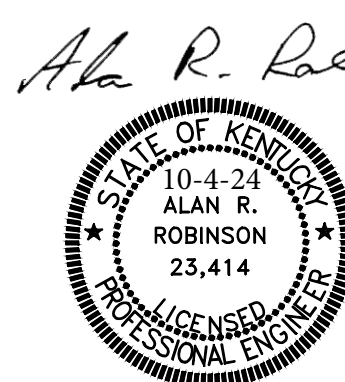
NOT TO SCALE

THRUST BLOCK SCHEDULE															
	90° BEND			45° BEND			22 1/2° BEND			11 1/4° BEND			TEE & END MAIN		
SIZE	D	W	L	D	W	L	D	W	L	D	W	L	D	W	L
2"	6"	10"	4"	4"	7"	3"	4"	7"	3"	4"	7"	3"	6"	10"	4"
3"	6"	10"	8"	4"	8"	6"	4"	8"	3"	4"	8"	3"	6"	10"	6"
4"	6"	11"	9"	6"	11"	7"	4"	9"	5"	4"	9"	3"	6"	11"	8"
6"	8"	15"	13"	6"	13"	12"	4"	11"	8"	4"	11"	4"	8"	15"	10"
8"	10"	21"	19"	8"	17"	17"	6"	15"	10"	4"	13"	6"	10"	11"	21"
10"	10"	23"	29"	8"	20"	22"	6"	17"	13"	6"	17"	7"	10"	23"	30"
12"	12"	27"	31"	10"	24"	27"	10"	23"	14"	6"	19"	9"	12"	27"	36"
14"	14"	31"	38"	13"	29"	31"	12"	27"	17"	6"	21"	12"	14"	31"	42"
16"	15"	34"	44"	15"	33"	36"	14"	31"	19"	8"	25"	13"	17"	36"	48"
18"	21"	42"	45"	18"	38"	39"	17"	36"	21"	10"	29"	14"	21"	41"	54"
20"	22"	45"	53"	21"	43"	42"	18"	39"	24"	10"	31"	16"	22"	44"	60"
24"	26"	51"	59"	27"	49"	48"	23"	45"	30"	16"	37"	32"	28"	50"	66"
30"	34"	57"	65"	33"	55"	54"	29"	51"	36"	22"	43"	38"	34"	56"	72"

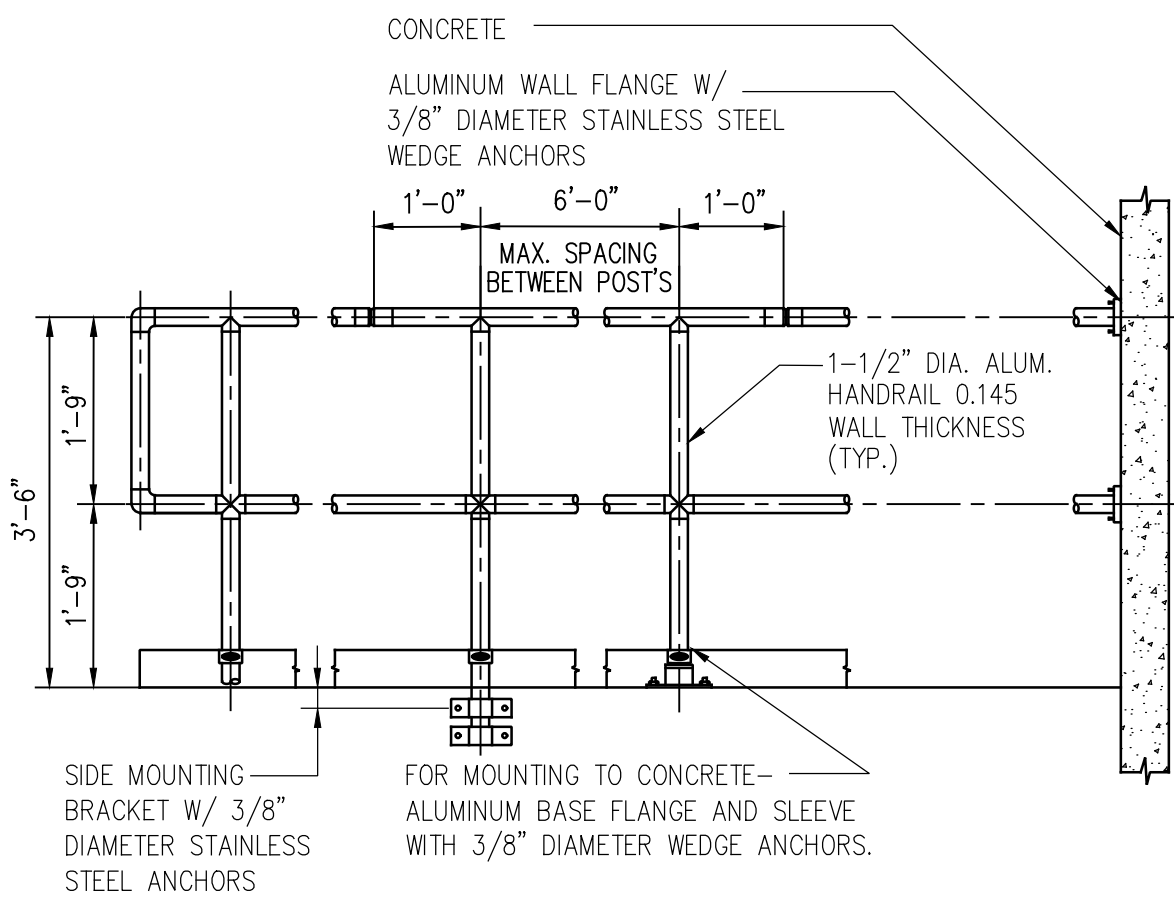
NOTE: W = WIDTH OF CONCRETE FROM UNDISTURBED TRENCH WALL TO UNDISTURBED TRENCH WALL.

NOTE: ALL PIPES AND FITTINGS IN DIRECT CONTACT WITH CONCRETE SHALL BE WRAPPED IN POLYETHYLENE (4 MIL MIN.).

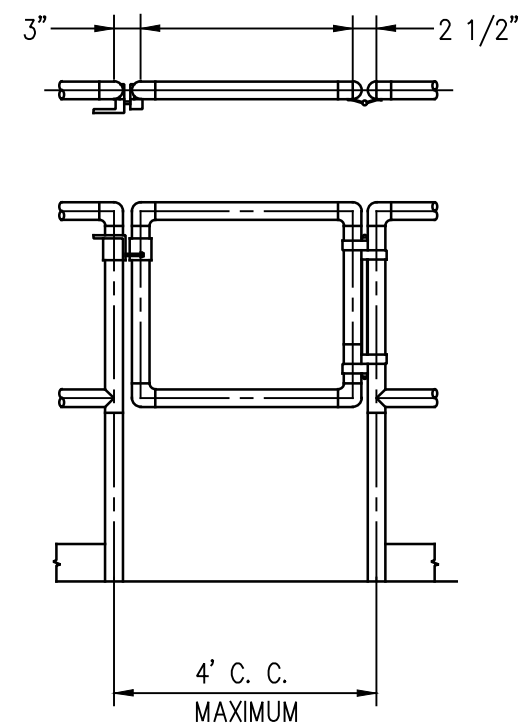
NOTE: ALL BURIED PRESSURE (PUMPED) LINES 4-INCHES DIAMETER AND GREATER SHALL HAVE THRUST BLOCKS AND MEGA-LUG RETAINER GLANDS AT ALL FITTINGS. ALL BURIED GRAVITY LINES SHALL HAVE EITHER THRUST BLOCKS OR MEGA-LUG RETAINER GLANDS AT ALL FITTINGS.



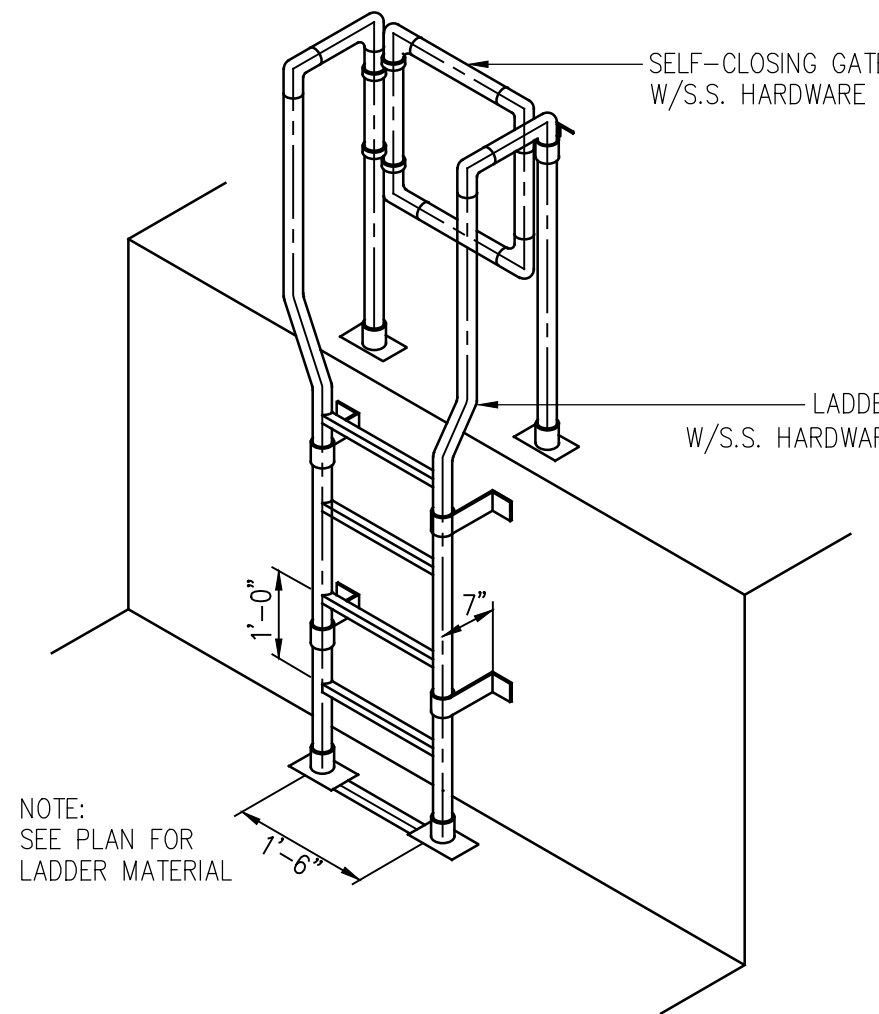
SCALE:	DESIGNED BY:	AS SHOWN	REVISION:	BY:	DATE:
		ARR			
		WBD			
		ARR			
		19008			
		OCTOBER 2024			
		CAD DWG ID: 19008 LONDON UTILITY...			



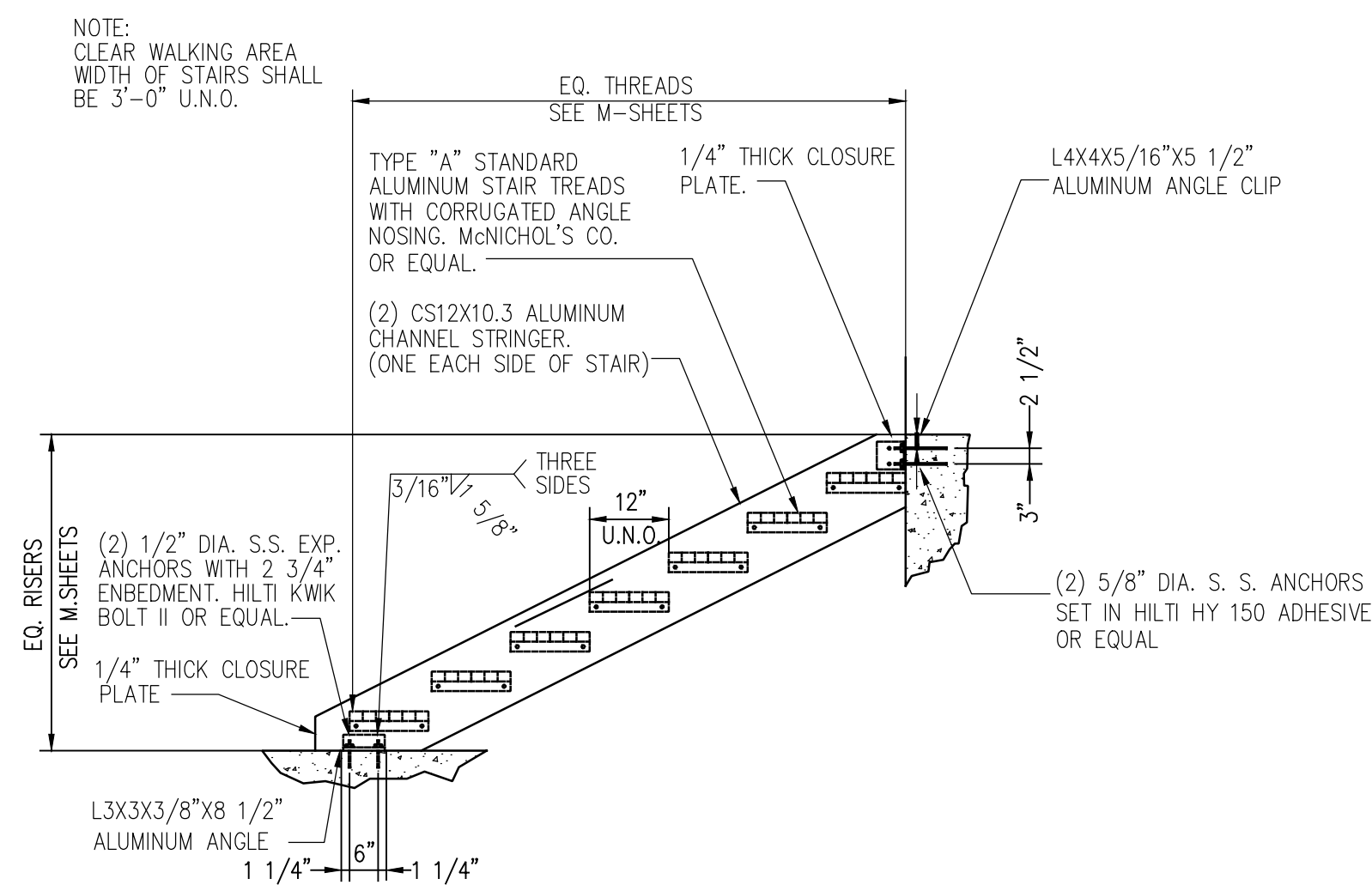
TYPICAL HANDRAIL



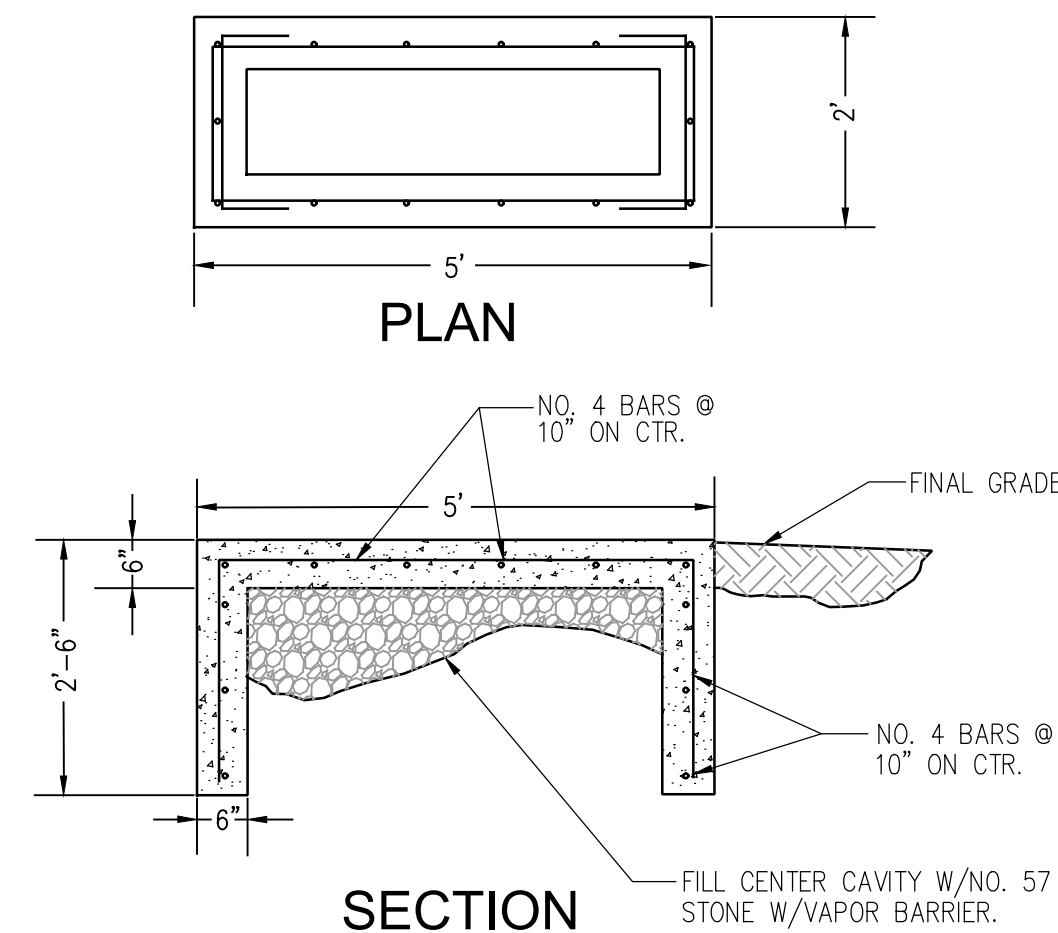
TYPICAL GATE



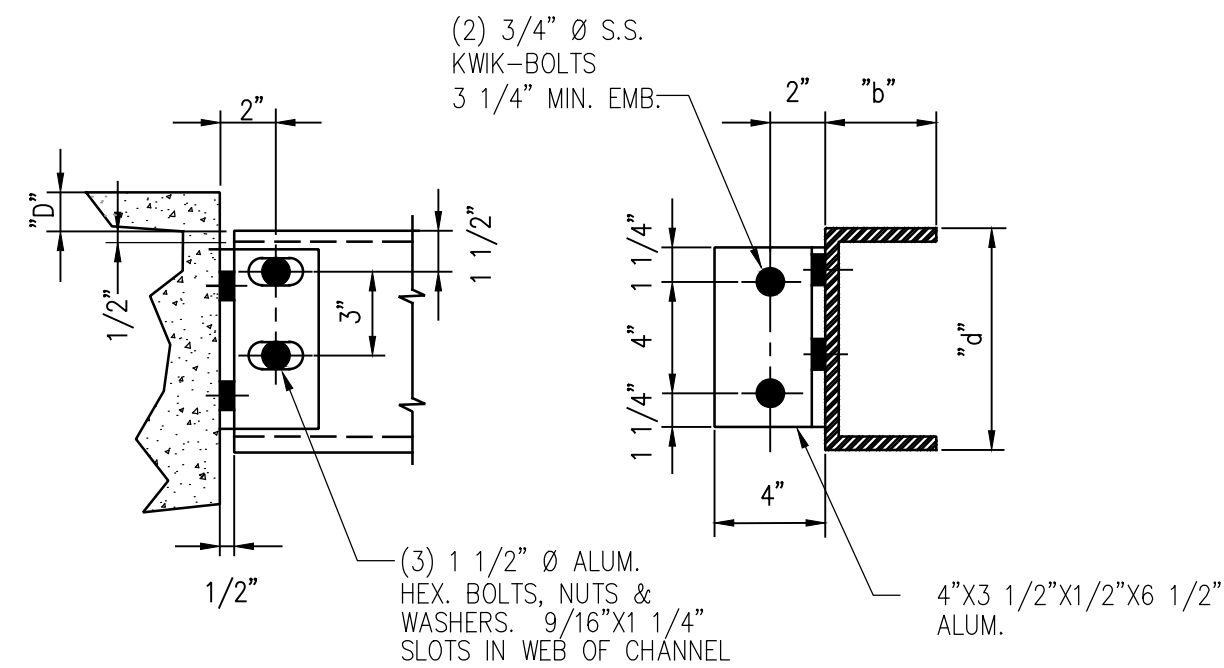
ACCESS LADDER



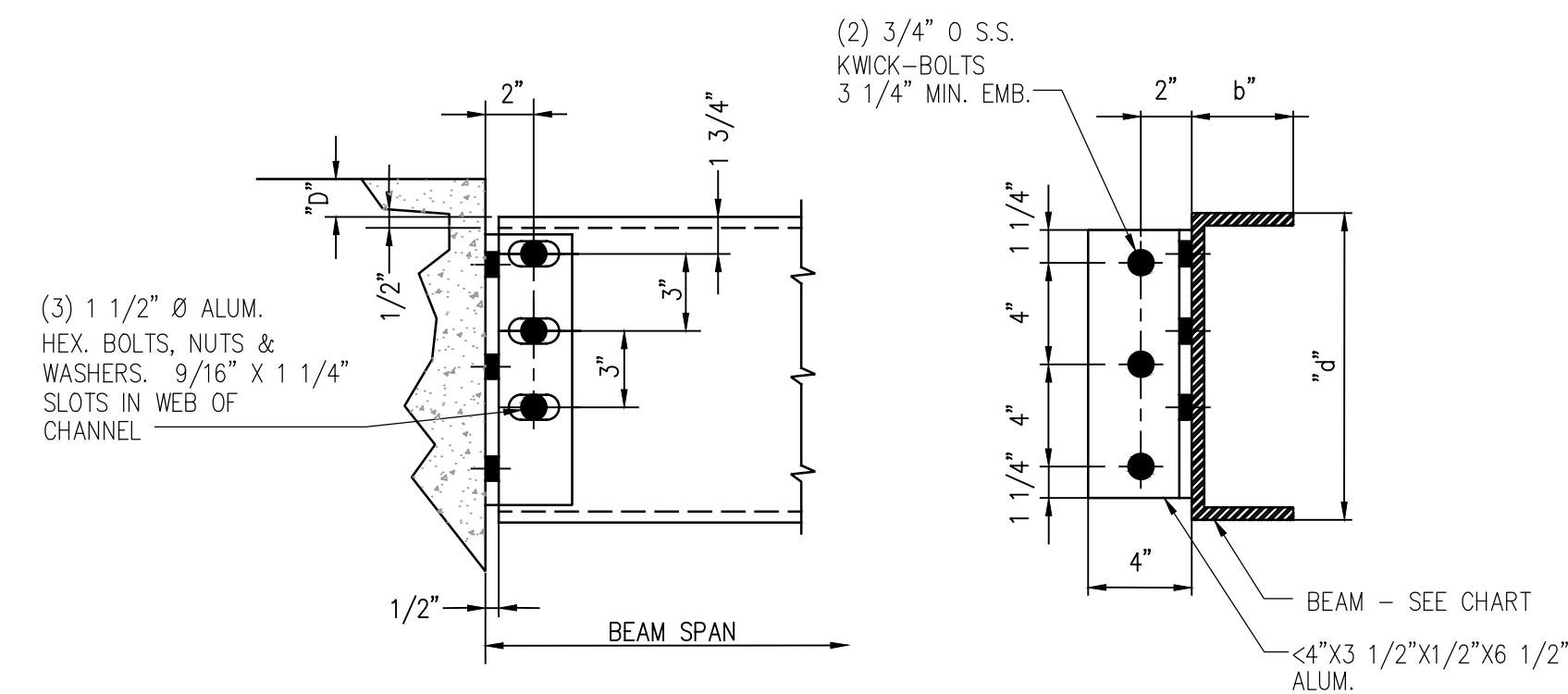
DETAIL - ALUMINUM STAIRS



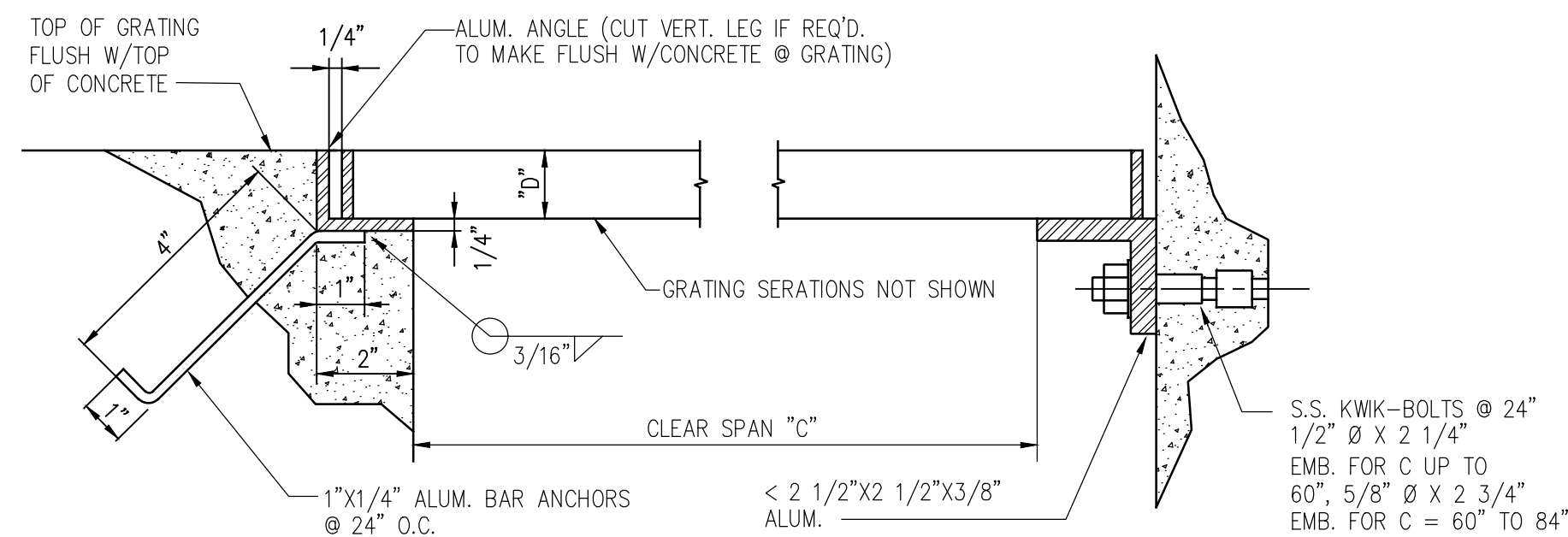
STAIR SUPPORT SLAB



GRATING SUPPORT BEAM CONNECTION TYPE 1



GRATING SUPPORT BEAM CONNECTION TYPE 2



EMBEDDED SUPPORT

SURFACE MOUNTED SUPPORT

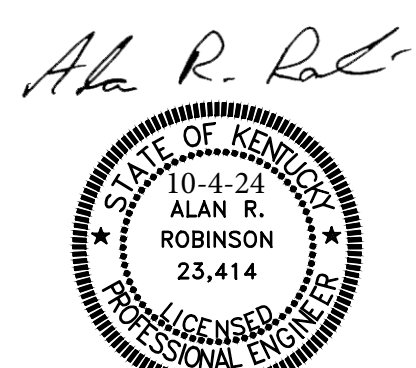
GRATING DETAILS

GRATING SUPPORT BEAM CHART					
BEAM SPAN (FEET)	6	8	10	12	14
BEAM SPAN	C6 X 3.25	C8 X 3.75	C10 X 4.25	C12 X 5.0	C12 X 5.0
WEIGHT (LB/FT)	4.030	5.789	8.360	11.82	11.82
BEAM CONNECTION TYPE	1	1	2	2	2

* BEAMS ARE ALUMINUM ASSOCIATION STANDARD CHANNELS.
SIZES SHOWN ARE DEPTH d x FLANGE WIDTH b.

GRATING SCHEDULE	
SPAN	DEPTH
0'-0" TO 4'-0"	1 1/2"
4'-1" TO 5'-0"	1 3/4"
5'-1" TO 6'-0"	2"

NOTES: COORDINATE SCHEDULE W/"M" SHEETS.
PROVIDE SAME DEPTH WHERE REQ'D. TO
MATCH ADJACENT SPANS IN SAME OR
ADJOINING STRUCTURES.



ECLIPSE ENGINEERS, PLLC

113 WEST MT. VERNON STREET
SOMERSET, KENTUCKY 40501
PHONE: 606-451-0555

DATE:

BY:

REVISION:

AS SHOWN

ARR

WBD

ARR

19008

OCTOBER 2024

CAD DWG ID: 19008 LONDON UTILITY...

LONDON UTILITY COMMISSION

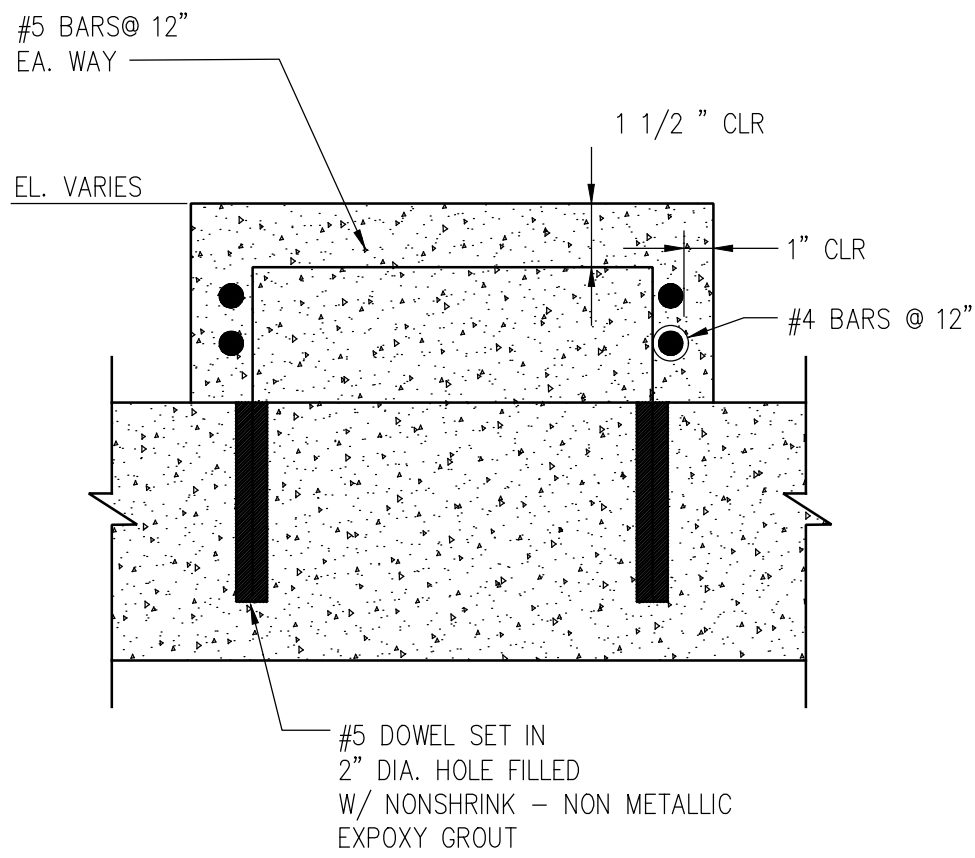
P.O. BOX 918
801 N. MAIN STREET
LONDON, KENTUCKY 40741

STANDARD DETAILS

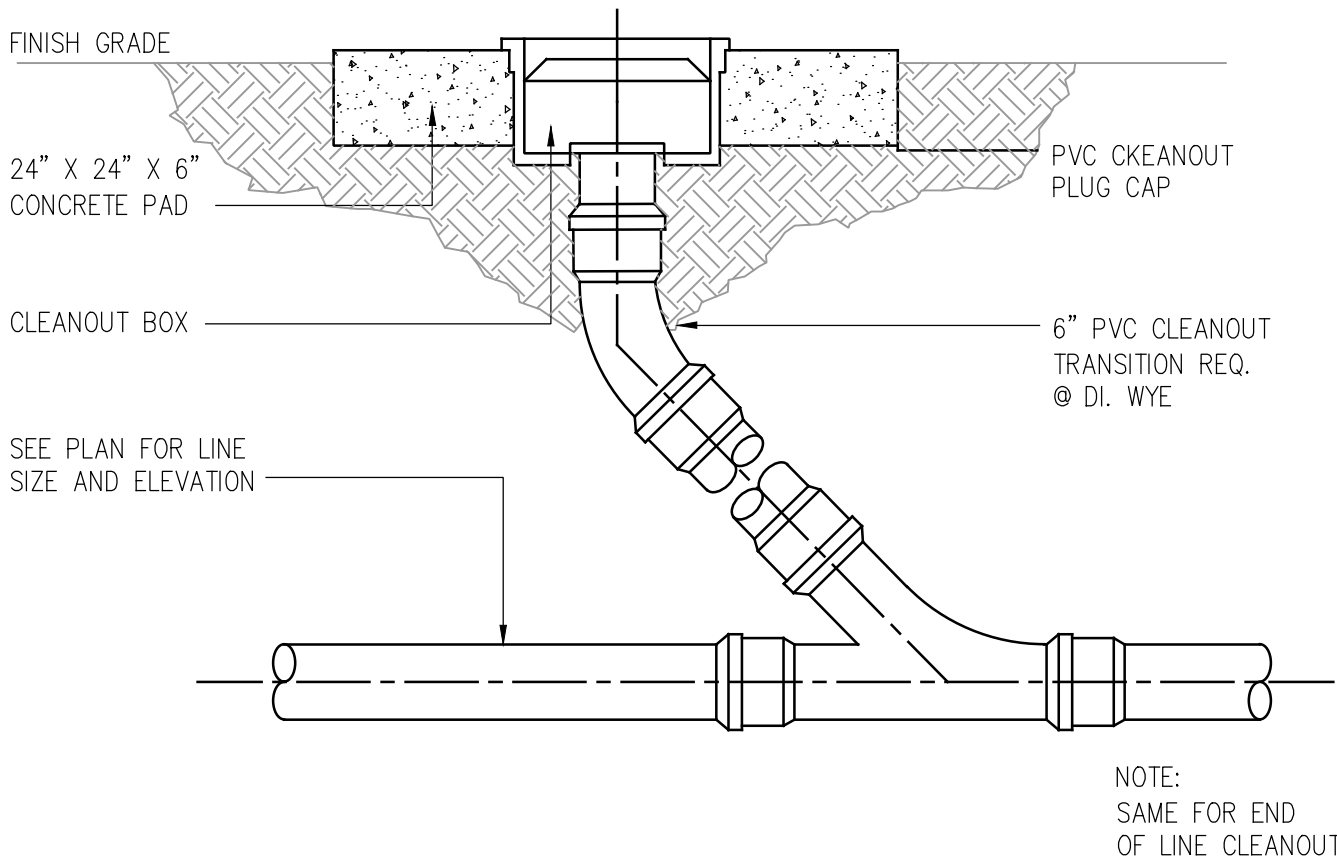
LONDON WATER TREATMENT PLANT IMPROVEMENTS

SHEET NUMBER:

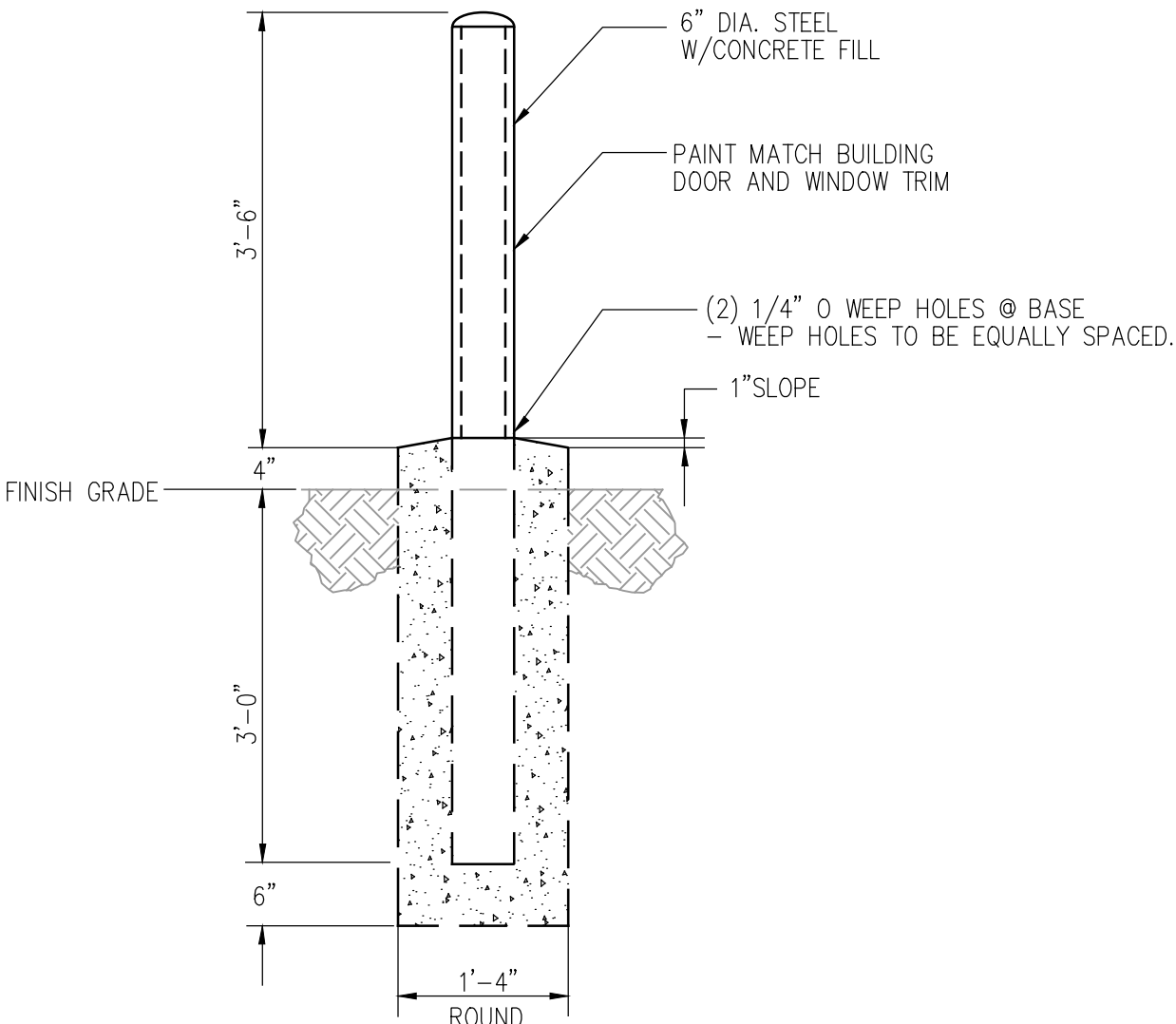
C-6



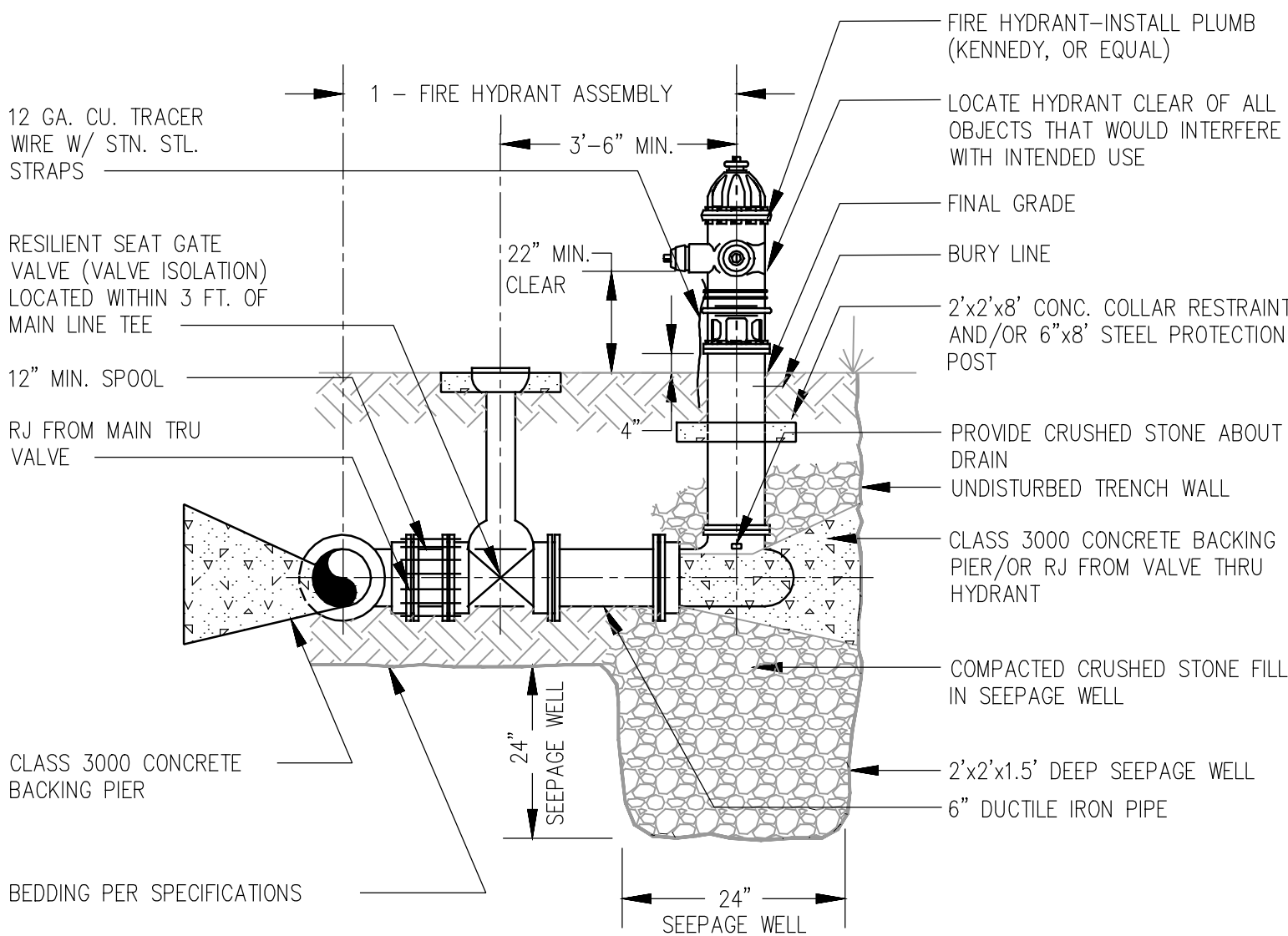
EQUIPMENT PAD
NOT TO SCALE



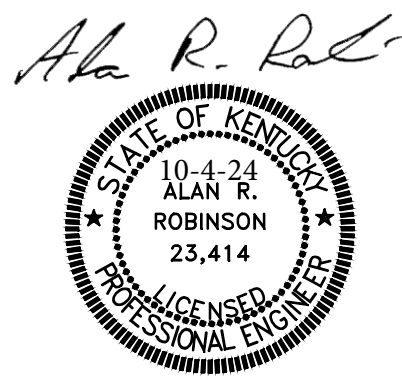
DETAIL CLEAN OUT LARGER THAN 2"
NOT TO SCALE



—UNLESS GRAPHICALLY SHOWN OTHERWISE—
—IF SQUARE PROVIDE 1" CHAMFER ON ALL EDGES—
BOLLARD POST DETAIL
NOT TO SCALE



FIRE HYDRANT SETTING
NOT TO SCALE



ECLIPSE ENGINEERS, PLLC

113 WEST MT. VERNON STREET
SOMERSET, KENTUCKY 40501
PHONE: 606-451-9555

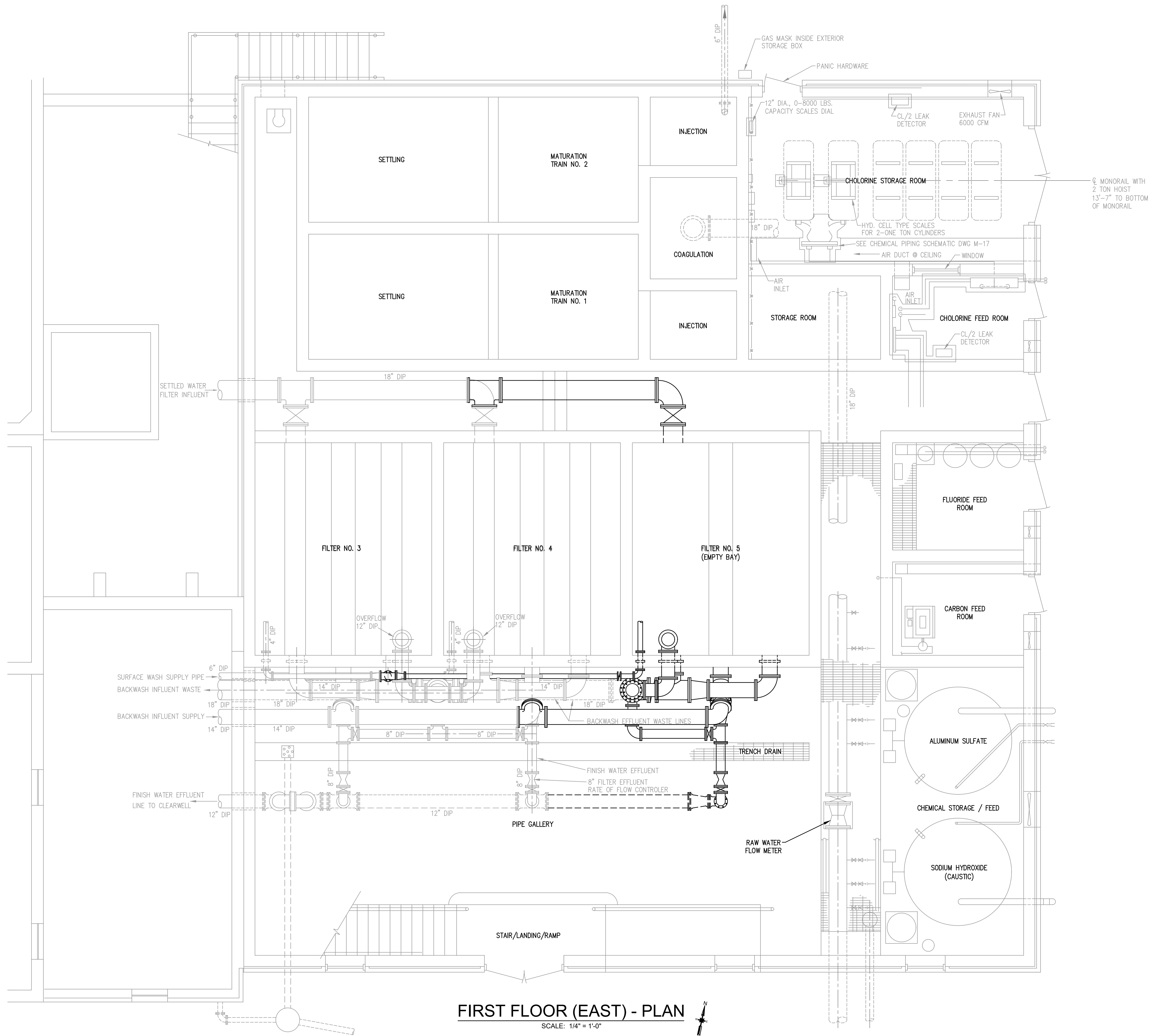
SCALE:	AS SHOWN	REVISION:	BY:	DATE:
DESIGNED BY:	ARR			
DRAWN BY:	WBD			
CHECKED BY:	ARR			
PROJECT NO:	19008			
DATE:	OCTOBER 2024			
CAD DWG ID:	19008 LONDON UTILITY...			

LONDON UTILITY
COMMISSION
P.O. BOX 918
801 N. MAIN STREET
LONDON, KENTUCKY 40741

STANDARD DETAILS

LONDON WATER TREATMENT PLANT IMPROVEMENTS

SHEET NUMBER:
C-7



FIRST FLOOR (EAST) - PLAN
SCALE: 1/4" = 1'-0"

Alan R. Robinson
10-4-24
ALAN R.
ROBINSON
23,414
REGISTERED
PROFESSIONAL ENGINEER
STATE OF KENTUCKY

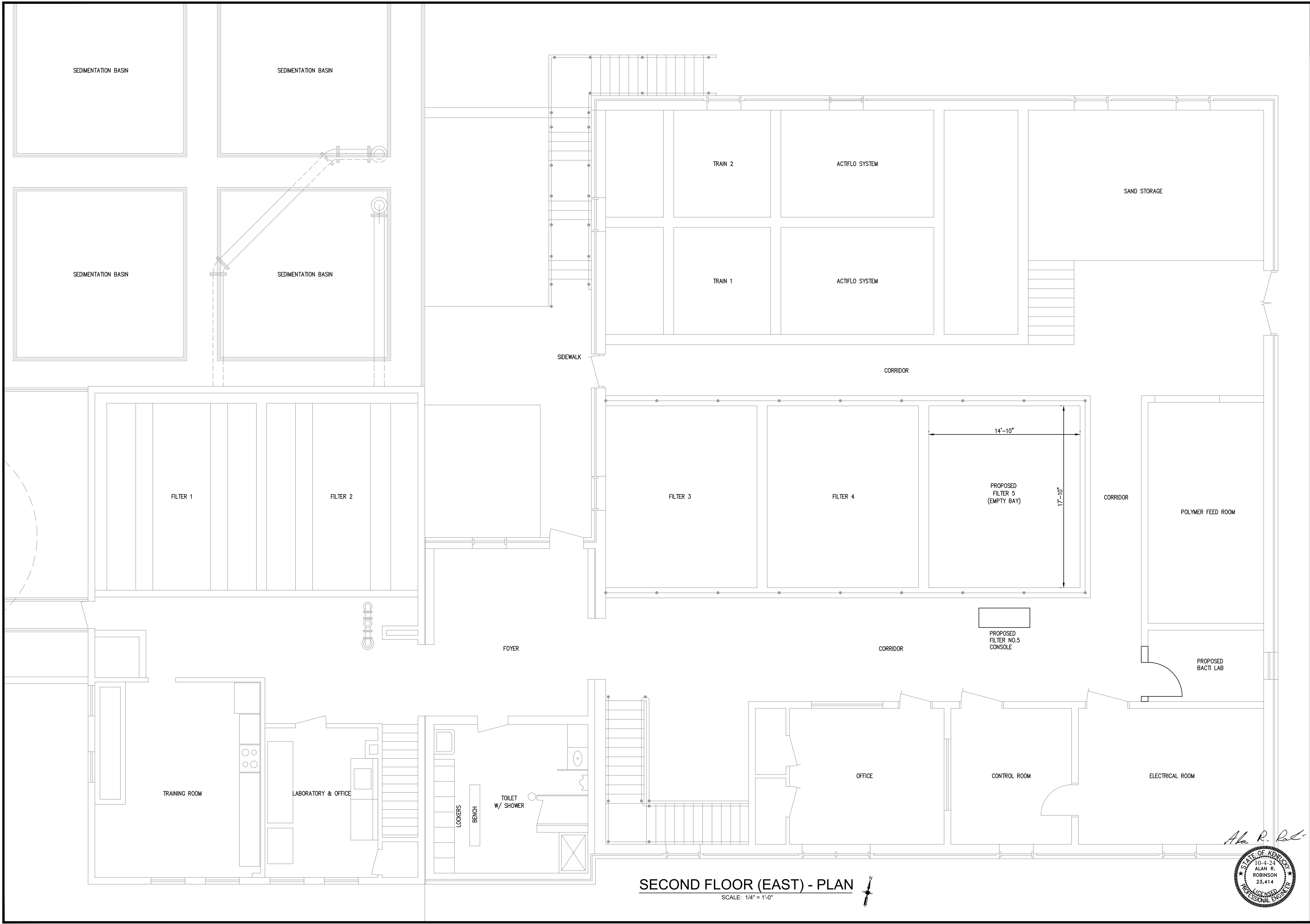
ECLIPSE ENGINEERS, PLLC
113 WEST MT. VERNON STREET
SOMERSET, KENTUCKY 40363
PHONE: 606-451-0555

SCALE:	DESIGNED BY:	1/4" = 1'-0"	REVISION:	BY:	DATE:
DRAWN BY:	ARR				
CHECKED BY:	CMB				
PROJECT NO:	ARR				
DATE:	1908				
	OCTOBER 2024				
	CAD DWG ID: 19008 LONDON UTILITY...				

LONDON UTILITY COMMISSION
P.O. BOX 918
801 N. MAIN STREET
LONDON, KENTUCKY 40341

**ADMINISTRATION / PROCESS BUILDING
FIRST FLOOR (EAST) - PLAN**
LONDON WATER TREATMENT PLANT IMPROVEMENTS

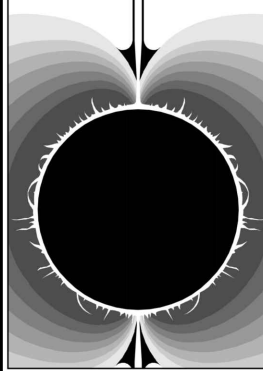
SHEET NUMBER:
C-8



SECOND FLOOR (EAST) - PLAN

SCALE: 1/4" = 1'-0"



**ECLIPSE ENGINEERS, PLLC**
113 WEST MT. VERNON STREET
SOMERSET, KY 40363
PHONE: 502-451-0555

SCALE:	DESIGNED BY:	1/4" = 1'-0"	REVISION:	BY:	DATE:
DRAWN BY:	ARR				
CHECKED BY:	CMB				
PROJECT NO:	ARR				
DATE:	1908				
CAD DWG ID:	OCTOBER 2024				
	19008 LONDON UTILITY...				

LONDON UTILITY COMMISSION
P.O. BOX 918
801 N. MAIN STREET
LONDON, KENTUCKY 40741

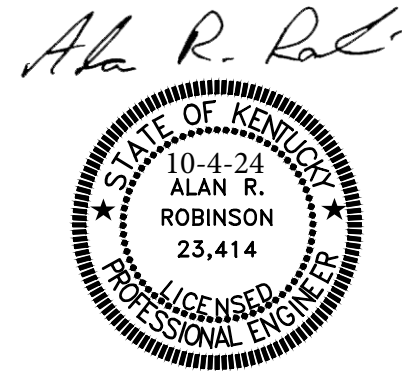
ADMINISTRATION / PROCESS BUILDING
SECOND FLOOR (EAST) - PLAN
LONDON WATER TREATMENT PLANT IMPROVEMENTS

SHEET NUMBER:
C-9



SECOND FLOOR (WEST) - PLAN

SCALE 1/4" = 1'-0"



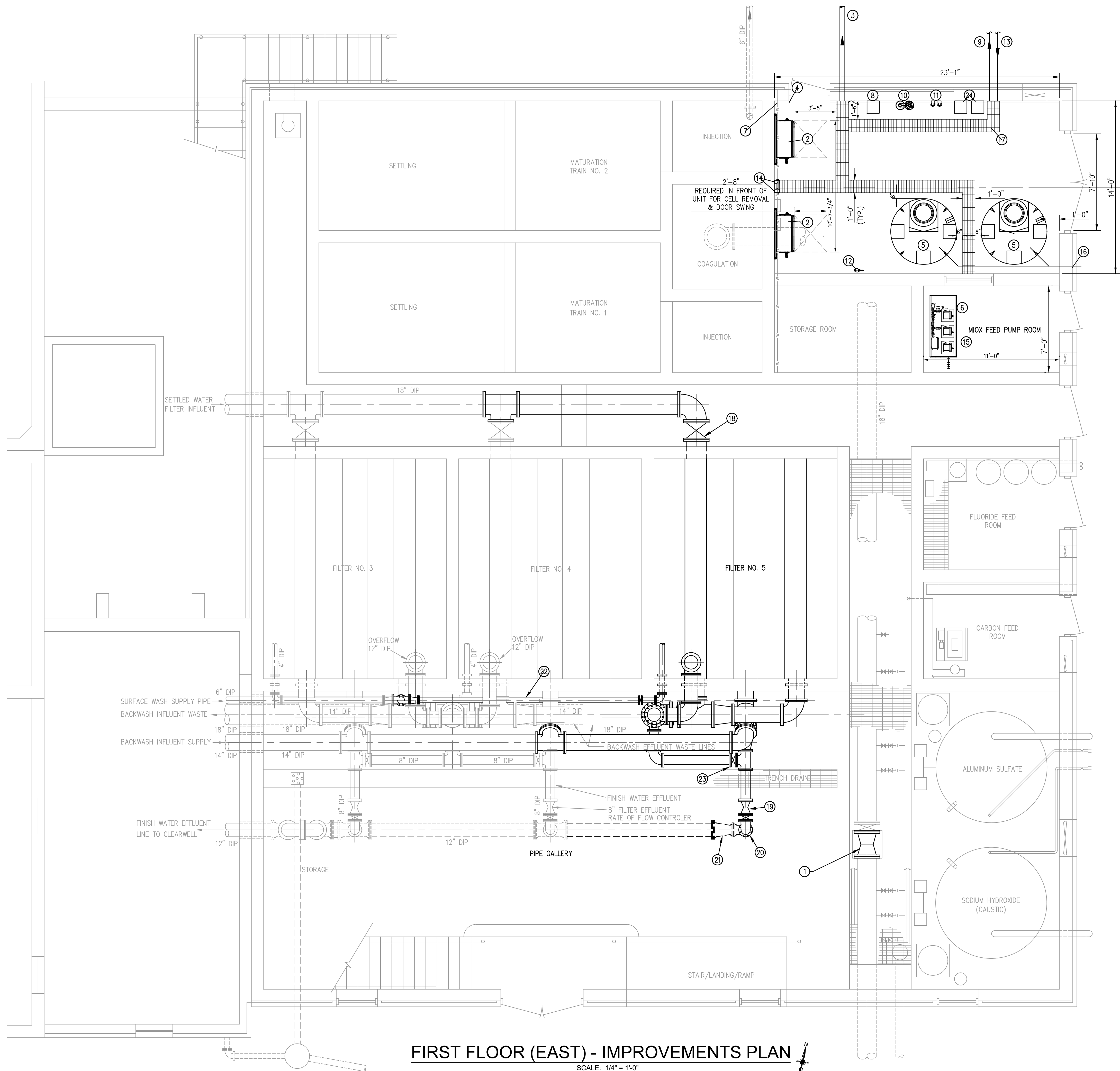
ECLIPSE ENGINEERS, PLLC
113 WEST MT. VERNON STREET
SOMERSET, KENTUCKY 40501
PHONE: 502-451-0555

SCALE:	DESIGNED BY:	1/4" = 1'-0"	REVISION:	BY:	DATE:
DRAWN BY:	ARR	ARR			
CHECKED BY:	CMB	CMB			
PROJECT NO:	ARR	ARR			
DATE:	19008	19008			
CAD DWG ID:	OCTOBER 2024	OCTOBER 2024			
	19008 LONDON UTILITY...	19008 LONDON UTILITY...			

LONDON UTILITY COMMISSION
P.O. BOX 918
801 N. MAIN STREET
LONDON, KENTUCKY 40741

ADMINISTRATION / PROCESS BUILDING
SECOND FLOOR (WEST) - PLAN
LONDON WATER TREATMENT PLANT IMPROVEMENTS

SHEET NUMBER:
C-10



FIRST FLOOR (EAST) - IMPROVEMENTS PLAN

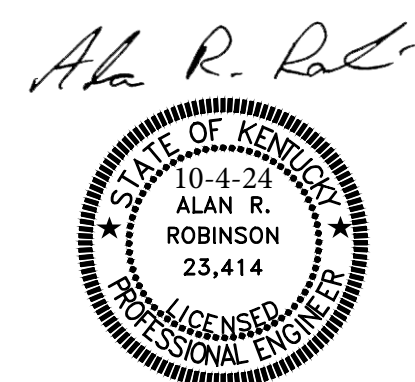
SCALE: 1/4" = 1'-0"

KEYNOTES:

- 1 INSTALL 18-INCH RAW WATER MAGNETIC FLOW METER PER SPECIFICATIONS.
- 2 MIX OSG VAULT UNIT
- 3 EXTEND 4-INCH PVC SDR 35 TO EX. MANHOLE
- 4 CONTRACTOR SHALL CONNECT TO EX. WL WITH 2" PVC SCH 80 WITH ISOLATION VALVE AND EXTEND INTO PROP. TRENCH AND EXTEND THROUGH WALL TO BRINE SILO.
- 5 1500 GALLON MIX STORAGE TANKS. CONNECT TANKS TOGETHER WITH BOTTOM FLANGES WITH 2" CPVC PIPING AND 2" ISOLATION BALL VALVE.
- 6 TRIPLEX MIX FEED PUMPS W/ SKID
- 7 EXISTING HOSE BIB (TR)
- 8 WATER HEATER
- 9 2"W TO SYSTEM BRINE SILO
- 10 WATER SOFTENER
- 11 WATER FILTER (2)
- 12 HYDROGEN SENSOR (ON THE CEILING)
- 13 2" BRINE FROM BRINE SILO
- 14 BRINE FILTERS (2)
- 15 CONTRACTOR SHALL CONNECT MIX SOLUTION TO MIX FEED SKID AND FEED SKID OUTLET TO EXISTING FEED PIPING.
- 16 HYDROGEN VENT TO BE INSTALLED PER MANUFACTURER'S INSTRUCTIONS/SCHEMATICS.
- 17 CONTRACTOR SHALL CUT IN FRP GRATING AS SHOWN. DEPTH OF TRENCHES SHALL BE 9 INCHES.
- 18 18" FILTER IN INFLUENT BUTTERFLY VALVE WITH OPEN/CLOSE ACTUATOR.
- 19 8" RATE OF FLOW CONTROLLER
- 20 8" DI FL 90° BEND AND 8" DI RJ 90° BEND.
- 21 12"x8" DI RJ REDUCER
- 22 4" DI SURFACE WASH SUPPLY
- 23 8" FL FILTER-TO-WASTE BUTTERFLY VALVE WITH OPEN/CLOSE ACTUATOR.
- 24 BRINE BOOSTER PUMPS (2)

GENERAL NOTES:

- 1 CONTRACTOR SHALL REFER TO MANUFACTURER LAYOUT AND PIPING SCHEMATICS FOR EXACT PIPE SIZES, PIPE TYPES, VALVING ARRANGEMENTS, AND ORIENTATIONS.
- 2 CONTRACTOR SHALL BECOME FAMILIAR WITH ENTIRE SYSTEM LAYOUT BEFORE INSTALLATION BEGINS.
- 3 ALL PIPING SHALL BE INSTALLED IN A NEAT, UNOBTRUSIVE MANNER. ALL BRACING, HARDWARE, ETC, SHALL BE DETERMINED BY THE CONTRACTOR AND SHALL BE STAINLESS STEEL.
- 4 CONTRACTOR SHALL PLACE SYSTEM PLUMBING IN PROPOSED TROUGH DRAIN TO DESIGNATED EQUIPMENT SCHEMATICS.
- 5 CONTRACTOR SHALL CORE DRILL ALL PROP. OPENINGS THROUGH EX. CONCRETE WALLS AND SEAL WITH LINE SEALS.



SCALE:	1/4" = 1'-0"	1/4" = 1'-0"
DESIGNED BY:	ARR	ARR
DRAWN BY:	CMB	CMB
CHECKED BY:	ARR	ARR
PROJECT NO:	19008	19008
DATE:	OCTOBER 2024	OCTOBER 2024
CAD DWG ID:	19008 LONDON UTILITY...	19008 LONDON UTILITY...

LONDON UTILITY
COMMISSION
P.O. BOX 918
801 N. MAIN STREET
LONDON, KENTUCKY 40741

ADMINISTRATION / PROCESS BUILDING
FIRST FLOOR (EAST) - IMPROVEMENTS PLAN
LONDON WATER TREATMENT PLANT IMPROVEMENTS

113 WEST MT. VERNON STREET
SOMERSET, KENTUCKY 40501
PHONE 606-451-0959

ECLIPSE

ENGINEERS, PLLC

14" = 1'-0"

SCALE:

DESIGNED BY: ARR

DRAWN BY: CMB

CHECKED BY: ARR

PROJECT NO: 19008

DATE: OCTOBER 2024

CAD DWG ID: 19008 LONDON UTILITY...

LONDON UTILITY
COMMISSION

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LONDON, KENTUCKY 40741

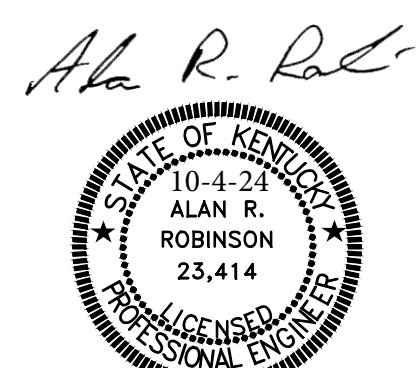
MIXED OXIDANT GENERATION
LEGEND AND SYMBOLS

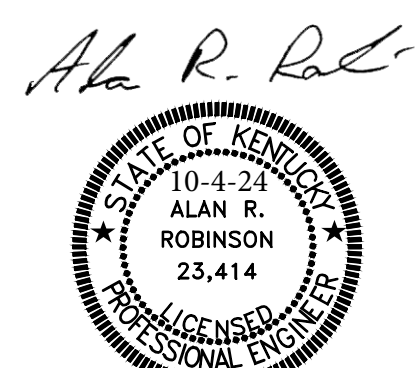
LONDON WATER TREATMENT PLANT IMPROVEMENTS

SHEET NUMBER:

C-13

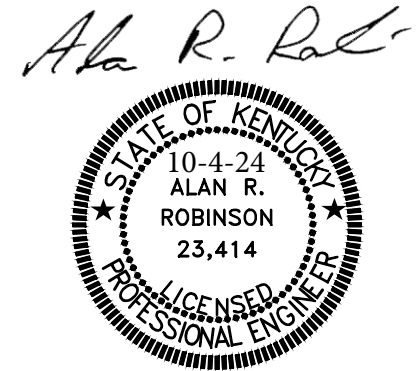
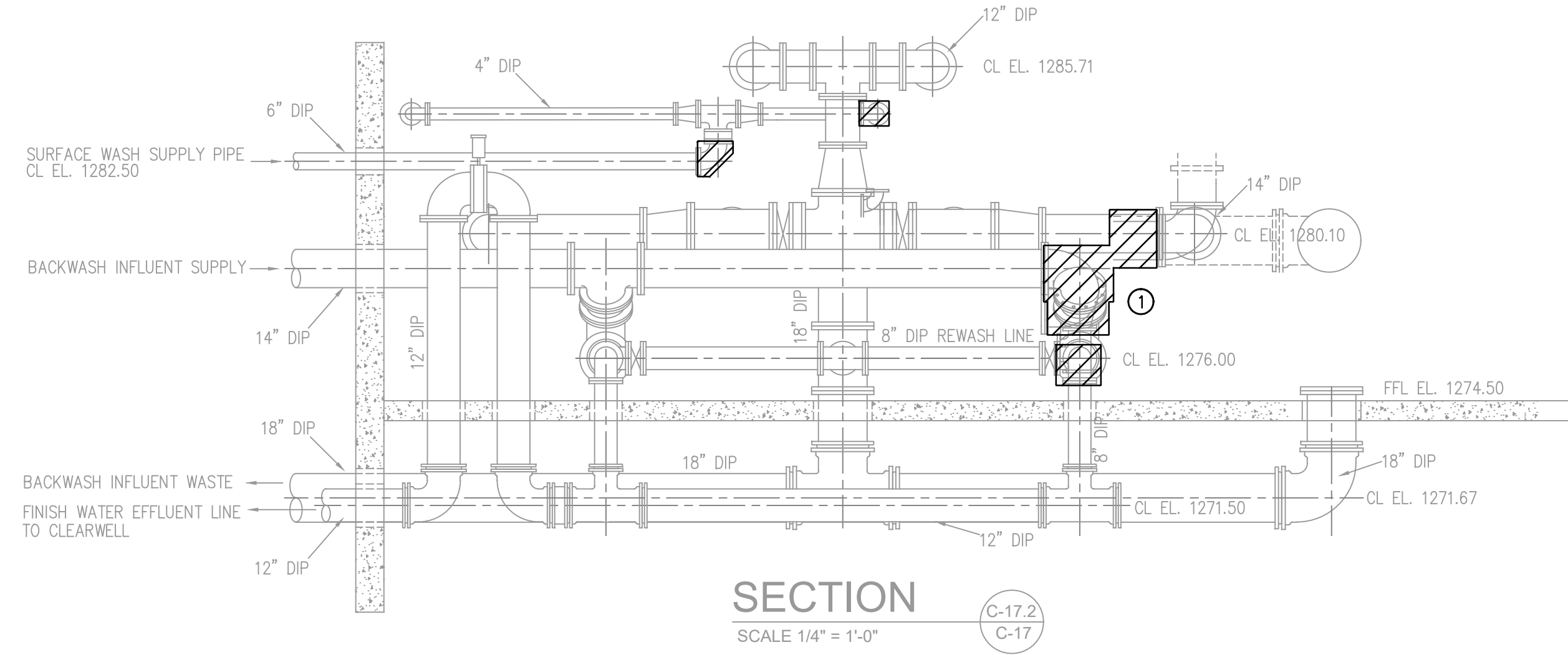
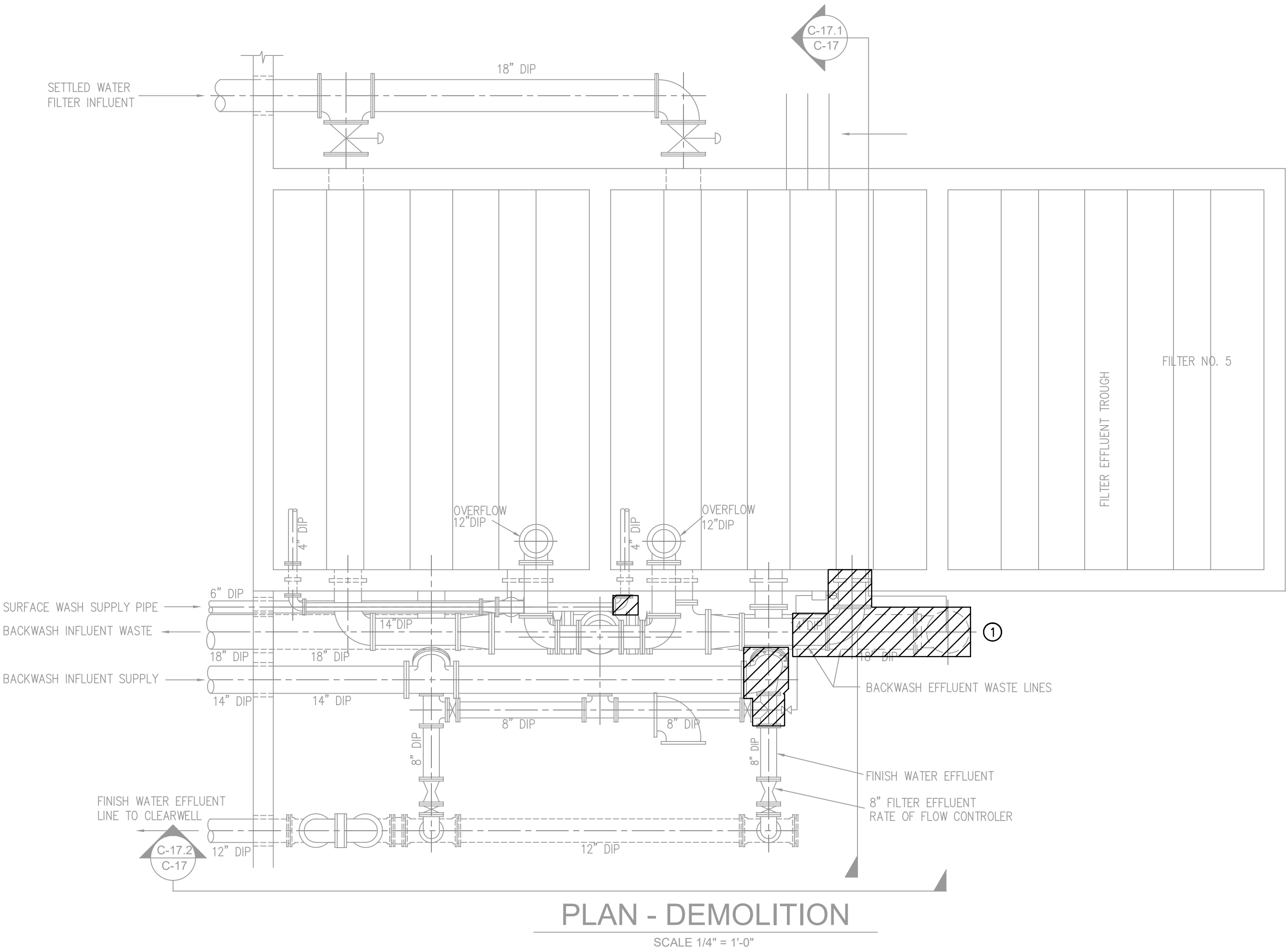
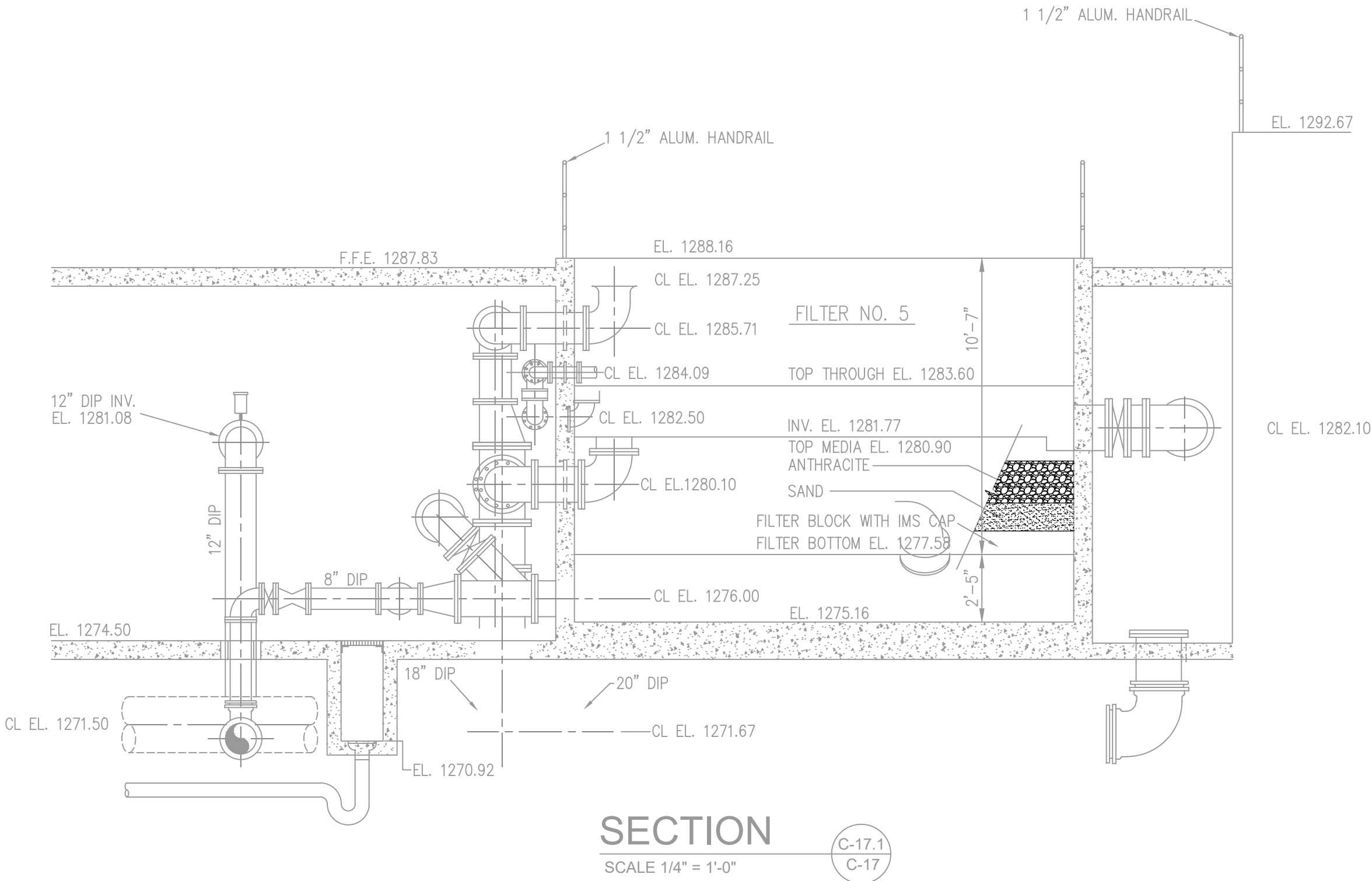
PROCESS & INSTRUMENTATION DIAGRAM SYMBOLOGY																																					
VALVE SYMBOLS		PROCESS COMPONENTS		VALVE ACTUATORS & SYMBOLS		PUMPS, BLOWERS & OTHER SYMBOLS		INSTRUMENTATION IDENTIFIERS																													
BALL	GATE	Y STRAINER	DIFFUSER	ELECTRICALLY ACTUATED SOLENOID		PERISTALTIC PUMP		<table><thead><tr><th></th><th>FIELD MOUNTED DEVICE LOCAL</th><th>FRONT ENC. DEVICE NORMALLY ACCESSIBLE</th><th>INSIDE ENC. DEVICE NORMALLY INACCESSIBLE</th><th>EXAMPLES</th></tr></thead><tbody><tr><td>DISCRETE INSTRUMENTS I.E. SWITCHES, SENSORS, INDICATORS</td><td></td><td></td><td></td><td rowspan="3"></td></tr><tr><td>INDICATING LIGHTS ALARMS, & SIREN</td><td></td><td></td><td></td></tr><tr><td>DISTRIBUTED CONTROL / SHARED DISPLAY OR SCREEN</td><td></td><td></td><td></td></tr><tr><td>PROGRAMMABLE LOGIC CONTROLLER, DISCRETE, ANALOG, INPUTS OUTPUT POINTS</td><td></td><td></td><td></td><td rowspan="2"></td></tr><tr><td>COMPUTER CONTROLLED FUNCTION, SUPERVISORY CONTROL, AND DATA ACQUISITION</td><td></td><td></td><td></td></tr></tbody></table>		FIELD MOUNTED DEVICE LOCAL	FRONT ENC. DEVICE NORMALLY ACCESSIBLE	INSIDE ENC. DEVICE NORMALLY INACCESSIBLE	EXAMPLES	DISCRETE INSTRUMENTS I.E. SWITCHES, SENSORS, INDICATORS					INDICATING LIGHTS ALARMS, & SIREN				DISTRIBUTED CONTROL / SHARED DISPLAY OR SCREEN				PROGRAMMABLE LOGIC CONTROLLER, DISCRETE, ANALOG, INPUTS OUTPUT POINTS					COMPUTER CONTROLLED FUNCTION, SUPERVISORY CONTROL, AND DATA ACQUISITION				INSTRUMENTATION EXAMPLES	
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PIPING NOMENCLATURE/MATERIAL		PIPING CONNECTIONS/COMPONENTS		PUMP SYMBOLS		INSTRUMENT/CONTROL ABBREVIATIONS																															
ACH = HYDROCHLORIC ACID AB = AIR BLOW/AIR BURST BR = BRASS BW = BACKWASH CA = CAUSTIC CI = CAST IRON CO = COAGULANT CPVC = CHLORINATED POLY VINYL CHLORIDE CS = CARBON STEEL CU = COPPER CW = CITY WATER DE = DIATOMACEOUS EARTH DI = DUCTILE IRON FA = FERRIC ACID H2FE04 FLOC = FLOCCULANT FRP = FIBERGLASS GCS = GALVANIZED CARBON STEEL PAC = POWDERED ACTIVATED CARBON PE = POLYETHYLENE PVC = POLY VINYL CHLORIDE PYS = POLYMER SLURRY RW = RAW WATER SL = SLUDGE SH = SODIUM HYPOCHLORITE SS = STAINLESS STEEL TR = TREATED WATER UTW = UNTREATED WATER WAS = WASTE ACTIVATED SLUDGE WS = WASTE SUPPLY WW = WASTE WATER		MISC. COMPONENTS				PIPE LINE NOMENCLATURE																															
		FLANGE TEE				AS = AIR SUPPLY C = CURRENT (AMPS) COND = CONDUCTIVITY DP = DELTA PRESSURE HOA = HAND/OFF/AUTO I/P = CURRENT TO PRESSURE IS = INSTRUMENT AIR O/I = ON/OFF ORP = OXIDATION REDUCTION POTENTIAL RES = RESISTIVITY TURB = TURBIDITY ZSC = LIMIT SWITCH CLOSED ZSO = LIMIT SWITCH OPEN																															
		COUPLING WELDED JOINT				PIPE LINE NOMENCLATURE																															
		BLIND FLANGE																																			
		REDUCER																																			
		UNION																																			
		FLEXIBLE																																			
		ELECTRIC MIXER & IMPELLER AIR DRIVEN MIXER & IMPELLER																																			
		AIR COMPRESSOR																																			





KEYNOTES:

- ① CONTRACTOR SHALL REMOVE ANY AND ALL EXISTING FITTINGS, SPOOL PIECES, COMPONENTS, TAPS, ETC. TO ACCOMMODATE PROPOSED FILTER NO. 5 FITTINGS, ETC. CONTRACTOR MAY REUSE OR REPOSITION FITTINGS IF NECESSARY.



ECLIPSE ENGINEERS, PLLC
113 WEST MT. VERNON STREET
SOMERSET, KENTUCKY 40501
PHONE: 606-451-0555

SCALE:	1/4" = 1'-0"
DESIGNED BY:	ARR
DRAWN BY:	CMB
CHECKED BY:	ARR
PROJECT NO:	19008
DATE:	OCTOBER 2024
CAD DWG ID:	19008 LONDON UTILITY...

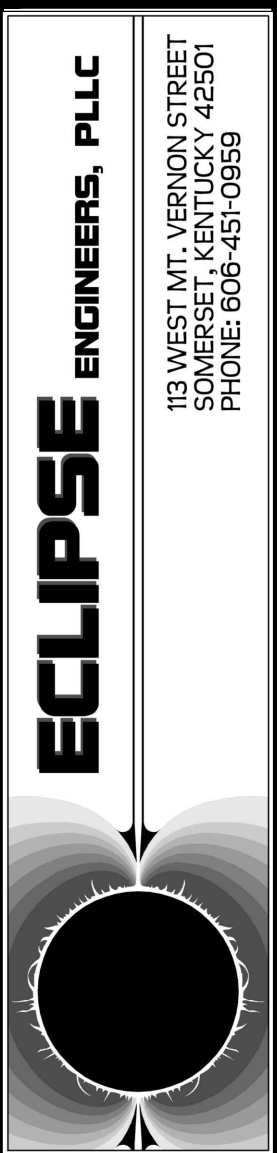
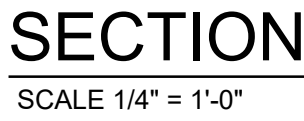
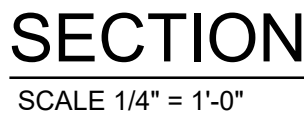
REVISION:	BY:	DATE:

LONDON UTILITY COMMISSION
P.O. BOX 918
801 N. MAIN STREET
LONDON, KENTUCKY 40741

**ADMINISTRATION / PROCESS BUILDING GRAVITY FILTERS
PIPE GALLERY - PLAN AND SECTIONS - DEMOLITION**
LONDON WATER TREATMENT PLANT IMPROVEMENTS

SHEET NUMBER:
C-17

- ① 18" DI FLG. TEE
- ② 18" DI FLG. 90° BEND
- ③ 18" ELEC. BUTTERFLY FILTER INFLUENT VALVE (OPEN/CLOSE)
- ④ CONTRACTOR SHALL CORE-DRILL EXISTING WALLS WHERE NECESSARY TO SEAL WITH INTERLOCKING LINK SEAL SYSTEM (TYP.).
- ⑤ 6" DI FLG. TEE
- ⑥ 6"x4" DI REDUCER
- ⑦ 4" DI FLG. 90° BEND
- ⑧ 4" DI FLG.-FLG. WALL PIPE
- ⑨ 12" DI FLG.-FLG. WALL PIPE
- ⑩ 12" DI FLG. 90° BEND
- ⑪ 18"x12" DI FLG. ECCENTRIC REDUCER
- ⑫ 14" DI FLG.-FLG. WALL PIPE
- ⑬ 18"x14" DI FLG. TEE
- ⑭ 18"x14" DI FLG. CONCENTRIC REDUCER
- ⑮ 14" DI FLG. 90° BEND
- ⑯ 14" DI FLG. WYE
- ⑰ 14" DI FLG. WAFER BACKWASH VALVE (MODULATING)
- ⑱ 14"x8" DI FLG. CONCENTRIC REDUCER
- ⑲ 8" DI FLG. TEE
- ⑳ 8" FLG. BUTTERFLY VALVE FOR FILTER REWASH (OPEN/CLOSE)
- ㉑ 8" DI FLG. 90° BEND
- ㉒ 4" FLG. BUTTERFLY VALVE FOR SURFACE WASH (OPEN/CLOSE)
- ㉓ 18" DI FLG. TEE
- ㉔ 18" DI FLG. BUTTERFLY WASTEWATER VALVE (OPEN/CLOSE)
- ㉕ 14" DI FLG. TEE
- ㉖ 18"x8" DI FLG. TEE TO BE CONNECTED TO EXISTING FLG. BY REMOVING CAP.
- ㉗ 8" FILTER EFFLUENT RATE OF FLOW CONTROLLER
- ㉘ 12"x8" DIRJ FLG. REDUCER
- ㉙ 8" DIRJ 90° BEND
- ㉚ 8" FLG. BUTTERFLY VALVE FOR FILTER EFFLUENT (MODULATING)



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					CAD DWG ID: 19008 LONDON UTILITY...

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COMMISSION**
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ADMINISTRATION / PROCESS BUILDING GRAVITY FILTERS
PIPE GALLERY - PLAN AND SECTIONS - IMPROVEMENTS
LONDON WATER TREATMENT PLANT IMPROVEMENTS

SHEET NUMBER:
C-18

①	2'-6"x2'-6" ALUM. ACCESS HATCH	⑨	16" ELEC. PUMP CONTROL VALVE	⑬	14" BFV
②	6" FLG. RETURN BEND VENT	⑩	16" GATE VALVE	⑭	EQUIPMENT DRAIN, TIE 6" DIP INTO THE PROPOSED 30" RCP
③	6" FLG-PE WALL PIPE	⑪	16" 90° ELL	⑮	48" SQ. ALUM. ACCESS HATCH, SINGLE DOOR FRAME & LID
④	18" DIP FLG. TEE	⑫	16" TEE	⑯	16" DIA. FLG-FLG. WALL PIPE
⑤	18" DIP FLG. 90° ELL	⑬	16" FLOW METER W/ INDICATOR AND RECORDER	⑰	14" DIA FLG-PE WALL PIPE
⑥	18" FLG. ELEC. BFV	⑭	14" SWING CHECK VALVE	⑱	CONNECT 6" DIP INTO 30" RCP
⑦	18" FLG. COUPLING ADAPTER	⑮	14" 90° ELL	⑲	18" MJ TEE
⑧	CORE 24" ID HOLE THROUGH THE EXISTING CONCRETE WALL, AND INSTALL 18" DIP, THEN SEAL OPENING WITH LINK SEAL MODEL LS-525-C WITH 17 LINKS.	⑯	14" GATE VALVE	⑳	16" DIA. FLG-PE WALL PIPE
		⑰	14" RATE OF FLOW CONTROLLER W/ FLOW INDICATOR & TOTALIZER	㉑	EX. PUMP CONTROL VALVES SHALL BE REPLACED WITH OL&W CHUSIONED SWING CHECK VALVES SIMILAR TO MODEL 220-D, OR EQUAL. GA INDUSTRIES.



UPPER PLAN

SCALE 1/4" = 1'-0"



Ala R. Rob

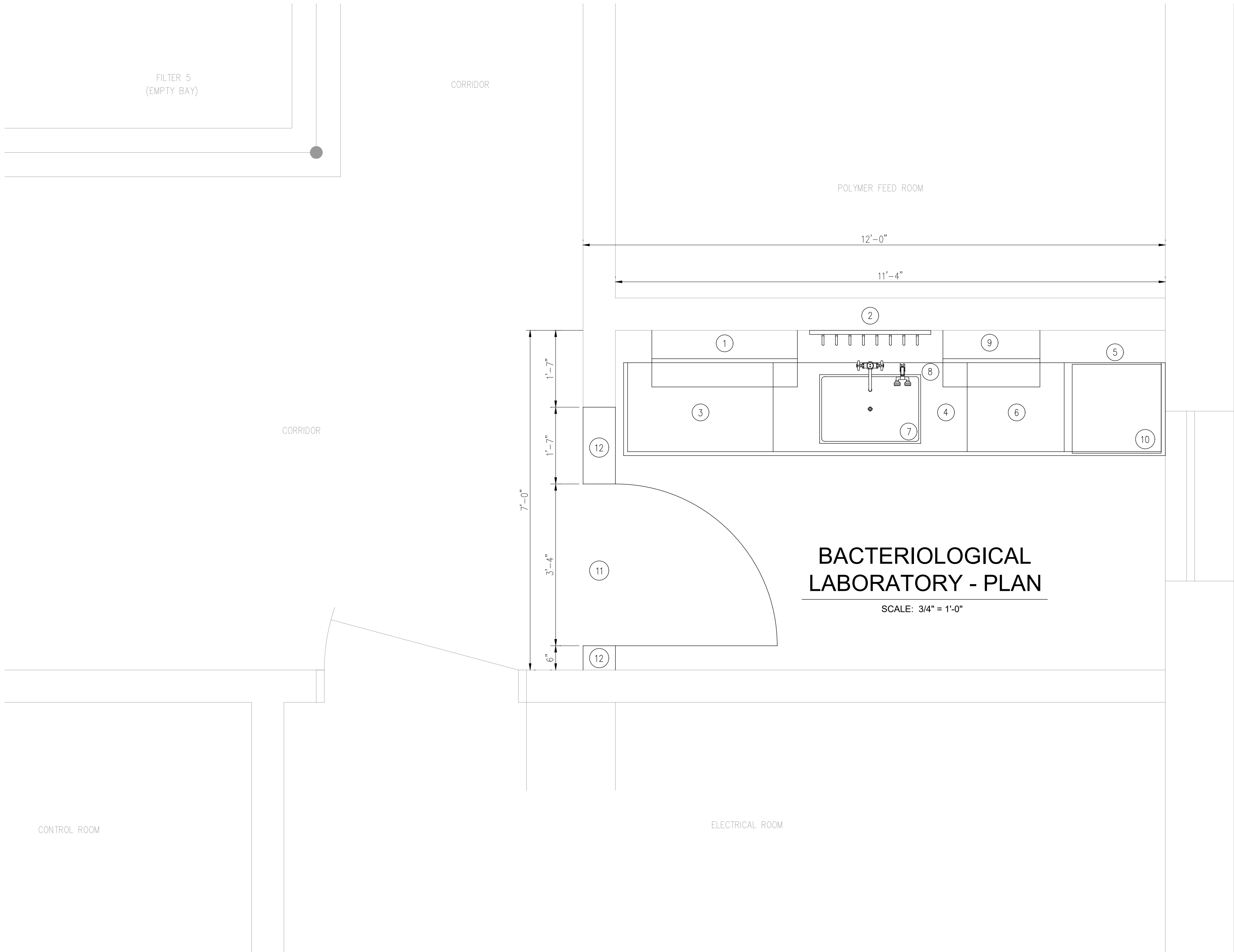
10-4-24
ALAN R.
ROBINSON
23,414
LICENSED
PROFESSIONAL ENGINEER

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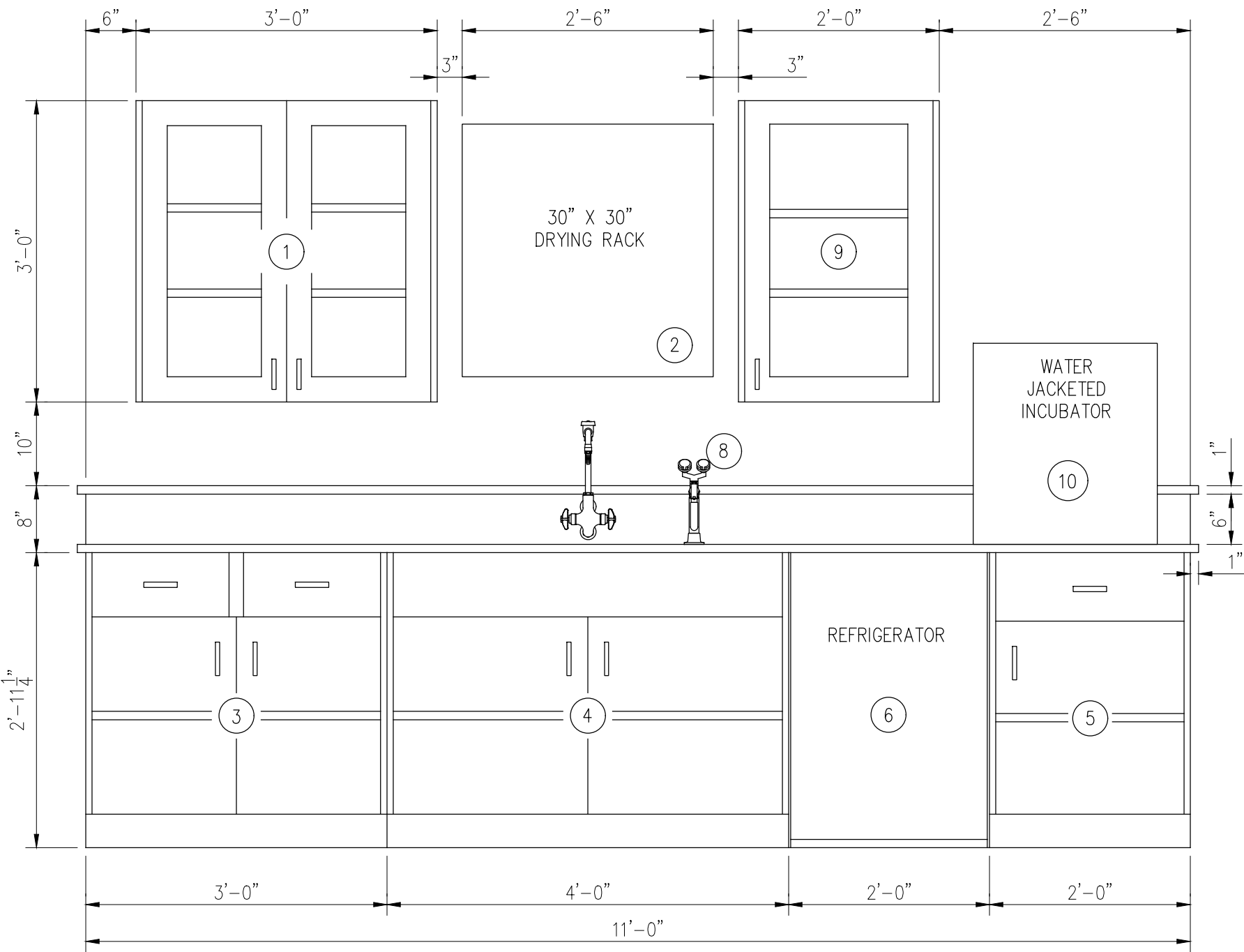
LONDON WATER TREATMENT PLANT IMPROVEMENTS

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C-20



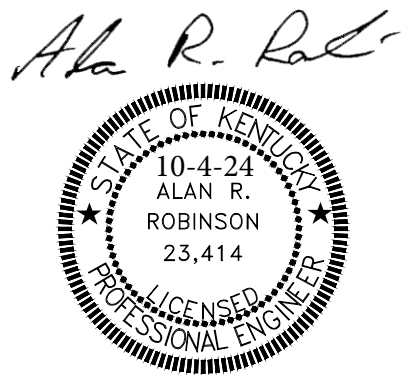
LEGEND

- 1 36" WALL CABINET
- 2 30" X 30" DRYING RACK
- 3 36" BASE CABINET
- 4 48" BASE CABINET
- 5 24" BASE CABINET
- 6 REFRIGERATOR
- SEE PLUMBING
- 7 SINK ASSEMBLY
- SEE PLUMBING
- 8 EYEWASH / DRENCH HOSE
- 9 24" WALL CABINET
- 10 EXISTING 22"X24" WATER JACKETED INCUBATOR (BY OWNER)
- 11 FRP STANDARD DOOR W/ GLASS
- 12 EXTEND BLOCK WALL AS NECESSARY TO ADD DOOR SYSTEM



ELEVATION

SCALE: 3/4" = 1'-0"



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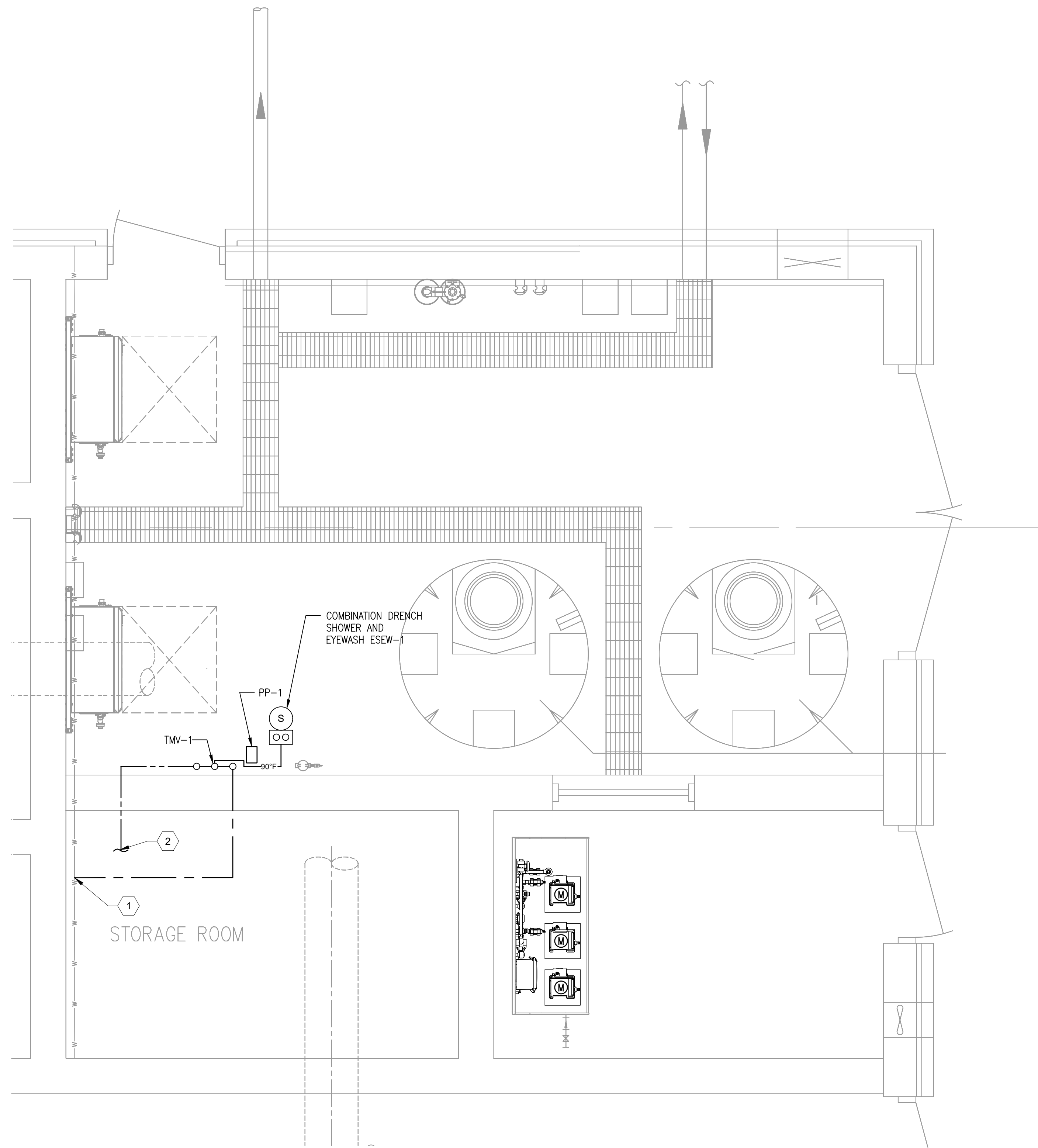
ADMINISTRATION / PROCESS BUILDING BACT-LAB

SECOND FLOOR (EAST) - PLAN AND ELEVATIONS

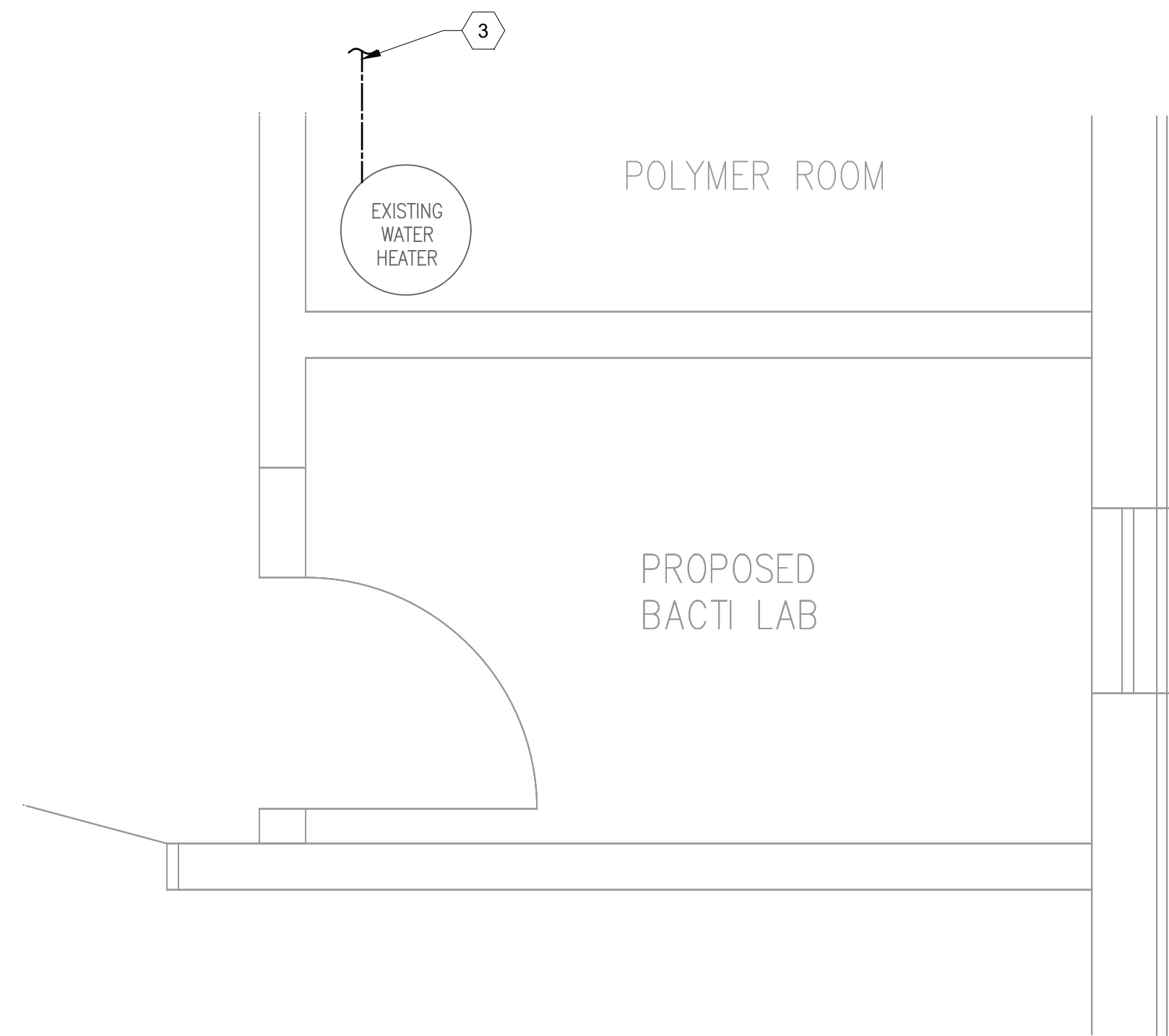
LONDON WATER TREATMENT PLANT IMPROVEMENTS

SHEET NUMBER:

A-1



CHLORINE ROOM 1ST FLOOR ENLARGED PLAN 1
SCALE 1/2" = 1'-0"



2nd FLOOR POLYMER ROOM ENLARGED PLAN 2
SCALE 1/2" = 1'-0"

GENERAL NOTES:

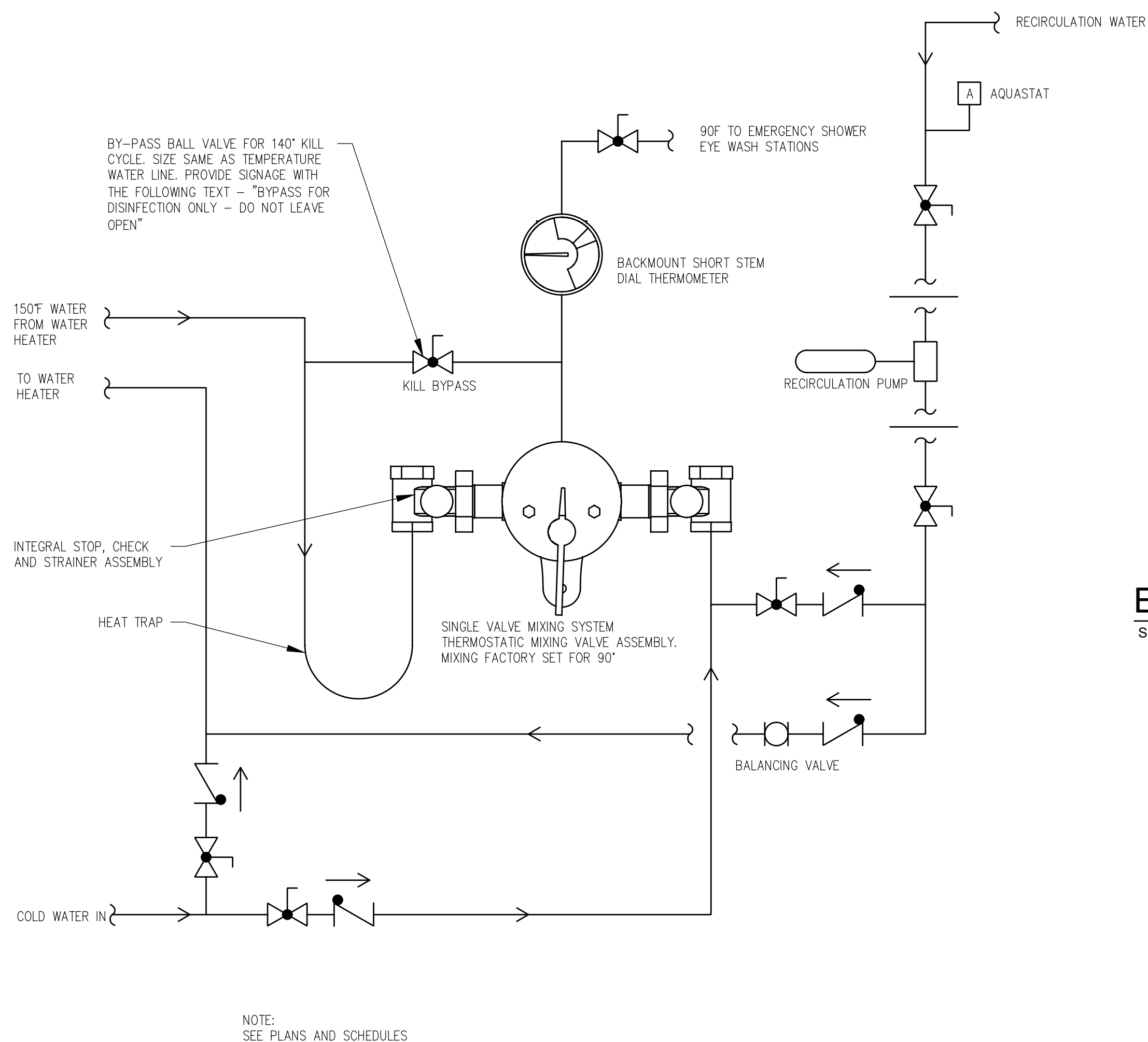
- COORDINATE LOCATION OF PLUMBING PIPING AND EQUIPMENT WITH LIGHTING, CONDUIT AND ELECTRICAL EQUIPMENT.
- COORDINATE WITH ELECTRICAL EQUIPMENT LOCATIONS TO INSURE PLUMBING PIPING IS NOT ROUTED ABOVE ELECTRICAL EQUIPMENT.

KEYNOTES:

- CONNECT 1 INCH COLD WATER LINE TO EXISTING 1 1/2 INCH COLD WATER.
- CONNECT 3/4 INCH HOT WATER LINE TO EXISTING HOT WATER FROM WATER HEATER IN POLYMER ROOM ON THE SECOND FLOOR.
- TIE INTO EXISTING HOT WATER SYSTEM FOR SERVICE TO EMERGENCY SHOWER EYE WASH IN THE CHLORINE ROOM OF THE FIRST FLOOR.



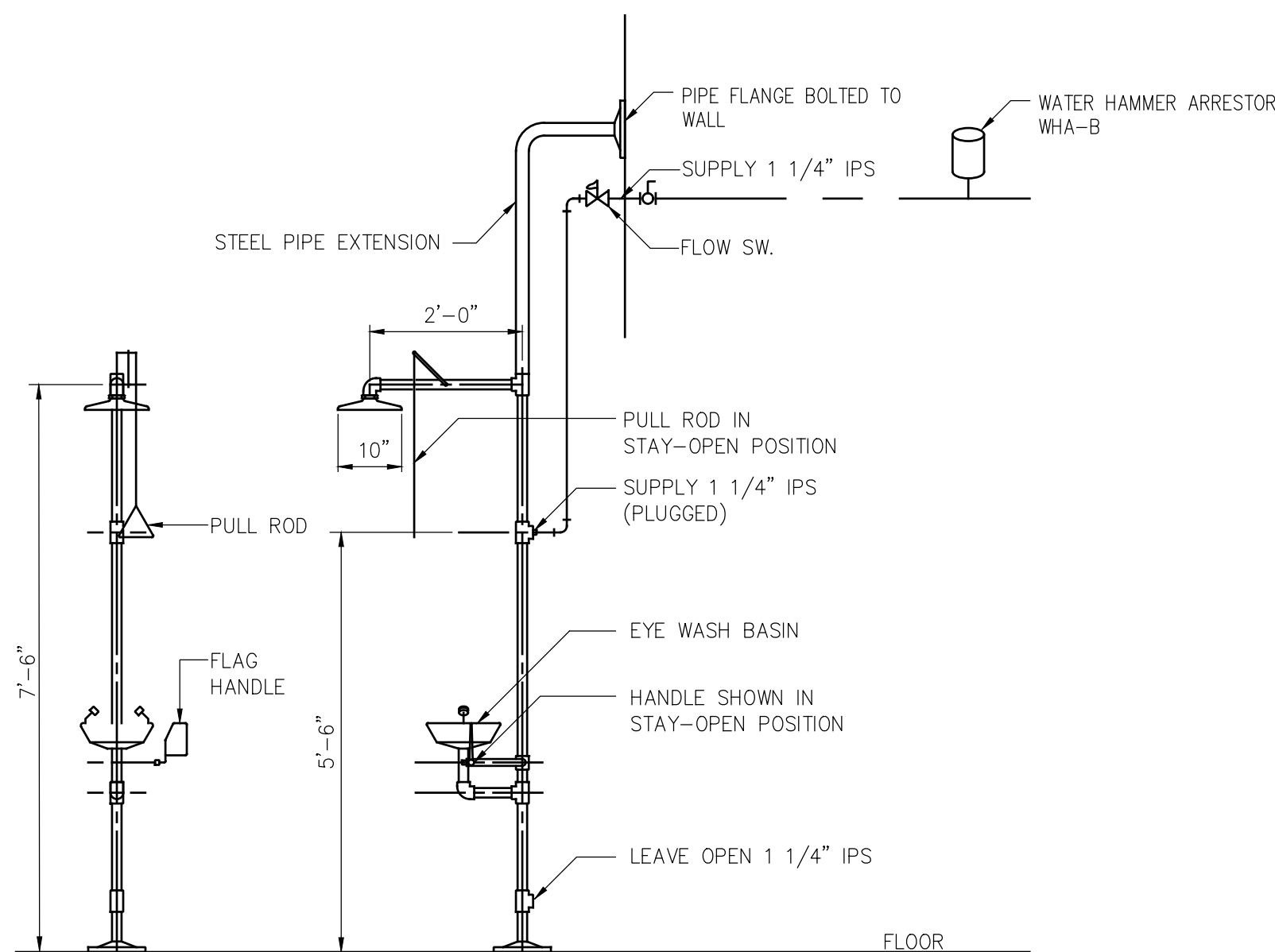
AS SHOWN	REVISION	BY	DATE
SCALE: DESIGNED BY: DNR DRAWN BY: YNR CHECKED BY: TMH PROJECT NO: 19008 DATE: JANUARY 2024 CAD DWG ID:			



Thermostatic mixing valve piping detail

SCALE: NOT TO SCALE

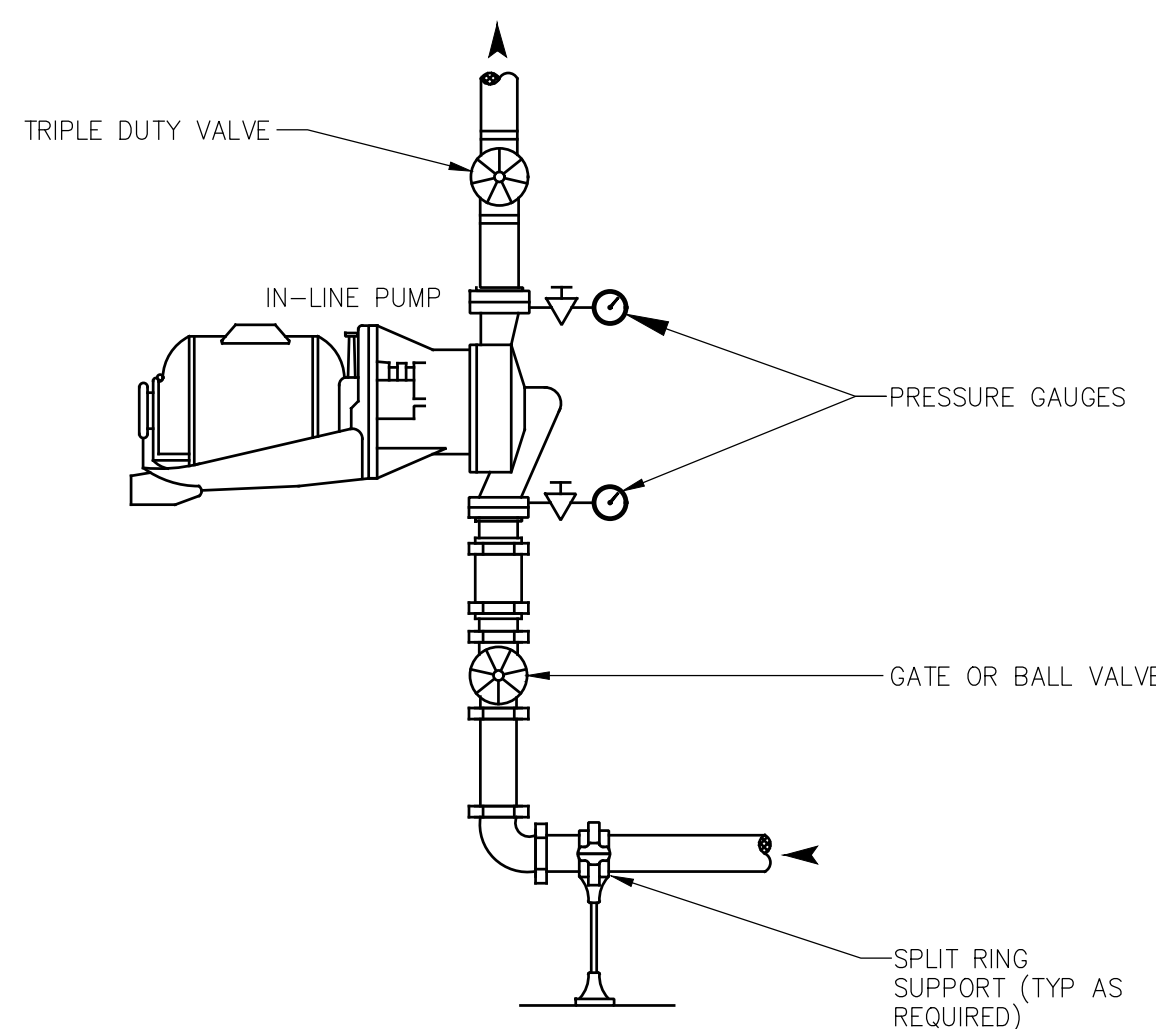
A
P-2



Emergency shower and eyewash ESEW-1

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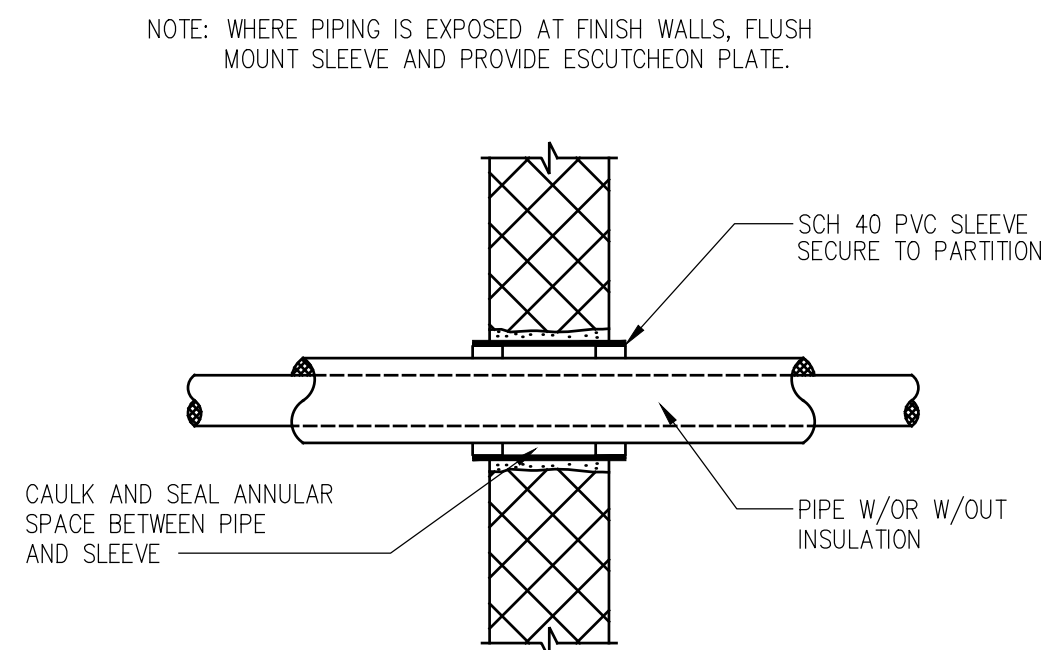
B
P-2



In-line pump detail

SCALE: NOT TO SCALE

D
P-2



Pipe penetration thru non-rated wall

SCALE: NOT TO SCALE

C
P-2

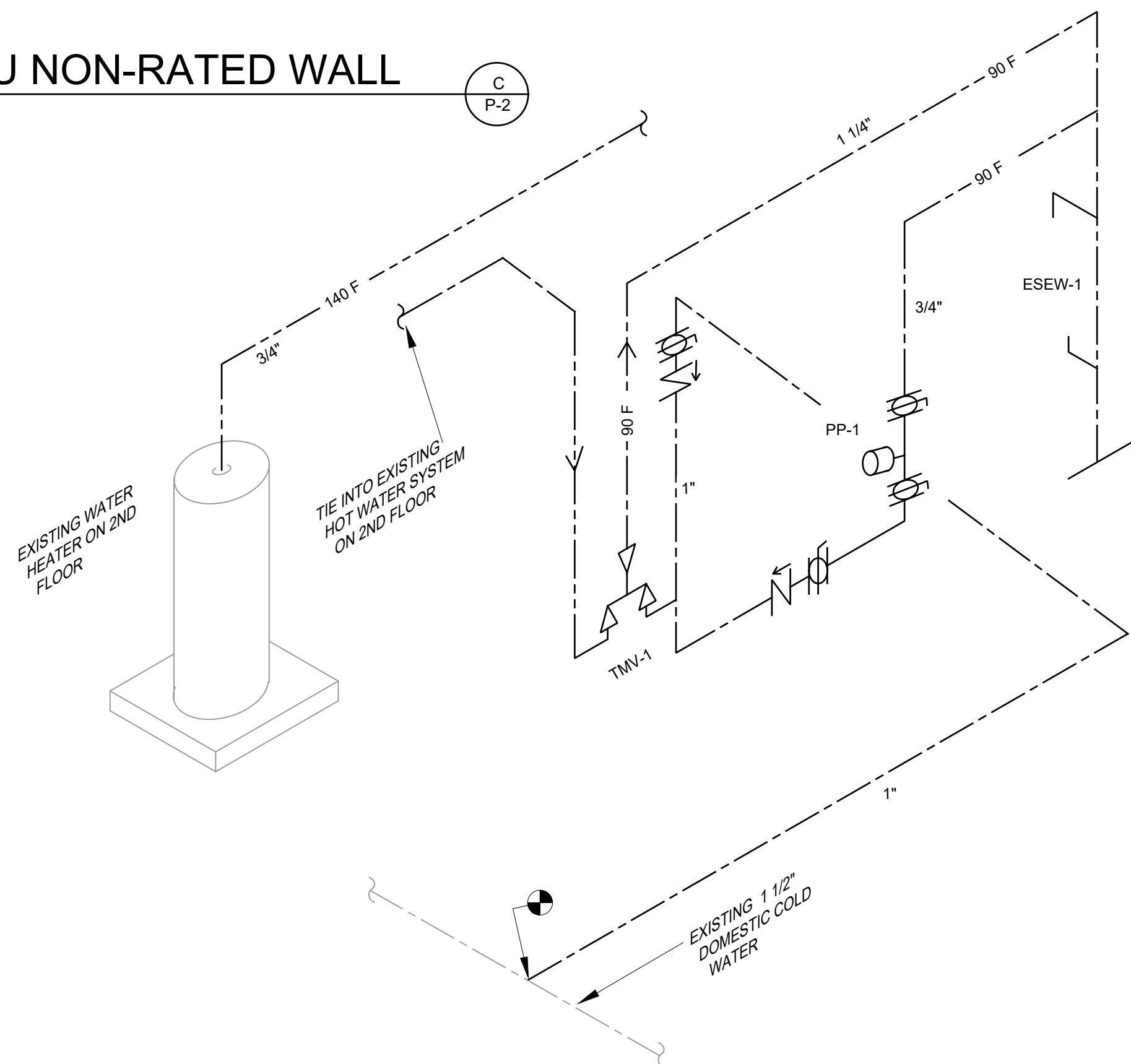
PLUMBING PUMP SCHEDULE												
MARK	TYPE	LOCATION	SERVICE	FLOW GPM	TOTAL HD FT	MIN NP/SH FT	MIN EFF NA	SIZE (IN)		MOTOR		
								SUCT	DISCH	HP	RPM	VOLTS/PHASE/HZ
PP-1	1	CHLORINE ROOM	140 F DOM HW RECIRC	5	7	NA	NA	0.75	0.75	FRAC	3250	115/1/60
											REMARKS	BASIS OF DESIGN
											1,2	GRUNDFOS UP 15-42FC

TYPE: 1. INLINE CLOSED COUPLE CENTRIFUGAL PUMP
REMARKS: 1. PUMPS SHALL BE NON-OVERLOADING THROUGHOUT THE CURVE. 2. MANUFACTURERS: BELL & GOSSET, GRUNDFOS OR TACO

PLUMBING FIXTURE SCHEDULE											
MARK	FIXTURE	DESCRIPTION (BASIS OF DESIGN)	MODEL	FIXTURE UNITS			PIPE SIZES				
				DRAIN	CW	HW	TRAP	WASTE	VENT	CW	HW
ESEW-1	EMERGENCY SHOWER EYE WASH	COMBINATION EMERGENCY SHOWER WITH EYE/FACE WASH STAINLESS STEEL SHOWER - BRADLEY HEAD AND BOWL, PULL ROD AND TRIANGULAR HANDLE	S19314SB	---	---	---	---	---	---	---	TEMPERED 1 1/4"

THERMOSTATIC MIXING VALVE SCHEDULE													
MARK	SERVICE	LOCATION	TYPE	CAPACITY MAX FLOW GPM	CAPACITY MIN FLOW GPM	COLD WATER EWT F	HOT WATER EWT F	MIXED WATER LWT F	FLOW @ 20 PSIG PRESS DROP - GPM	COLD INLET DIA INCHES	HOT INLET DIA INCHES	MIX OUTLET DIA INCHES	REMARKS
TMV-1	DHW - EMERGENCY FIXTURE	CHLORINE ROOM	1	23	3	50	140	90	33	1	1	1 1/4	1 - 4

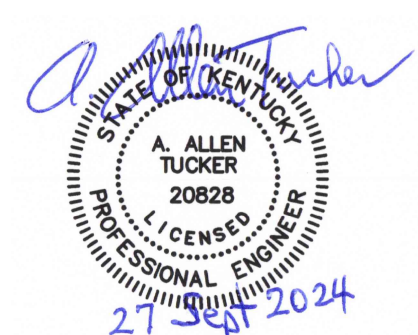
TYPE: 1. EMERGENCY SHOWER EYE WASH STATION THERMOSTATIC MIXING VALVE
REMARKS: 1. ASSE 1017 LISTED 2. THERMOMETER ON WATER OUTLET 3. INTERNAL COLD WATER BY PASS 4. MOUNT ON UNITS/STRUT OR IN CABINET PER PLANS

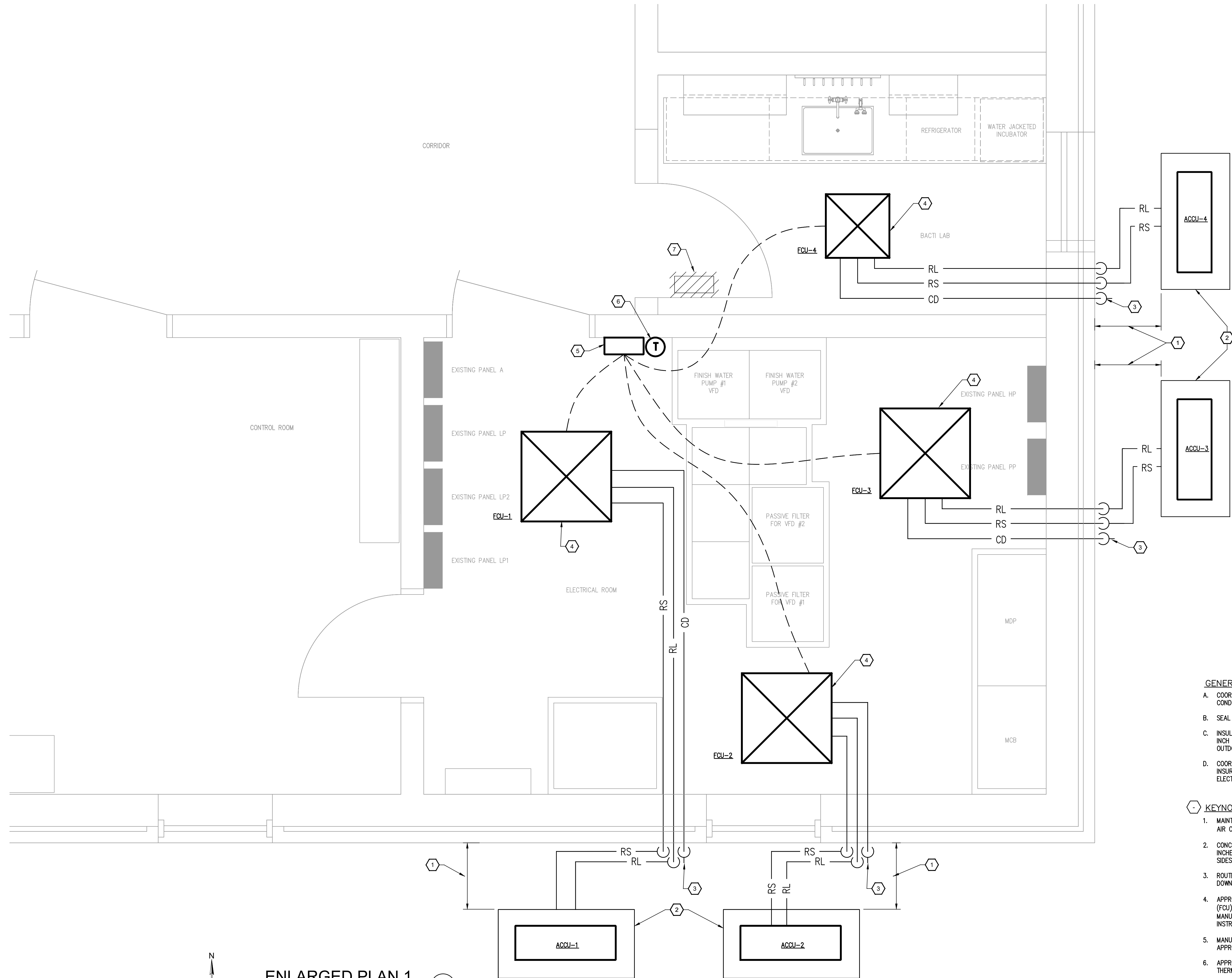


Plumbing riser diagram

SCALE: NOT TO SCALE

E
P-2

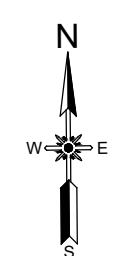




A. Allen Tucker
A. ALLEN
TUCKER
20828
LICENSED
PROFESSIONAL ENGINEER
27 Sept 2024

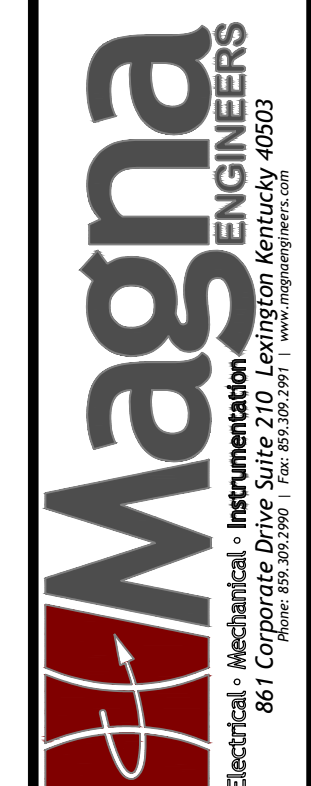
- GENERAL NOTES:**
- A. COORDINATE LOCATION OF HVAC EQUIPMENT WITH LIGHTING, CONDUIT AND ELECTRICAL EQUIPMENT.
 - B. SEAL PIPE WALL PENETRATIONS WATERTIGHT.
 - C. INSULATE REFRIGERANT PIPING WITH A MINIMUM OF 0.5 INCH THICK ELASTOMERIC INSULATION AND JACKET EXPOSED OUTDOOR PIPING.
 - D. COORDINATE WITH ELECTRICAL EQUIPMENT LOCATIONS TO INSURE HVAC PIPING OR DUCT IS NOT ROUTED ABOVE ELECTRICAL EQUIPMENT.

- KEYNOTES:**
- 1. MAINTAIN A MINIMUM SEPARATION OF TWO (2) FEET FROM AIR COOLED CONDENSING UNIT (ACCU) TO WALL.
 - 2. CONCRETE PAD FOUR (4) INCHES THICK AND SIX (6) INCHES GREATER THAN EQUIPMENT FOOTPRINT ON ALL SIDES. SECURE ACCU TO CONCRETE PAD.
 - 3. ROUTE INSULATED AND JACKETED CONDENSATE PIPING DOWN TO SPLASH BLOCK AT GRADE.
 - 4. APPROXIMATELY 9'0" AFF TO BOTTOM OF FAN COIL UNIT (FCU). SUSPEND FCU FROM STRUCTURE ABOVE PER MANUFACTURER'S RECOMMENDED INSTALLATION INSTRUCTIONS.
 - 5. MANUFACTURER'S LEAD/LAG CONTROL PANEL APPROXIMATELY 48-60 INCHES AFF TO BOTTOM OF PANEL.
 - 6. APPROXIMATELY 48-60 INCHES AFF TO BOTTOM OF THERMOSTAT.
 - 7. DEMOLISH AND REMOVE EXISTING UNIT HEATER.



ENLARGED PLAN 1
SCALE 3/4" = 1'-0"

M
M-1

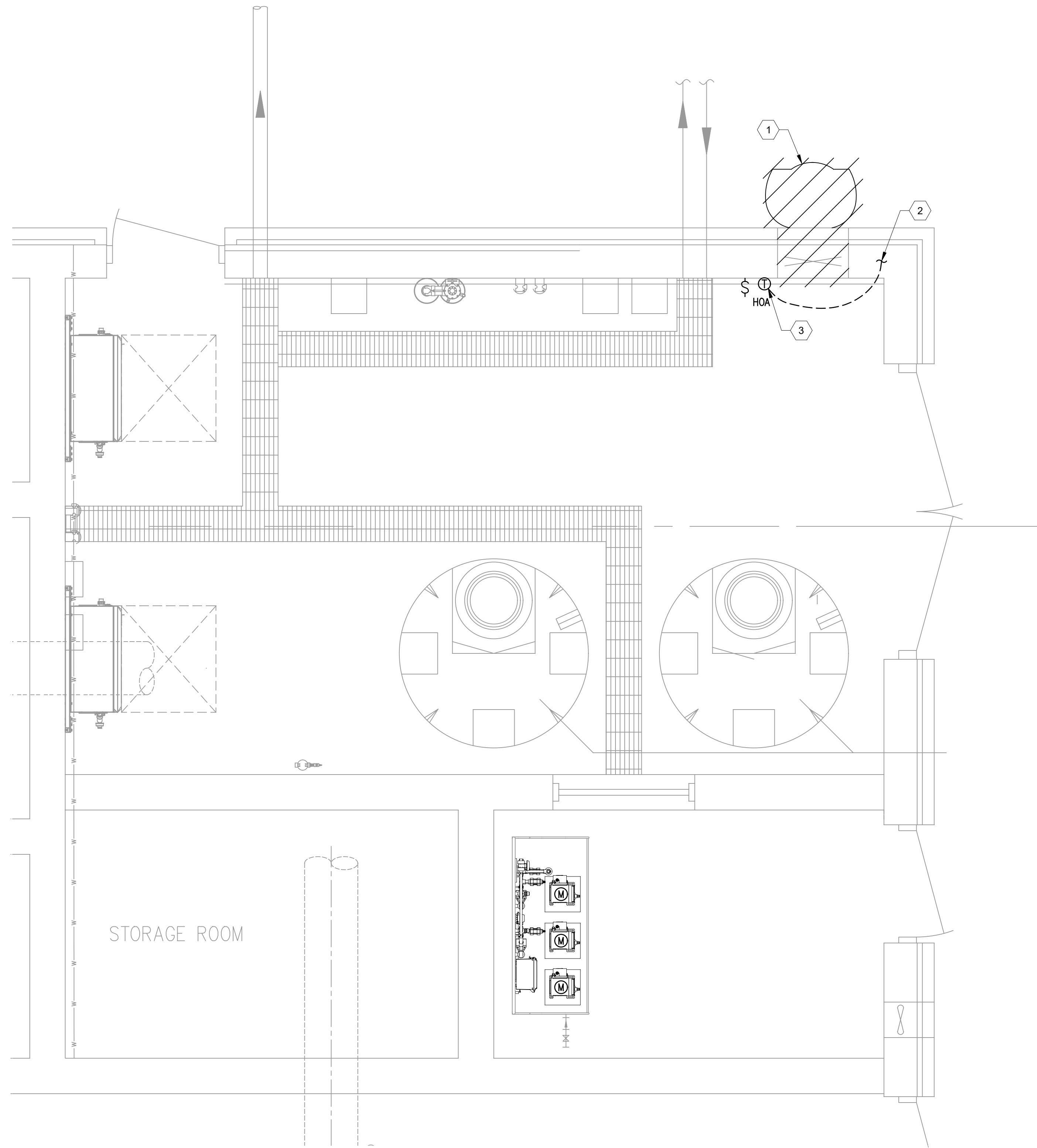


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LONDON UTILITY COMMISSION
P.O. BOX 918
801 N. MAIN STREET
LONDON, KENTUCKY 40741

**ADMINISTRATION / PROCESS BUILDING
MECHANICAL ENLARGED PLAN**
LONDON WATER TREATMENT PLAN IMPROVEMENTS

SHEET NUMBER:
M-1



ENLARGED PLAN 1

SCALE 1/2" = 1'-0"

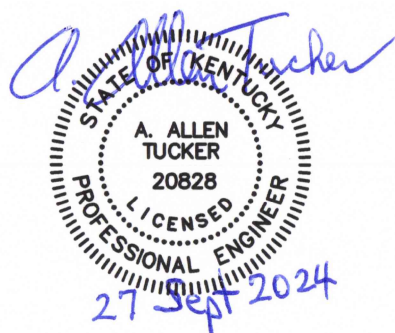
M
M-2

GENERAL NOTES:

- COORDINATE LOCATION OF HVAC EQUIPMENT WITH LIGHTING, CONDUIT AND ELECTRICAL EQUIPMENT.
- COORDINATE WITH ELECTRICAL EQUIPMENT LOCATIONS TO INSURE HVAC PIPING OR DUCT IS NOT ROUTED ABOVE ELECTRICAL EQUIPMENT.

KEYNOTES:

- DEMOLISH AND REMOVE EXISTING EXHAUST FAN. PREPARE WALL FOR INSTALLATION OF NEW EXHAUST FAN. REPAIR WALL WITH IN-KIND MATERIAL TO MATCH EXISTING.
- CONTROL WIRING FROM THERMOSTAT AND H-O-A SWITCH TO THE NEW EXHAUST FAN.
- APPROXIMATELY 48-60 INCHES AFF TO BOTTOM OF THERMOSTAT AND H-O-A SWITCH.



ADMINISTRATION / PROCESS BUILDING
MECHANICAL ENLARGED PLAN

LONDON WATER TREATMENT PLAN IMPROVEMENTS

LONDON UTILITY
COMMISSION

P.O. BOX 918
801 N. MAIN STREET
LONDON, KENTUCKY 40741

SHEET NUMBER:

M-2



Electrical, Mechanical, Instrumentation
861 Crumrine Drive
London, KY 40301
Phone: 502.262.2262 Fax: 502.262.2261 E-mail: info@magnaengineers.com

OPERATING PARAMETERS		
FUNCTION	SETPOINT (ADJUSTABLE)	REMARKS
SPACE AIR TEMPERATURE	COOLING - 80 F (27 C) HEATING - 55 F (13 C)	DEAD BAND +/- 2.5 F (1.5 C) DEAD BAND +/- 2.5 F (1.5 C)

SINGLE ZONE CONSTANT VOLUME DUCTLESS SPLIT SYSTEM - ELECT RM - FCU-1, FCU-2 & FCU-3

DX COIL

IN COOLING MODE DX COIL SHALL MAINTAIN SPACE COOLING TEMPERATURE SETPOINT (ADJUSTABLE). IN HEATING MODE HEAT PUMP REVERSING SHALL SWITCH TO HEAT AND THE DX COIL SHALL MAINTAIN SPACE HEATING TEMPERATURE SETPOINT (ADJUSTABLE).

THERMOSTAT

MICROPROCESSOR BASED THERMOSTAT WITH "HEAT-OFF-COOL" , "AUTO-ON" SWITCHES AND AUTOMATIC HEATING/ COOLING CHANGE OVER SHALL CONTROL THE TEMPERATURE. DURING AUTO POSITION THE SUPPLY FAN SHALL BE UNDER SPACE TEMPERATURE CONTROL AND THE CONDENSER SHALL BE INTERLOCKED WITH THE SUPPLY FAN. SUPPLY SHALL HAVE AN ADJUSTABLE TIME DELAYED ON/OFF.

SEQUENCING

FCU-1, FCU-2 AND FCU-3 SHALL START IN LEAD/LAG FASHION. DURING COOLING IF SPACE TEMPERATURE IS 2.5 F ABOVE SETPOINT AFTER 45 MINUTES (ADJUSTABLE) OF LEAD UNIT OPERATION THE LAG UNIT SHALL BE BROUGHT ON AND TWO (2) UNITS SHALL OPERATE SIMULTANEOUSLY UNTIL SPACE TEMPERATURE IS 2.5 F BELOW SETPOINT. AFTER 15 MINUTES OF SPACE TEMPERATURE 2.5 F BELOW SETPOINT THE LAG UNIT SHALL BE CYCLED OFF. DURING COOLING IF SPACE TEMPERATURE IS 2.5 F ABOVE SETPOINT FOR 45 MINUTES WITH TWO (2) UNITS OPERATING THE NEXT LAG UNIT SHALL BE BROUGHT ON AND THREE (3) UNITS SHALL OPERATE SIMULTANEOUSLY UNTIL SPACE TEMPERATURE IS 2.5 F BELOW SETPOINT. AFTER 15 MINUTES OF SPACE TEMPERATURE 2.5 F BELOW SETPOINT THE LAG UNITS SHALL BE CYCLED OFF IN REVERSE ORDER WITH 15 MINUTE SEPARATION BETWEEN EACH LAG UNIT SHUT DOWN. EVERY 24 HOURS THE LEAD AND LAG UNITS SHALL ALTERNATE.

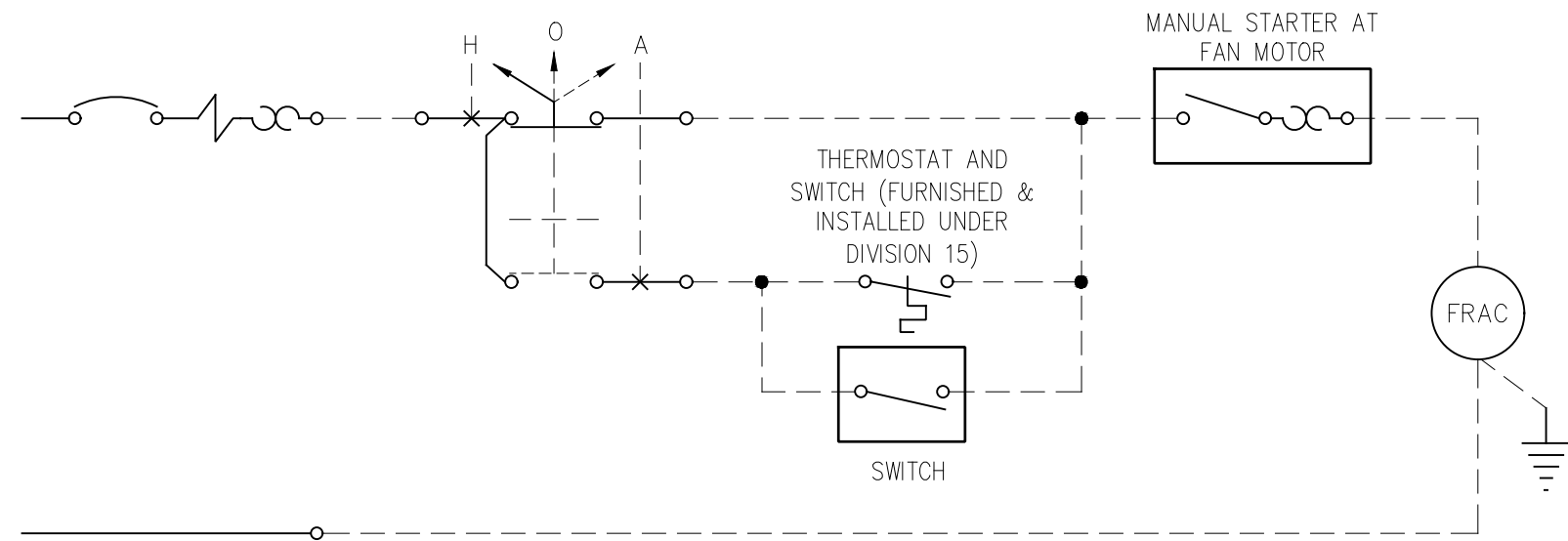
OPERATING PARAMETERS		
FUNCTION	SETPOINT (ADJUSTABLE)	REMARKS
SPACE AIR TEMPERATURE	COOLING - 75 F (24 C) HEATING - 68 F (20 C)	DEAD BAND +/- 2.5 F (1.5 C) DEAD BAND +/- 2.5 F (1.5 C)

SINGLE ZONE CONSTANT VOLUME DUCTLESS SPLIT SYSTEM - LAB - FCU-4

IN COOLING MODE DX COIL SHALL MAINTAIN SPACE COOLING TEMPERATURE SETPOINT (ADJUSTABLE). IN HEATING MODE HEAT PUMP REVERSING SHALL SWITCH TO HEAT AND THE DX COIL SHALL MAINTAIN SPACE HEATING TEMPERATURE SETPOINT (ADJUSTABLE).

THERMOSTAT

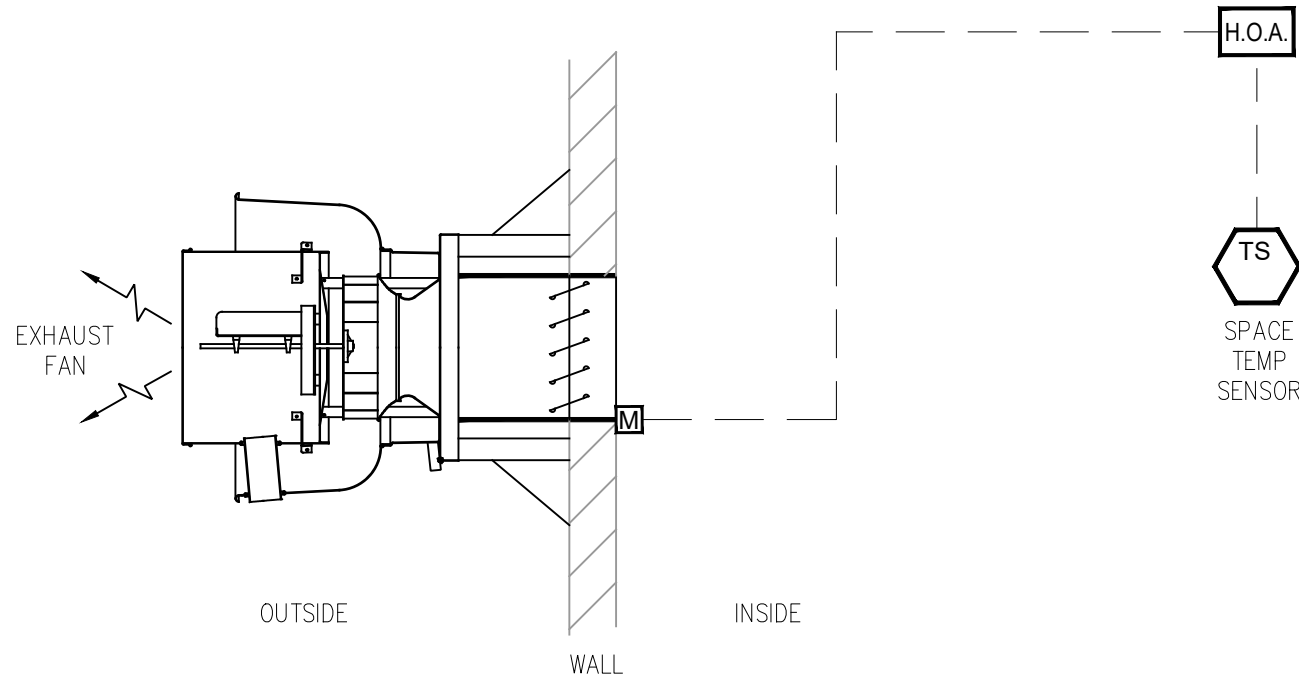
MICROPROCESSOR BASED THERMOSTAT WITH "HEAT-OFF-COOL" , "AUTO-ON" SWITCHES AND AUTOMATIC HEATING/ COOLING CHANGE OVER SHALL CONTROL THE TEMPERATURE. DURING AUTO POSITION THE SUPPLY FAN SHALL BE UNDER SPACE TEMPERATURE CONTROL AND THE CONDENSER SHALL BE INTERLOCKED WITH THE SUPPLY FAN. SUPPLY SHALL HAVE AN ADJUSTABLE TIME DELAYED ON/OFF.



EXHAUST FAN CONTROL CIRCUIT

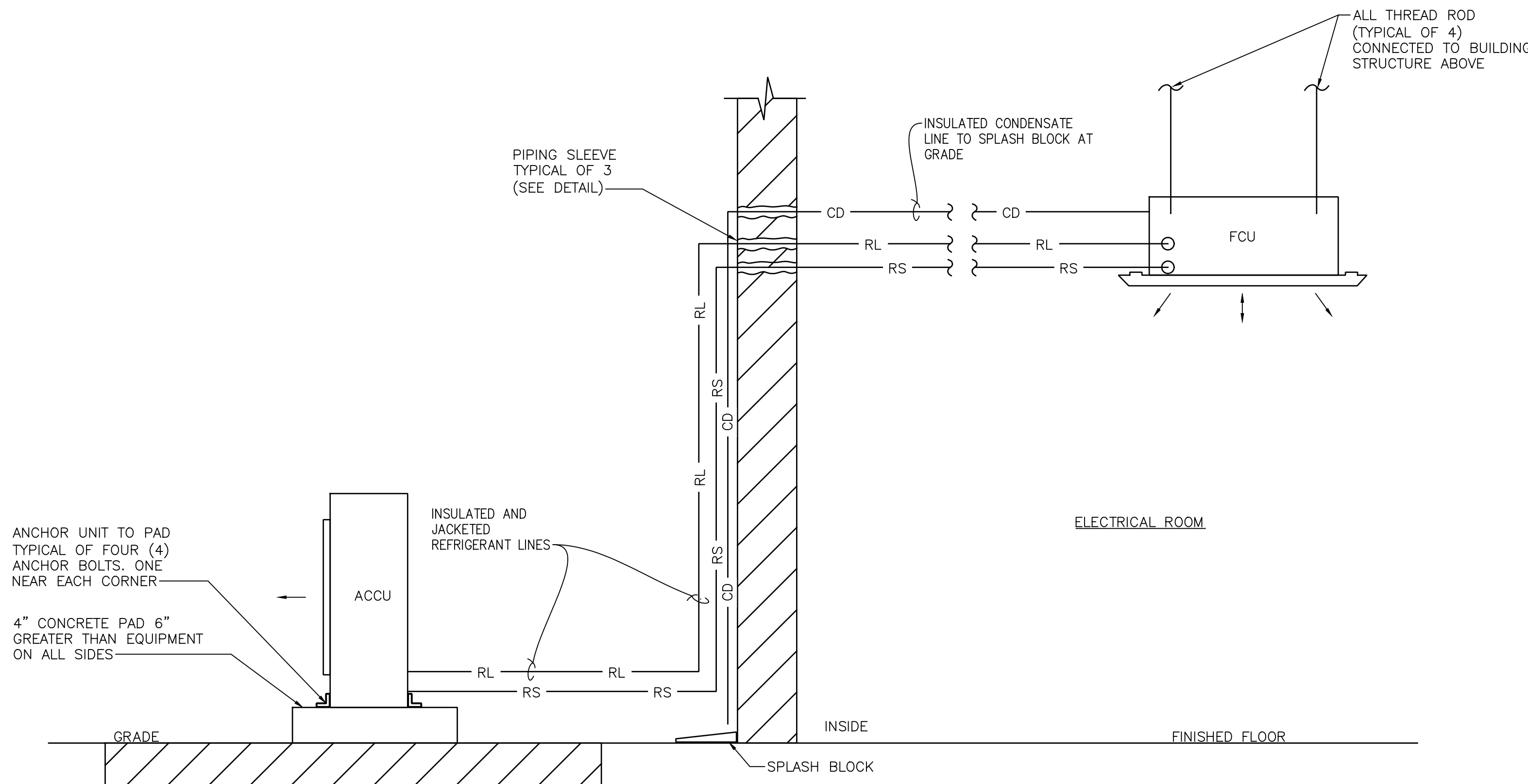
SCALE: NOT TO SCALE

- SYSTEMS REQUIRED (NEMA 1 ENCLOSED) -- EF-1
- SWITCHES SHALL BE 1-HP RATED
- UTILIZE #12 AWG CONDUCTORS



EXHAUST FAN CONTROL DIAGRAM

SCALE: NOT TO SCALE



DUCTLESS SPLIT SYSTEM DETAIL

SCALE: NOT TO SCALE

3
M-3

OPERATING PARAMETERS

FUNCTION	SET POINT (ADJUSTABLE)	REMARKS
EXHAUST FAN SPACE AIR TEMPERATURE SETPOINT	90 F (32 C)	SUMMER VENTILATION DEAD BAND +/- 5 F (3 C)

SEQUENCE OF OPERATION - EXHAUST FAN

EXHAUST FAN CONTROL

EXHAUST FAN SHALL BE ENABLED CONTINUOUSLY UNDER HAND-OFF-AUTOMATIC (H-O-A) CONTROL. DURING AUTOMATIC (A) CONTROL FAN THERMOSTAT CONTROLS FAN.

DUCTLESS SPLIT AIR COOLED CONDENSING UNIT HEAT PUMP

MARK	SERVICE	TOTAL CAPACITY (MBH)	AMBIENT AIR TEMP. (F)	SUCTION TEMP (F)	VOLTS	PH	FLA	MCA	MFS	NOTES
ACCU-1	FCU-1	48	95	45	208/230	1	23.3	29.1	35	1, 2, 3, 4
ACCU-2	FCU-2	48	95	45	208/230	1	23.3	29.1	35	1, 2, 3, 4
ACCU-3	FCU-3	48	95	45	208/230	1	23.3	29.1	35	1, 2, 3, 4
ACCU-4	FCU-4	15	95	45	208/230	1	8	10	18	1, 2, 3, 4

NOTES:
1. SINGLE POINT ELECTRICAL CONNECTION WITH INTEGRAL CONTROLS
2. SPLIT UNITS WITH R-410A
3. VARIABLE CAPACITY SCROLL COMPRESSOR(S)
4. MANUFACTURERS: DAIKIN, EM, MITSUBISHI

BASIS OF DESIGN:
1. ACCU-4 - MITSUBISHI MOD: SLZ-KA15NA2
2. ACCU-1, 2, and 3- DAIKIN MOD: RZQ48TAVJUA

EXHAUST FAN SCHEDULE

MARK	SERVICE	LOCATION	TYPE	CFM	S.P. IN WG	FAN RPM	DRIVE	FAN TIP FPM	MOTOR HP	V/PH/Hz	ACCESSORIES	BASIS OF DESIGN GREENHECK MOD: CUE-099-A
EF-1	CHLORINE ROOM	CHLORINE ROOM WALL	1	1100	0.5	1725	DIRECT	5053	1/4	115/1/60	3, 4, 5, 6, 7	

FAN TYPE:
1. SIDEWALL CENTRIFUGAL FAN

FAN ACCESSORIES:
1. INLET SCREEN, WALL HOUSING, OSHA MOTOR GUARD
2. ADJ. SHEAVES , OSHA MOTOR AND/OR BELT GUARD
3. MOTOR OPERATED BACKDRAFT DAMPER
4. H-PRO POLYESTER LAB COATING

5. SPARK CLASS B
6. NEOPRENE VIBRATION ISOLATORS
7. FACTORY INSTALLED SINGLE POINT WIRING

DUCTLESS SPLIT SYSTEM FAN COIL UNIT SCHEDULE

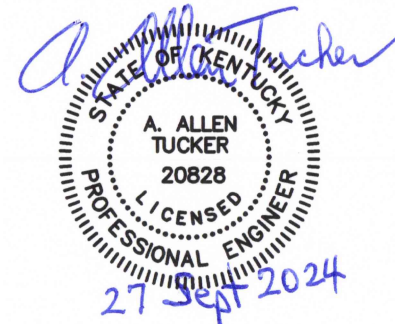
MARK	SERVICE	LOCATION	CFM	FCU TYPE	OA CFM	DX COOLING COIL						DX HEAT PUMP				ELECTRICAL				ACCESSORIES	BASIS OF DESIGN			
						TOTAL MBH	SENS MBH	EAT F db	EAT F wb	LAT F db	LAT F wb	MIN SEER	EAT F db	LAT F db	MIN HSPF	CAP MBH	CAP KW	VOLTS	PH			FLA	MCA	MFS
FCU-1	ACQU-1	ELECTRICAL ROOM	1240	CASSETTE	25	43.8	32.4	82	65	58	56	12	55	60	8.0	6.8	2.0	230/208	1	1.4	1.8	15.0	2 - 10, 12-13	DAKIN FQ048TAV/JU
FCU-2	ACQU-2	ELECTRICAL ROOM	1240	CASSETTE	25	43.8	32.4	82	65	58	56	12	55	60	8.0	6.8	2.0	230/208	1	1.4	1.8	15.0	2 - 10, 12-13	DAKIN FQ048TAV/JU
FCU-3	ACQU-3	ELECTRICAL ROOM	1240	CASSETTE	25	43.8	32.4	82	65	58	56	12	55	60	8.0	6.8	2.0	230/208	1	1.4	1.8	15.0	2 - 10, 12-13	DAKIN FQ048TAV/JU
FCU-4	ACQU-4	LAB	405	CASSETTE	25	14.4	10.8	78	66	54	53	15	55	70	9.0	6.6	1.9	230/208	1	---	---	---	2 - 9, 11-13	MTSUBISHI MOD. SLZ-KP15NA

SYSTEM TYPE:
1. SPLIT SYSTEM
HEAT PUMP
WITH R-410A

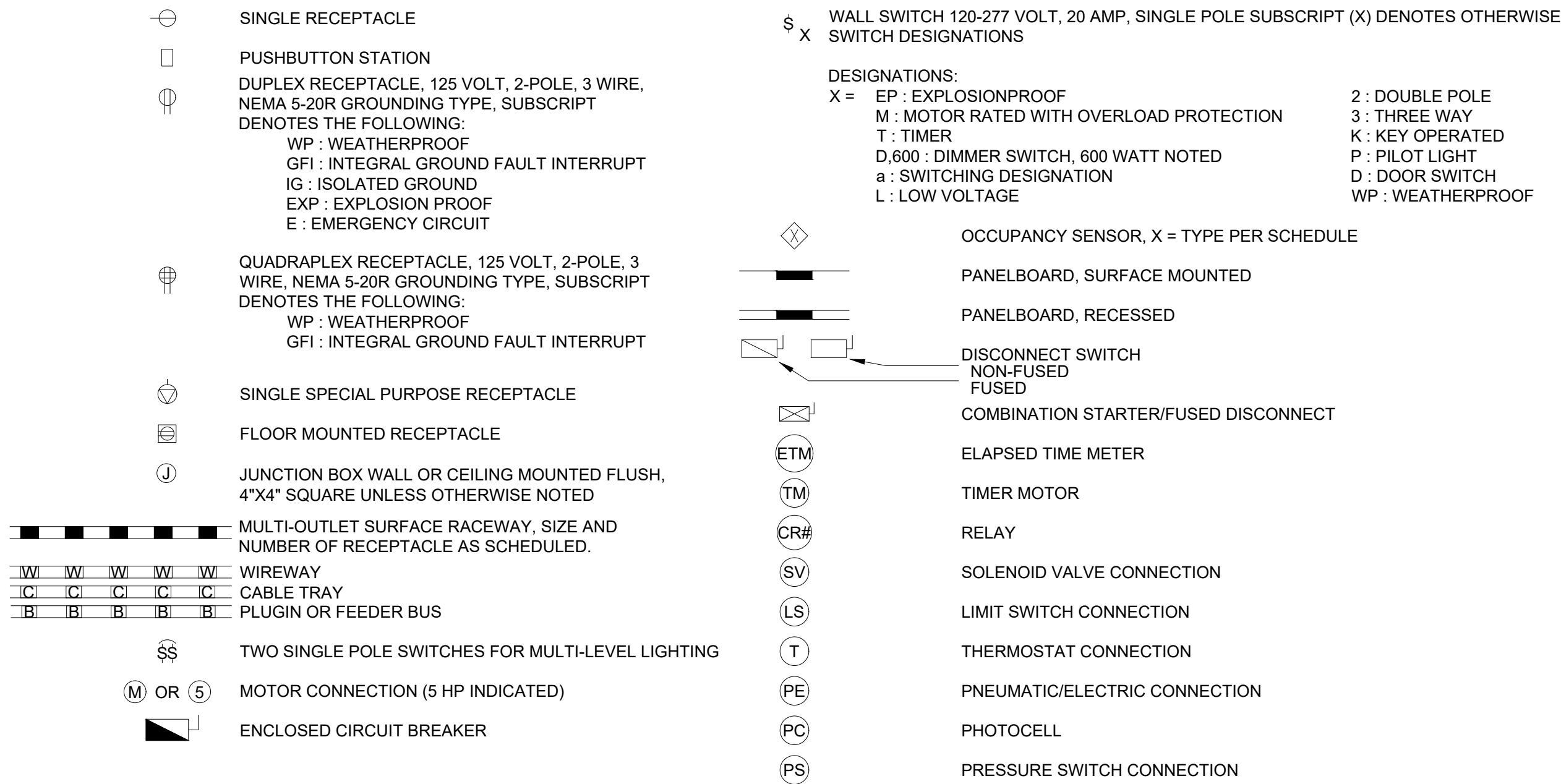
ACCESSORIES:
1. LOW AMBIENT KIT (0 F)
2. SINGLE POINT ELECT CONNECTION
3. CLEANABLE REUSABLE FILTER (2 SPARES)
4. CONTROL PANEL WIRING c/w PROGRAMABLE THERMOSTAT

5. OA VENT KIT c/w KNOCKOUTS & OA DAMPER
6. ANTI-SHORT CYCLE PROTECTION
7. VARIABLE REFRIGERANT VOLUME
8. SECONDARY CONDENSATE DRAIN PAN c/w CUTOFF SWITCH
9. CONDENSATE PUMP

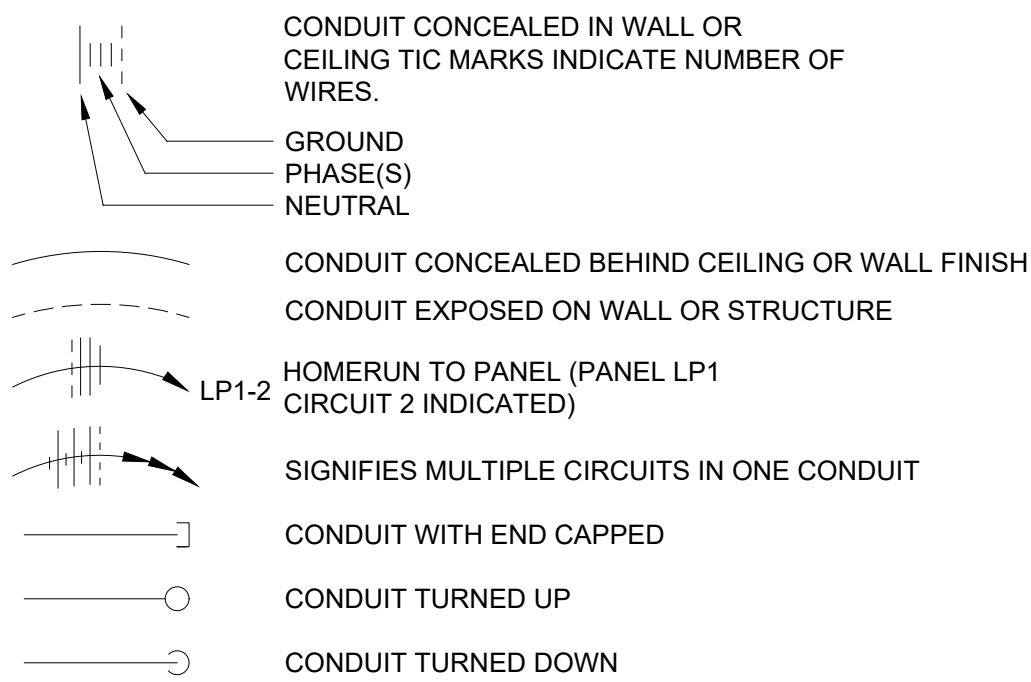
10. MANUFACTURER'S LEAD/LAG CONTROL PANEL
11. INDOOR UNIT ELECTRIC FED FROM FROM OUTDOOR UNIT
12. SUMMER OUTDOOR AIR TEMPERATURE 95 F
13. MANUF: DAIKIN, EM, MITSUBISHI



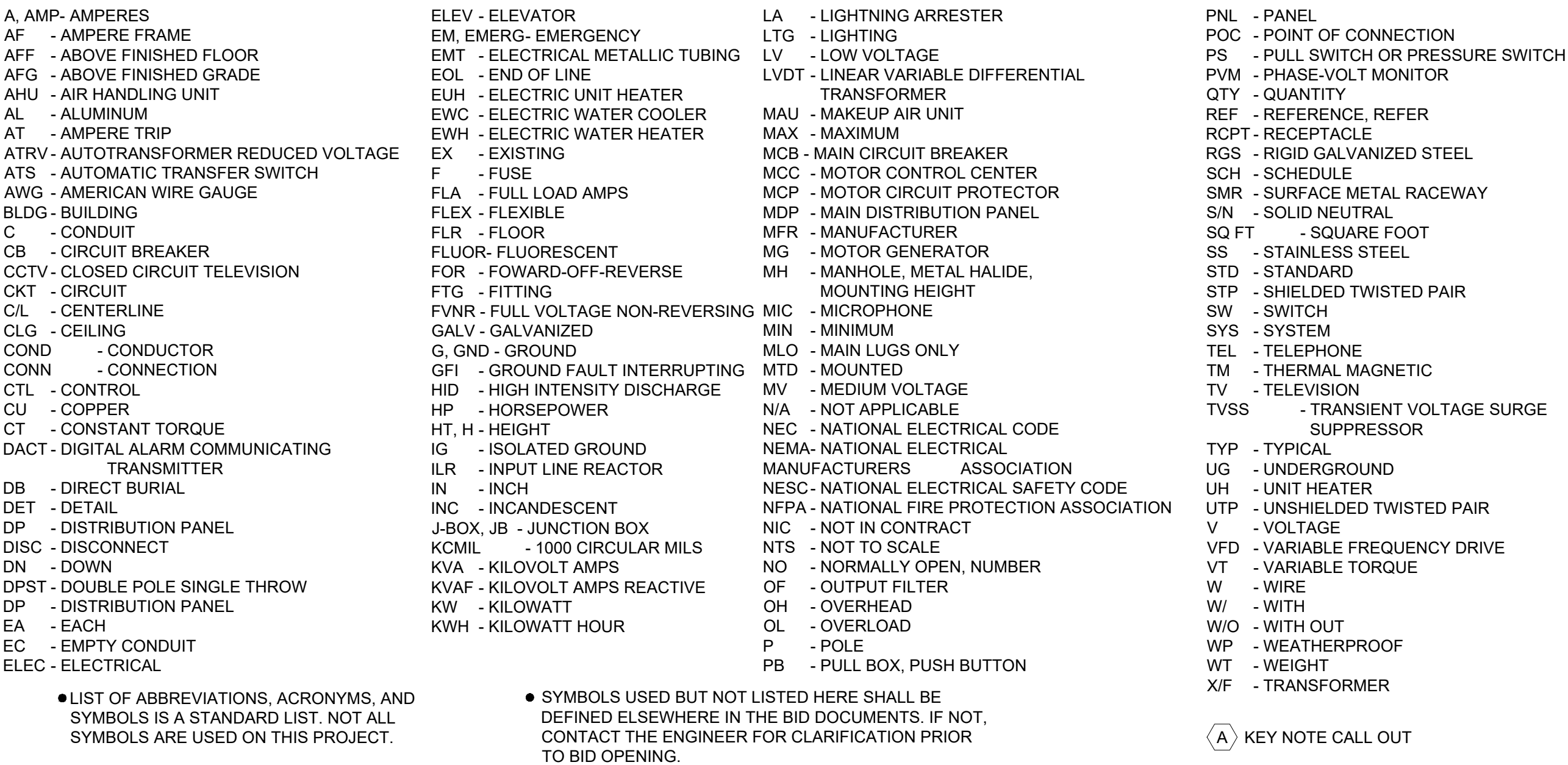
POWER EQUIPMENT & DEVICES



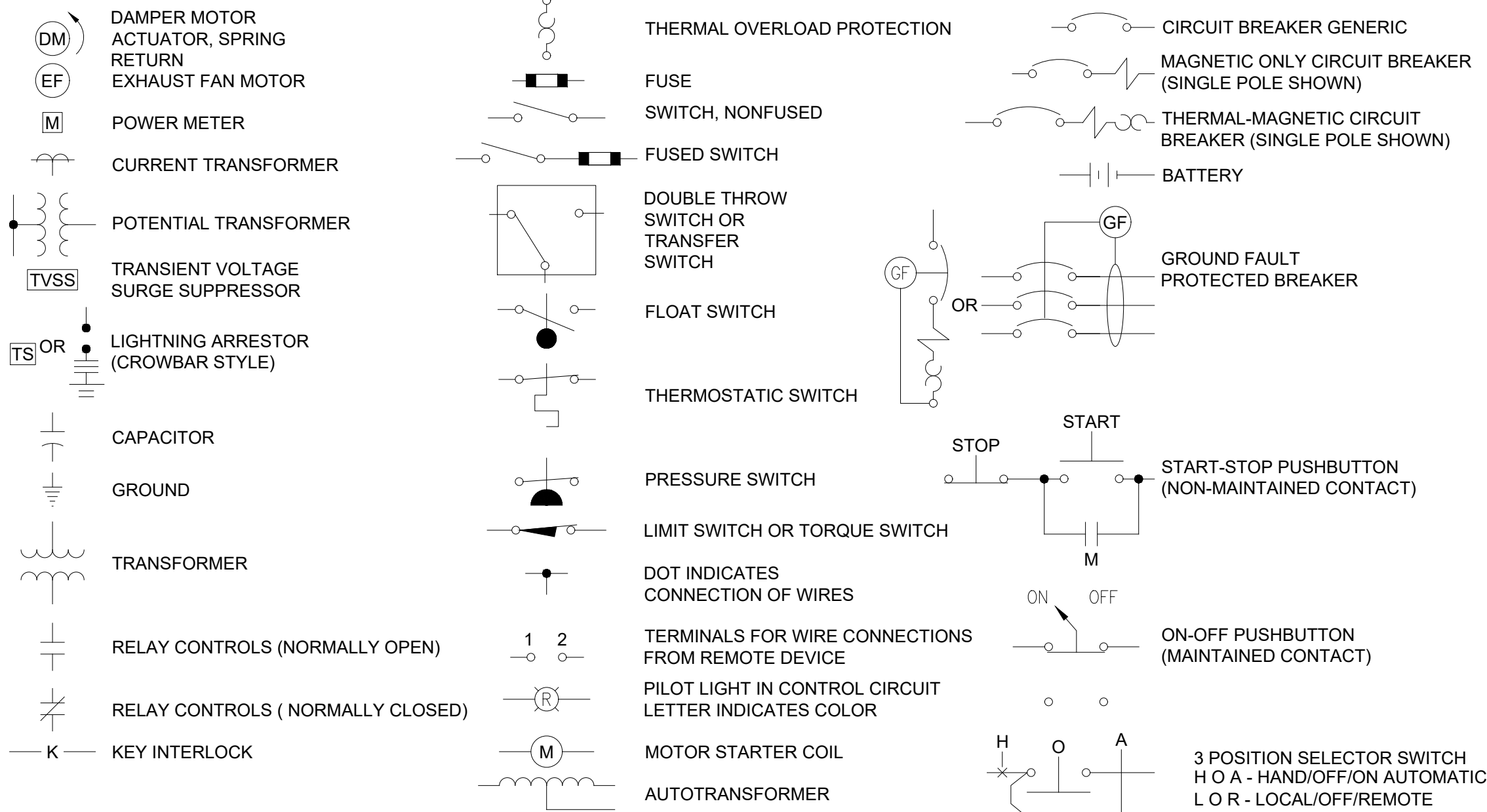
INTERIOR CONDUIT AND WIRE



ABBREVIATIONS



CONTROLS

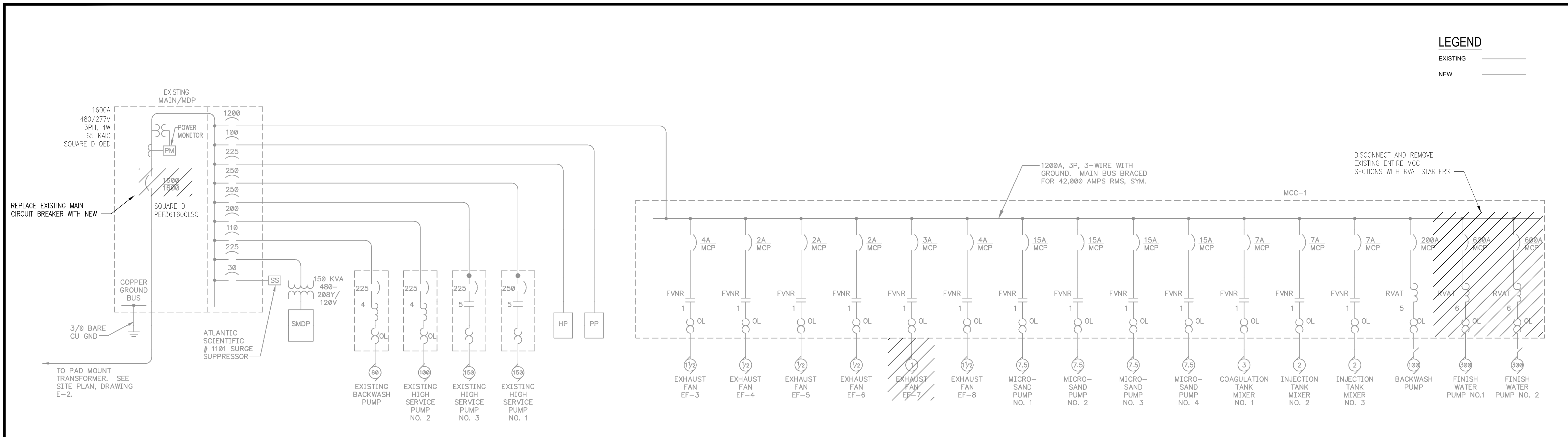


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CHECKED BY:	TMH			
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DATE:	JANUARY 2024			
CAD DWG ID:				

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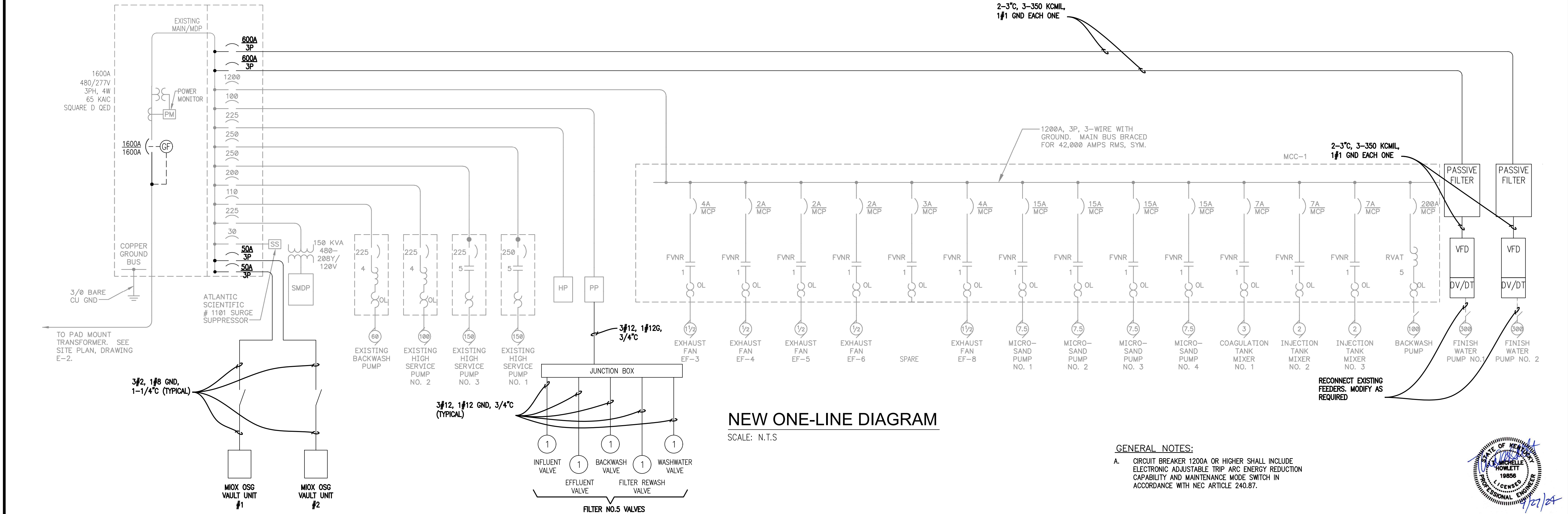
ELECTRICAL SYMBOLOLOGY
LONDON WATER TREATMENT PLANT IMPROVEMENTS





DEMOLITION ONE-LINE DIAGRAM

SCALE: N.T.S



NEW ONE-LINE DIAGRAM

SCALE: N.T.S

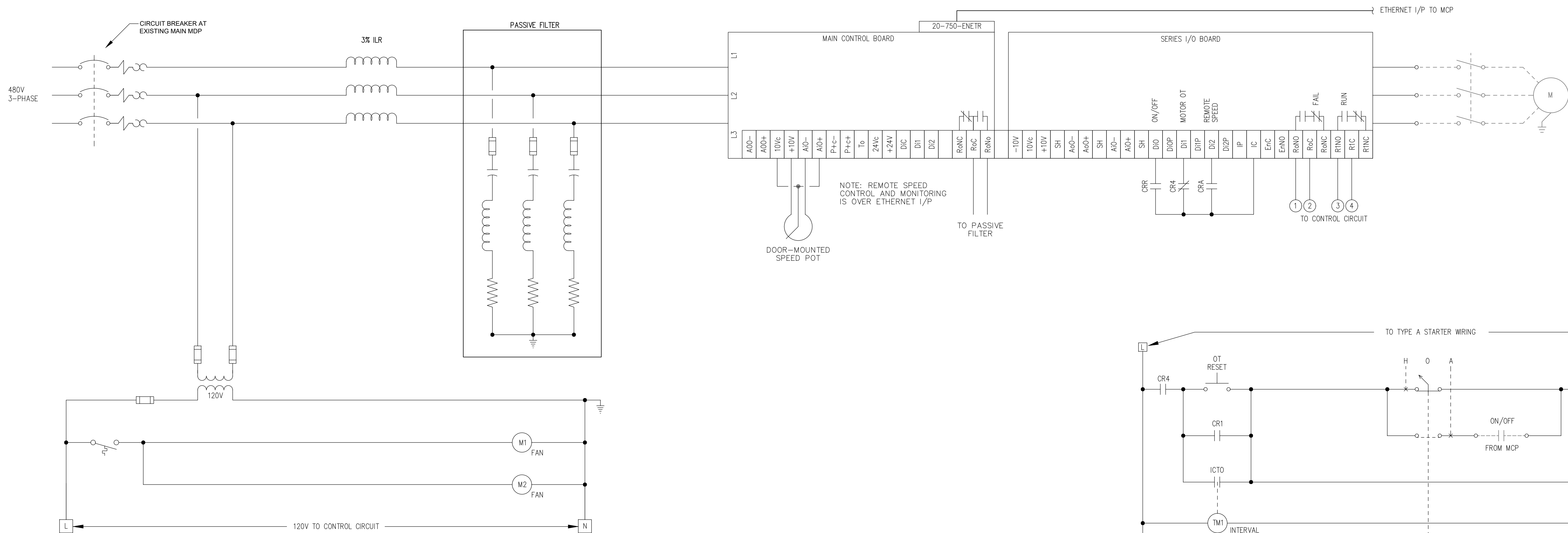
GENERAL NOTES:

- A. CIRCUIT BREAKER 1200A OR HIGHER SHALL INCLUDE ELECTRONIC ADJUSTABLE TRIP ARC ENERGY REDUCTION CAPABILITY AND MAINTENANCE MODE SWITCH IN ACCORDANCE WITH NEC ARTICLE 240.87.

LEGEND

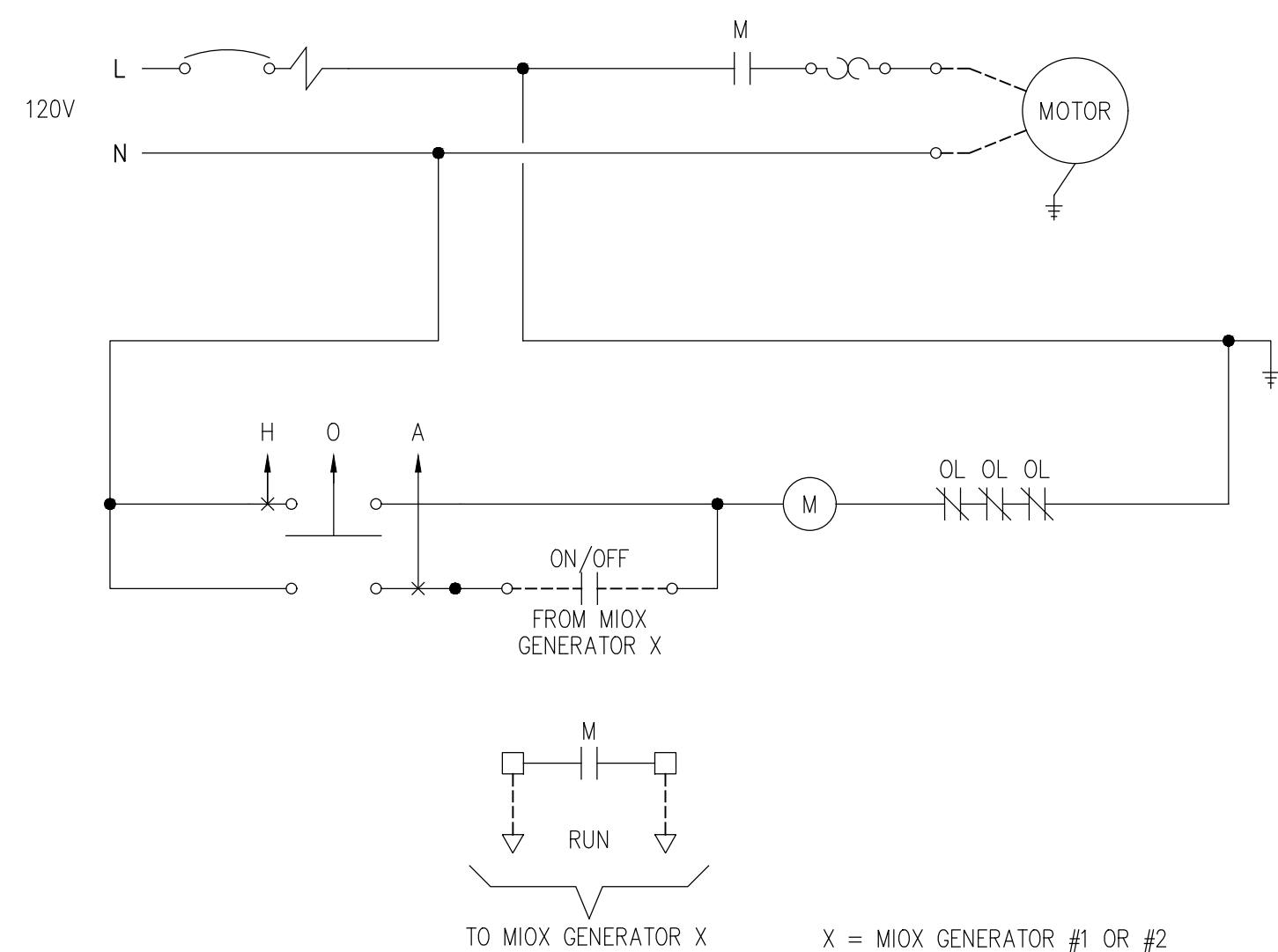
EXISTING
NEW

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CHECKED BY:	TMH	YNR		
PROJECT NO:	19008			
DATE:	JANUARY 2024			
CAD DWG ID:				



TYPICAL TYPE A STARTER POWER WIRING

SCALE: N.T.S



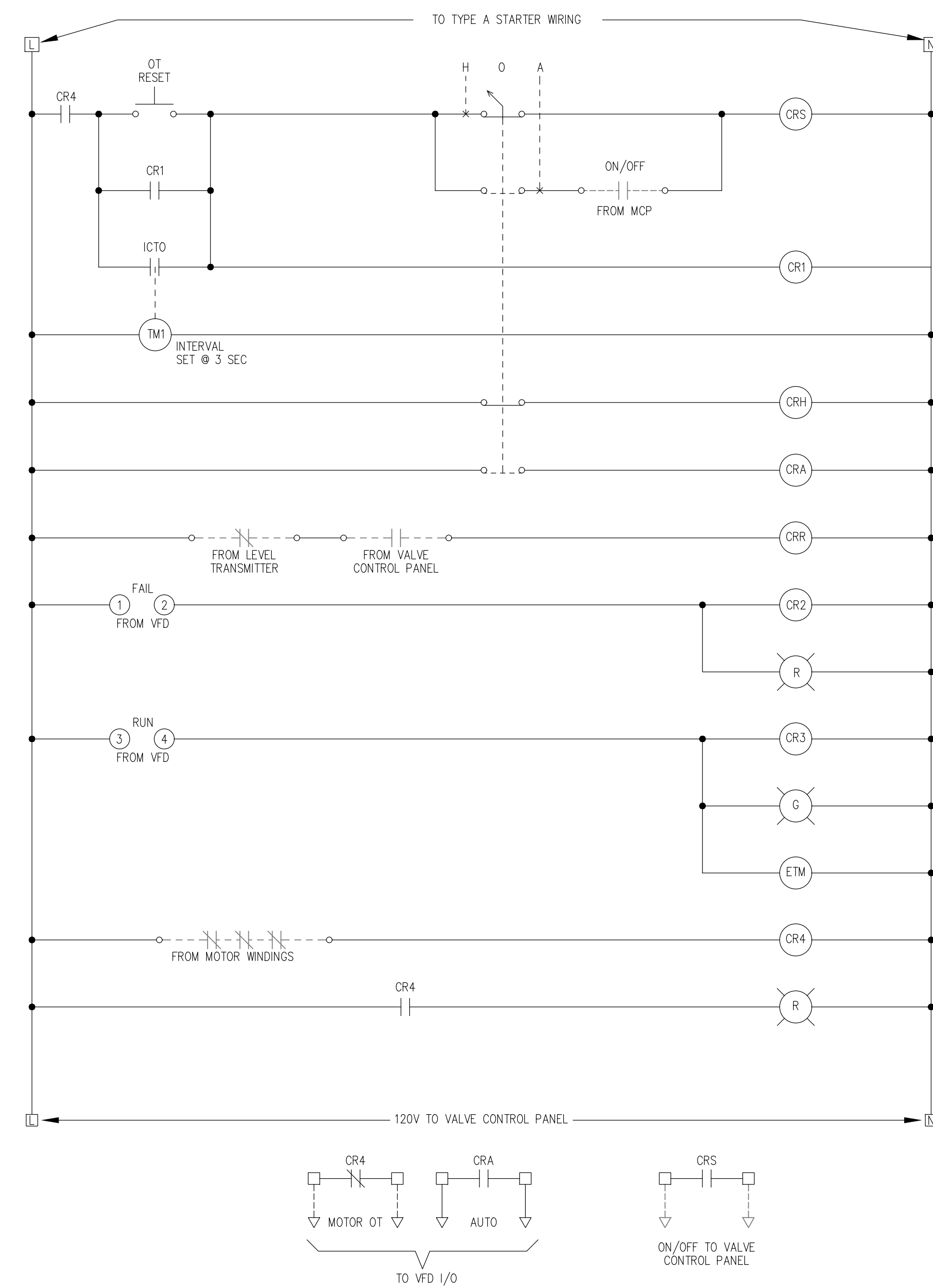
CONTROL CIRCUIT NO. 2

BRINE BOOSTER PUMPS (2 REQUIRED, NEMA 4X NON-METALLIC ENCLOSED)

LEGEND

EXISTING

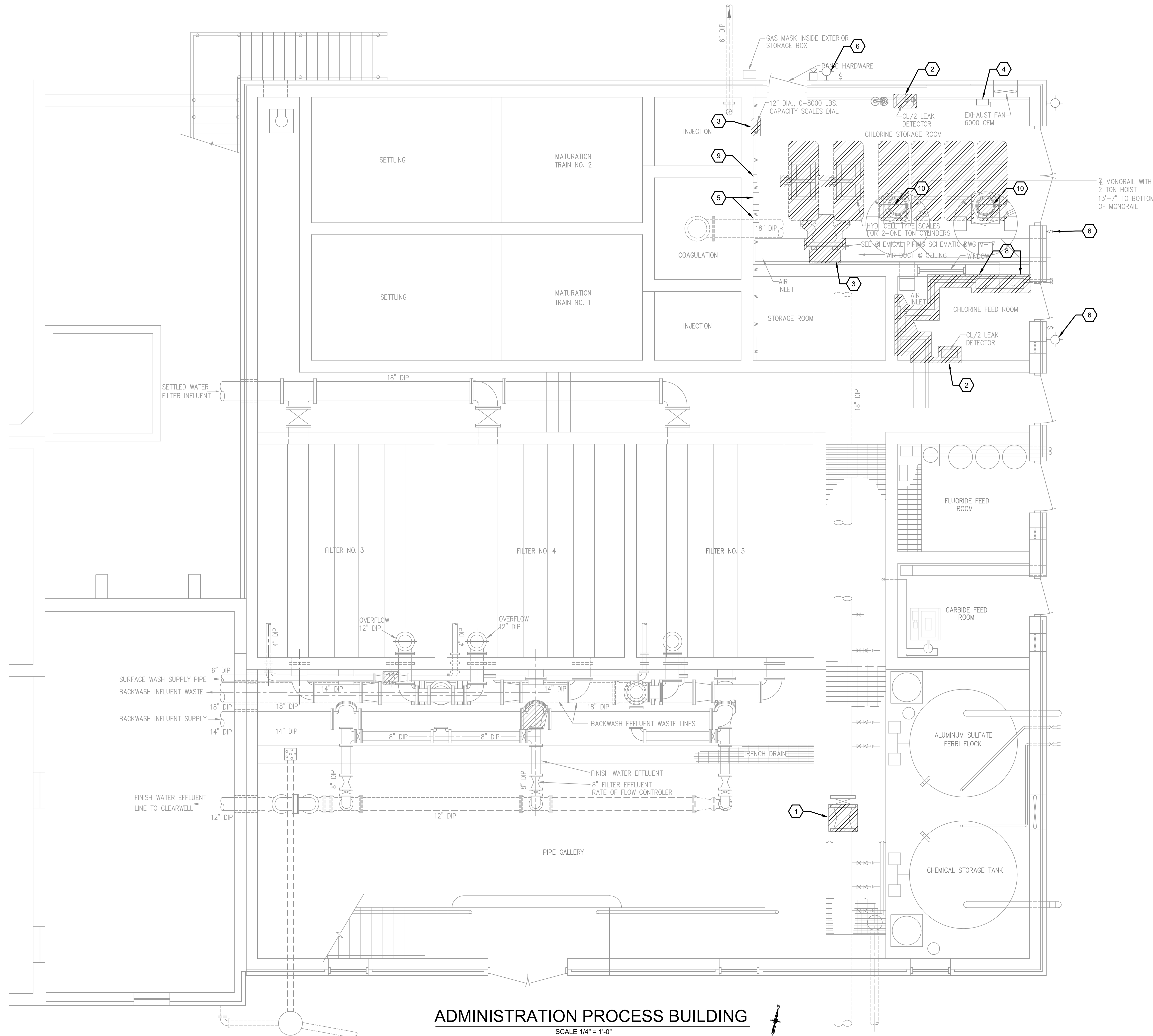
NEW



CONTROL CIRCUIT NO. 1

FINISH SERVICE PUMPS (2 REQUIRED, NEMA 1 ENCLOSED)

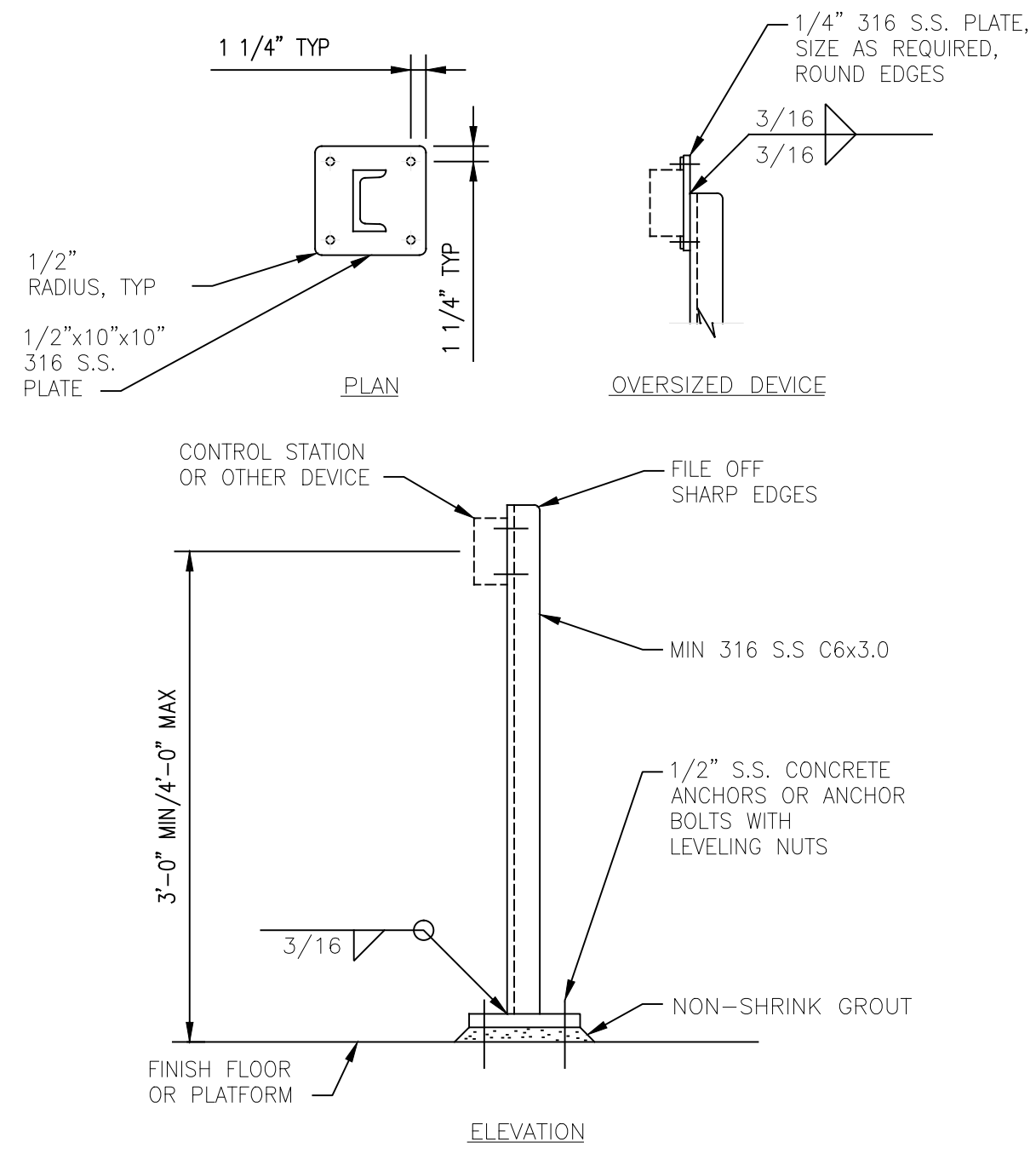
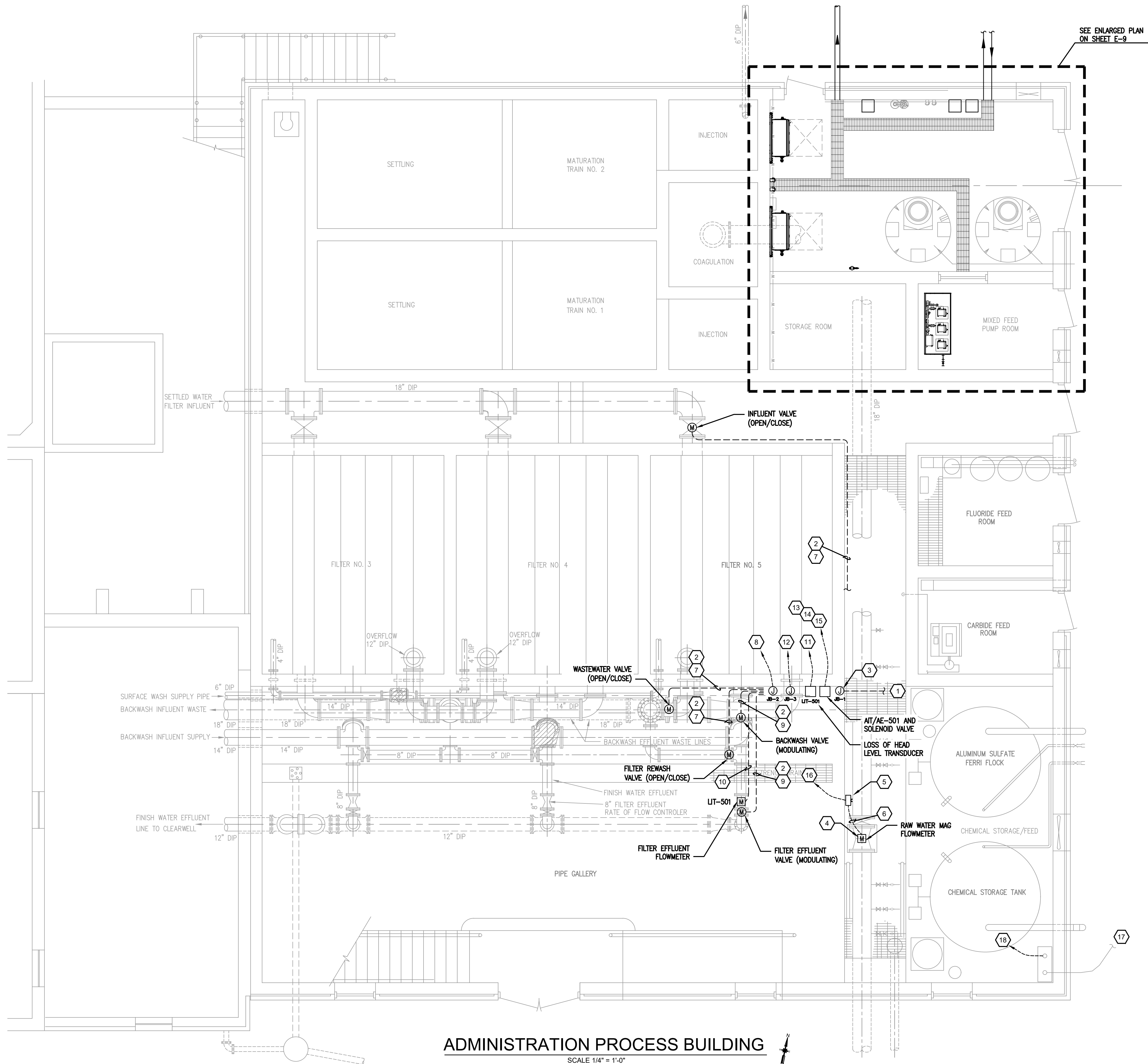




ADMINISTRATION PROCESS BUILDING
SCALE 1/4" = 1'-0"

- KEYNOTES:**
1. DISCONNECT AND REMOVE EXISTING RAW WATER FLOW METER. EXISTING CONDUCTORS AND CONDUITS SHALL BE REUSED.
 2. DISCONNECT AND REMOVE EXISTING CL2 LEAK DETECTOR ALONG WITH ASSOCIATED SENSOR, CONDUCTORS AND CONDUITS. (TYPICAL)
 3. DISCONNECT AND REMOVE EXISTING DIGITAL SCALE ALONG WITH ASSOCIATED SENSORS, CONDUCTORS AND CONDUITS.
 4. DISCONNECT AND REMOVE EXISTING DISCONNECT SWITCH FOR EXHAUST FAN ALONG WITH ASSOCIATED CONDUCTORS AND CONDUITS.
 5. RELOCATE EXISTING TWO ENCLOSED STARTERS AND THERMOSTATS FOR RADIANT HEAT LAMPS TO NEW LOCATION SHOWN ON SHEET E-9. MODIFY CONDUITS AS REQUIRED.
 6. DISCONNECT AND REMOVE EXISTING LEAK DETECTOR ALARM LIGHT, HORN AND WEATHERPROOF SWITCH ALONG WITH EXPOSED CONDUCTORS AND CONDUITS. (TYPICAL)
 7. DISCONNECT AND REMOVE EXISTING SOLENOID VALVES ALONG WITH ASSOCIATED CONDUCTORS AND CONDUITS.
 8. DISCONNECT AND REMOVE CONDUCTORS AND CONDUITS TO EXISTING CHLORINATORS.
 9. DISCONNECT AND REMOVE EXISTING DISCONNECT SWITCH FOR CRANE/HOIST ALONG WITH ASSOCIATED CONDUCTORS AND CONDUITS.
 10. DISCONNECT TWO RADIANT HEAT LAMPS SUSPENDED FROM CEILING ABOVE NEW MIX TANKS





NOTE:
ALL MOUNTING HARDWARE SHALL BE STAINLESS STEEL. USE WASHERS AND SPLIT-LOCK WASHERS UNDER ALL NUTS AND BOLTS.

DEVICE MOUNTING, SINGLE PEDESTAL
SCALE: NOT TO SCALE



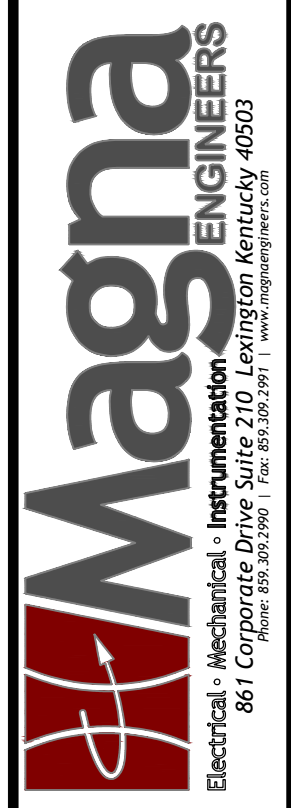
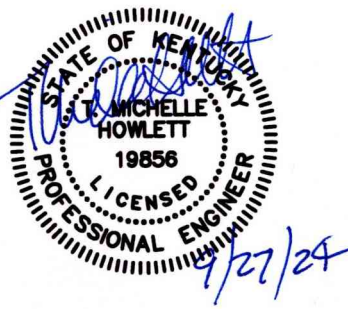
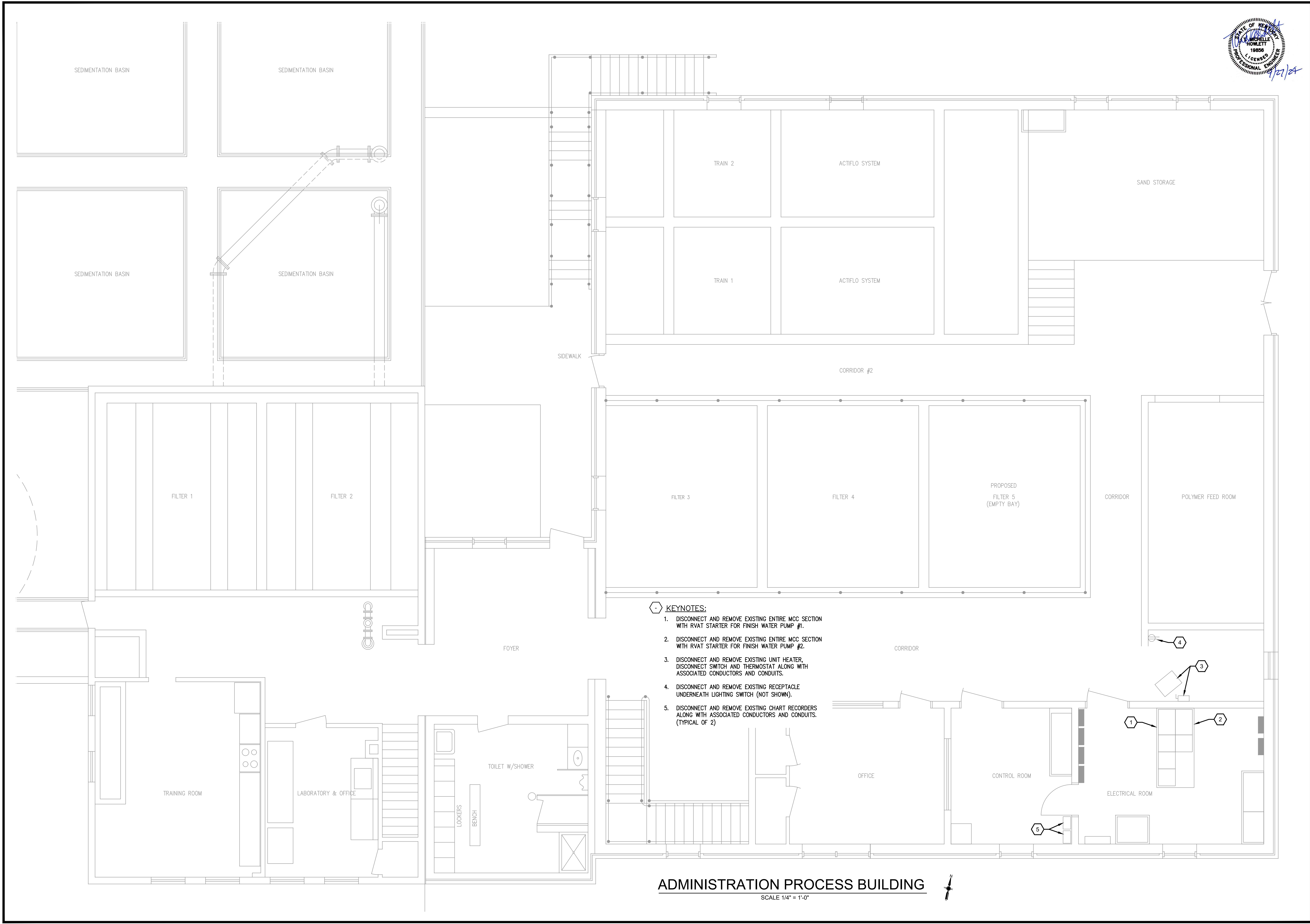
- KEYNOTES:**
- 3#12, 3/4" C FROM PANEL PP TO JUNCTION BOX JB-1.
 - 3#12, 3/4" C FROM JUNCTION BOX JB-1 TO MOTORIZED VALVE. (TYPICAL FOR 5 VALVES)
 - NEMA 4X STAINLESS STEEL JUNCTION BOX MOUNTED ON WALL OR CEILING. FIELD COORDINATE FINAL LOCATION. (TYPICAL)
 - REPLACE EXISTING 18" VENTURI FLOWMETER WITH NEW 18" MAGNETIC FLOWMETER. INTERCEPT EXISTING SHIELDED TWISTED PAIR AND EXTEND TO NEW TRANSMITTER. MODIFY CONDUITS AS REQUIRED.
 - NEW FLOW TRANSMITTER MOUNTED ON SINGLE POST SUPPORT BRACKET ANCHORED TO FLOOR SLAB. SEE DETAIL ON THIS SHEET.
 - MFR. CABLE IN 3/4" C.
 - 6#14, 1#14 GND IN 3/4" C FROM VALVE ACTUATOR TO JUNCTION BOX JB-2. (TYPICAL)
 - 18#14, 1#14 GND IN 1" C FROM FILTER CONSOLE NO. 5 TO JUNCTION BOX JB-2.
 - 2-2/C#18 SHIELDED TWISTED PAIR CABLES IN 3/4" C FROM VALVE ACTUATOR TO JUNCTION BOX JB-3. (TYPICAL)
 - 1-2/C#18 SHIELDED TWISTED PAIR CABLE IN 3/4" C FROM FILTER EFFLUENT FLOWMETER FIT/FE-501 TO JUNCTION BOX JB-3.
 - 1-2/C#18 SHIELDED TWISTED PAIR CABLE IN 3/4" C FROM LOSS OF HEAD LEVEL TRANSDUCER TO JUNCTION BOX JB-3.
 - 6-2/C#18 SHIELDED TWISTED PAIR CABLES IN 1" C FROM FILTER CONSOLE NO. 5 TO JUNCTION BOX JB-3.
 - 2#12, 1#12 GND IN 3/4" C FROM PANEL LP TO TURBIDITY MONITOR.
 - 2#12, 1#12 GND IN 3/4" C FROM MCP PANEL TO SOLENOID VALVE.
 - 1-2/C#18 SHIELDED TWISTED PAIR CABLE IN 3/4" C FROM TURBIDITY MONITOR TO MCP.
 - 2#12, 1#12 GND IN 3/4" C FROM PANEL LP.
 - 2#10, 1#10 GND IN EXISTING 2 1/2" C FROM EXISTING JUNCTION BOX TO EXISTING JUNCTION BOX AT FINISHED WATER VALVE VAULT. SEE DRAWING E-9 FOR CONTINUATION.
 - 2#10, 1#10 GND IN 3/4" C FROM PANEL A TO EXISTING JUNCTION BOX.

ADMINISTRATION PROCESS BUILDING
SCALE 1/4" = 1'-0"

SCALE:	AS SHOWN	DNR	YNR	THM	19050	19008	JANUARY 2024	CAD DWG ID:
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ADMINISTRATION / PROCESS BUILDING
FIRST FLOOR (EAST) - ELECTRICAL PLAN
LONDON WATER TREATMENT PLANT IMPROVEMENTS

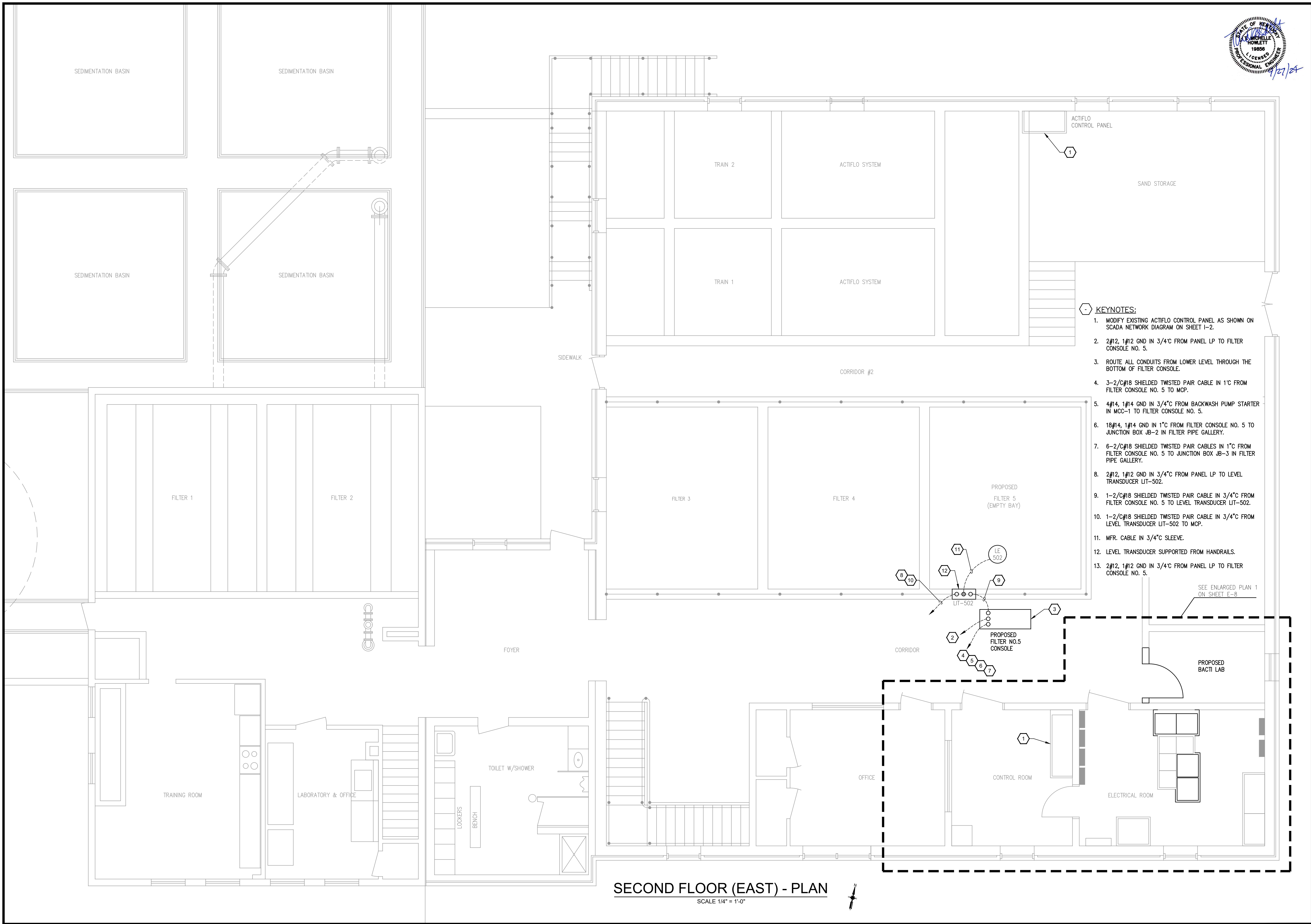


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ADMINISTRATION / PROCESS BUILDING
SECOND FLOOR (EAST) - ELECTRICAL DEMOLITION PLAN
LONDON WATER TREATMENT PLAN IMPROVEMENTS

SHEET NUMBER:
E-6



SECOND FLOOR (EAST) - PLAN

SCALE 1/4" = 1'-0"



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DATE:	JANUARY 2024			
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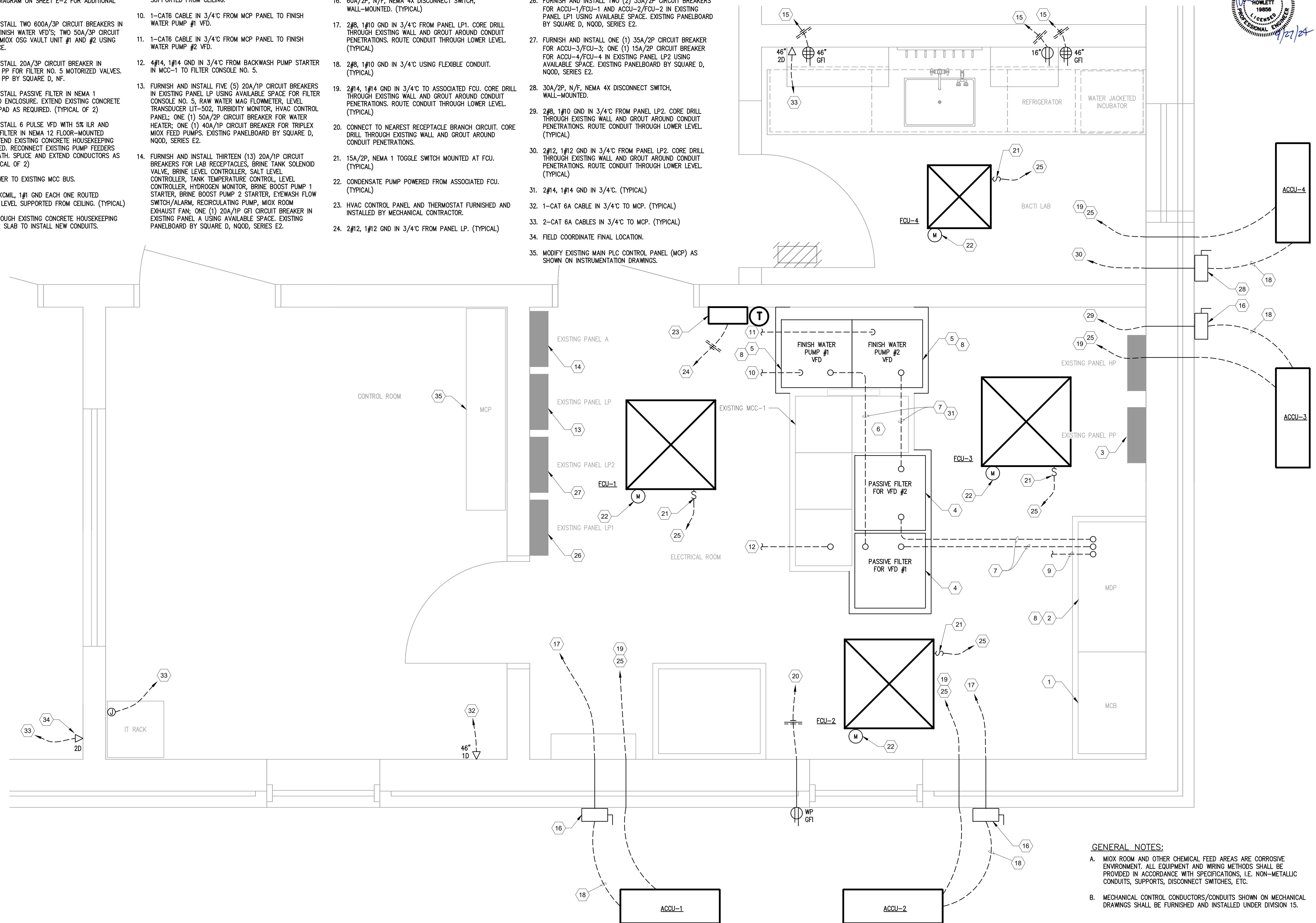
LONDON UTILITY COMMISSION

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ADMINISTRATION / PROCESS BUILDING
SECOND FLOOR (EAST) - ELECTRICAL PLAN
LONDON WATER TREATMENT PLAN IMPROVEMENTS

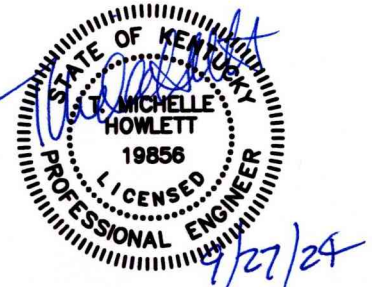
KEYNOTES:

1. REPLACE EXISTING MALFUNCTIONING 1600A/3P MAIN CIRCUIT BREAKER WITH NEW 1600A/3P CIRCUIT BREAKER. SEE ONE-LINE DIAGRAM ON SHEET E-2 FOR ADDITIONAL INFORMATION.
2. FURNISH AND INSTALL TWO 600A/3P CIRCUIT BREAKERS IN MDP FOR NEW FINISH WATER VFD'S; TWO 50A/3P CIRCUIT BREAKERS FOR MIX OSG VAULT UNIT #1 AND #2 USING AVAILABLE SPACE.
3. FURNISH AND INSTALL 20A/3P CIRCUIT BREAKER IN EXISTING PANEL PP FOR FILTER NO. 5 MOTORIZED VALVES. EXISTING PANEL PP BY SQUARE D, NF.
4. FURNISH AND INSTALL PASSIVE FILTER IN NEMA 1 FLOOR-MOUNTED ENCLOSURE. EXTEND EXISTING CONCRETE HOUSEKEEPING PAD AS REQUIRED. (TYPICAL OF 2)
5. FURNISH AND INSTALL 6 PULSE VFD WITH 5% ILR AND DV/DT OUTPUT FILTER IN NEMA 12 FLOOR-MOUNTED ENCLOSURE. EXTEND EXISTING CONCRETE HOUSEKEEPING PAD AS REQUIRED. RECONNECT EXISTING PUMP FEEDERS FROM UNDERNEATH. SPLICE AND EXTEND CONDUCTORS AS REQUIRED. (TYPICAL OF 2)
6. RECONNECT POWER TO EXISTING MCC BUS.
7. 2-3°C, 3-350 KOMIL, 1#1 GND EACH ONE ROUTED THROUGH FIRST LEVEL SUPPORTED FROM CEILING. (TYPICAL)
8. CORE DRILL THROUGH EXISTING CONCRETE HOUSEKEEPING PAD AND FLOOR SLAB TO INSTALL NEW CONDUITS. (TYPICAL)
9. 3#12, 3/4" C FROM MDP TO JUNCTION BOX ON FIRST FLOOR FOR FILTER NO. 5 VALVES. ROUTE THROUGH FIRST LEVEL SUPPORTED FROM CEILING.
10. 1-CAT6 CABLE IN 3/4" C FROM MCP PANEL TO FINISH WATER PUMP #1 VFD.
11. 1-CAT6 CABLE IN 3/4" C FROM MCP PANEL TO FINISH WATER PUMP #2 VFD.
12. 4#14, 1#14 GND IN 3/4" C FROM BACKWASH PUMP STARTER IN MCC-1 TO FILTER CONSOLE NO. 5.
13. FURNISH AND INSTALL FIVE (5) 20A/1P CIRCUIT BREAKERS IN EXISTING PANEL LP USING AVAILABLE SPACE FOR FILTER CONSOLE NO. 5, RAW WATER MAG FLOWMETER, LEVEL TRANSDUCER LIT-502, TURBIDITY MONITOR, HVAC CONTROL PANEL; ONE (1) 50A/2P CIRCUIT BREAKER FOR WATER HEATER; ONE (1) 40A/1P CIRCUIT BREAKER FOR TRIPLEX MIXO FEED PUMPS. EXISTING PANELBOARD BY SQUARE D, NQOD, SERIES E2.
14. FURNISH AND INSTALL THIRTEEN (13) 20A/1P CIRCUIT BREAKERS FOR LAB RECEPTACLES, BRINE TANK SOLENOID VALVE, BRINE LEVEL CONTROLLER, LEVEL CONTROLLER, HYDROGEN MONITOR, BRINE BOOST PUMP 1 STARTER, BRINE BOOST PUMP 2 STARTER, EYEWASH FLOW SWITCH/ALARM, RECIRCULATING PUMP, MIXO ROOM EXHAUST FAN; ONE (1) 20A/1P GFI CIRCUIT BREAKER IN EXISTING PANEL A USING AVAILABLE SPACE. EXISTING PANELBOARD BY SQUARE D, NQOD, SERIES E2.
15. 2#12, 1#12 GND IN 3/4" C FROM PANEL A. (TYPICAL)
16. 60A/2P, N/F, NEMA 4X DISCONNECT SWITCH, WALL-MOUNTED. (TYPICAL)
17. 2#8, 1#10 GND IN 3/4" C FROM PANEL LP1. CORE DRILL THROUGH EXISTING WALL AND GROUT AROUND CONDUIT PENETRATIONS. ROUTE CONDUIT THROUGH LOWER LEVEL. (TYPICAL)
18. 2#8, 1#10 GND IN 3/4" C USING FLEXIBLE CONDUIT. (TYPICAL)
19. 2#14, 1#14 GND IN 3/4" C TO ASSOCIATED FCU. CORE DRILL THROUGH EXISTING WALL AND GROUT AROUND CONDUIT PENETRATIONS. ROUTE CONDUIT THROUGH LOWER LEVEL. (TYPICAL)
20. CONNECT TO NEAREST RECEPTACLE BRANCH CIRCUIT. CORE DRILL THROUGH EXISTING WALL AND GROUT AROUND CONDUIT PENETRATIONS.
21. 15A/2P, NEMA 1 TOGGLE SWITCH MOUNTED AT FCU. (TYPICAL)
22. CONDENSATE PUMP POWERED FROM ASSOCIATED FCU. (TYPICAL)
23. HVAC CONTROL PANEL AND THERMOSTAT FURNISHED AND INSTALLED BY MECHANICAL CONTRACTOR.
24. 2#12, 1#12 GND IN 3/4" C FROM PANEL LP. (TYPICAL)
25. 2#12, 1#12 GND IN 3/4" C FROM ACCU TO ASSOCIATED FCU.
26. FURNISH AND INSTALL TWO (2) 35A/2P CIRCUIT BREAKERS FOR ACCU-1/FCU-1 AND ACCU-2/FCU-2 IN EXISTING PANEL LP1 USING AVAILABLE SPACE. EXISTING PANELBOARD BY SQUARE D, NQOD, SERIES E2.
27. FURNISH AND INSTALL ONE (1) 35A/2P CIRCUIT BREAKER FOR ACCU-3/FCU-3; ONE (1) 15A/2P CIRCUIT BREAKER FOR ACCU-4/FCU-4 IN EXISTING PANEL LP2 USING AVAILABLE SPACE. EXISTING PANELBOARD BY SQUARE D, NQOD, SERIES E2.
28. 30A/2P, N/F, NEMA 4X DISCONNECT SWITCH, WALL-MOUNTED.
29. 2#8, 1#10 GND IN 3/4" C FROM PANEL LP2. CORE DRILL THROUGH EXISTING WALL AND GROUT AROUND CONDUIT PENETRATIONS. ROUTE CONDUIT THROUGH LOWER LEVEL. (TYPICAL)
30. 2#12, 1#12 GND IN 3/4" C FROM PANEL LP2. CORE DRILL THROUGH EXISTING WALL AND GROUT AROUND CONDUIT PENETRATIONS. ROUTE CONDUIT THROUGH LOWER LEVEL. (TYPICAL)
31. 2#14, 1#14 GND IN 3/4" C. (TYPICAL)
32. 1-CAT 6A CABLE IN 3/4" C TO MCP. (TYPICAL)
33. 2-CAT 6A CABLES IN 3/4" C TO MCP. (TYPICAL)
34. FIELD COORDINATE FINAL LOCATION.
35. MODIFY EXISTING MAIN PLC CONTROL PANEL (MCP) AS SHOWN ON INSTRUMENTATION DRAWINGS.

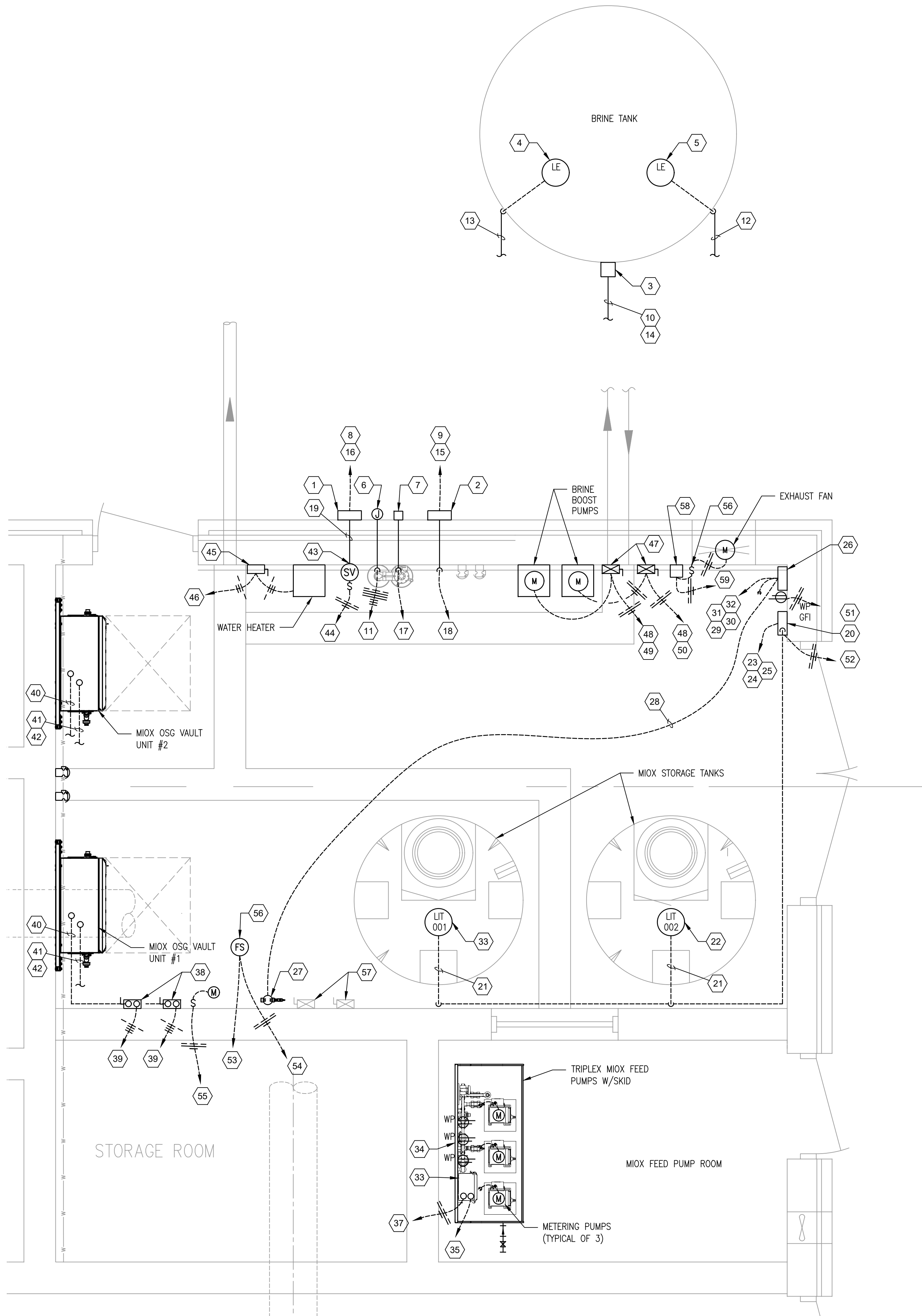


GENERAL NOTES:

- A. MIXO ROOM AND OTHER CHEMICAL FEED AREAS ARE CORROSIVE ENVIRONMENT. ALL EQUIPMENT AND WIRING METHODS SHALL BE PROVIDED IN ACCORDANCE WITH SPECIFICATIONS, I.E. NON-METALLIC CONDUITS, SUPPORTS, DISCONNECT SWITCHES, ETC.
- B. MECHANICAL CONTROL CONDUCTORS/CONDUITS SHOWN ON MECHANICAL DRAWINGS SHALL BE FURNISHED AND INSTALLED UNDER DIVISION 15.



SCALE:	AS SHOWN	REVISION:	BY:	DATE:
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DRAWN BY:	YNR			
CHECKED BY:	TMH			
PROJECT NO:	19008			
DATE:	JANUARY 2024			
CAD DWG ID:				



ENLARGED PLAN 2

SCALE 1/2" = 1'-0"

E-9.1
E-9

GENERAL NOTES:

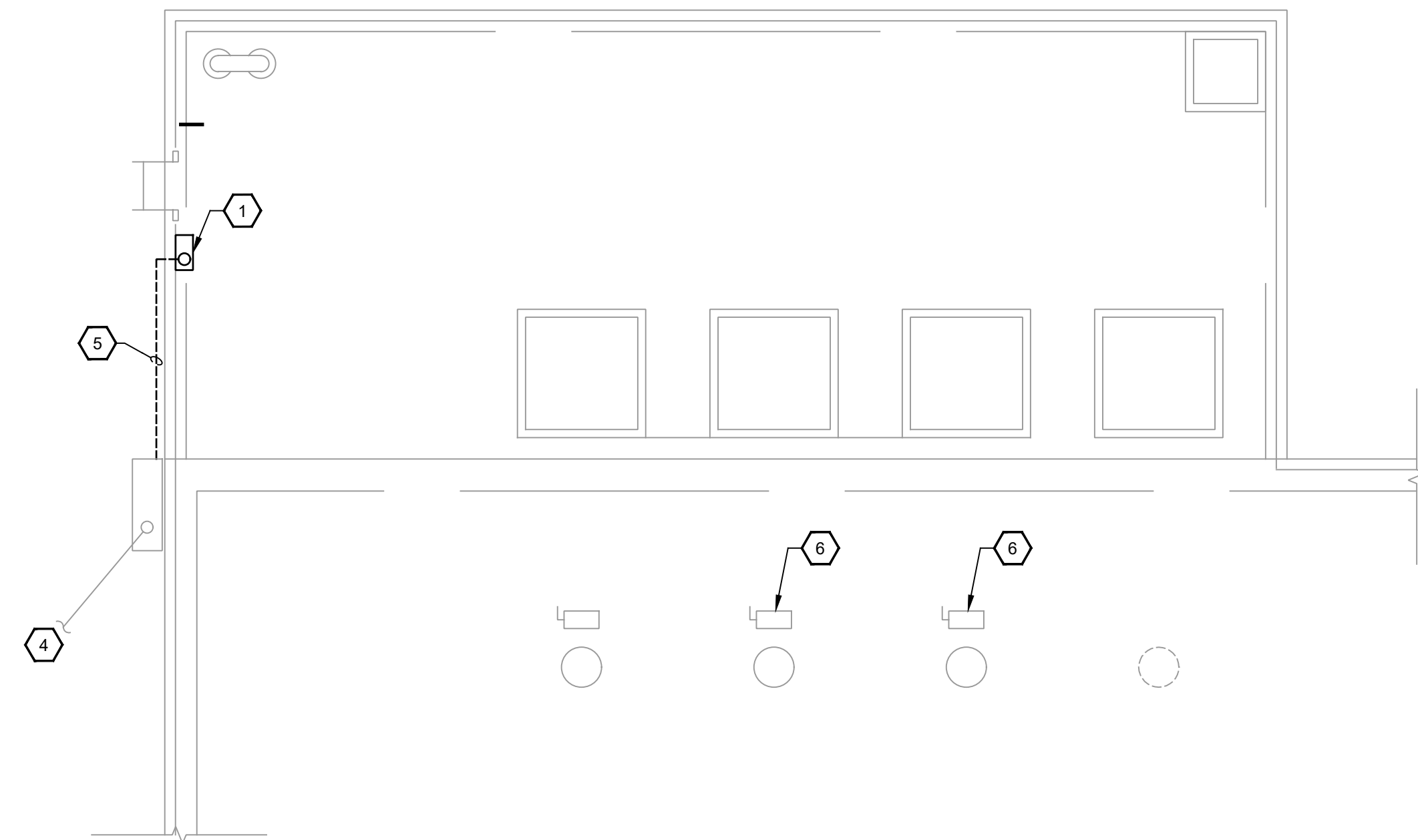
A. MIOX ROOM AND OTHER CHEMICAL FEED AREAS ARE CORROSIVE ENVIRONMENT. ALL EQUIPMENT AND WIRING METHODS SHALL BE PROVIDED IN ACCORDANCE WITH SPECIFICATIONS, I.E. NON-METALLIC CONDUITS, SUPPORTS, DISCONNECT SWITCHES, ETC.

KEYNOTES:

- BRINE LEVEL CONTROLLER WALL-MOUNTED.
- SALT LEVEL CONTROLLER WALL-MOUNTED.
- TANK TEMPERATURE CONTROLLER. FIELD COORDINATE FINAL LOCATION.
- PRESSURE TRANSDUCER. FIELD COORDINATE FINAL LOCATION.
- SALT LEVEL INDICATOR. FIELD COORDINATE FINAL LOCATION.
- NEMA 4X JUNCTION BOX (JB-4) WITH TERMINATION BLOCKS, WALL-MOUNTED FOR 120V POWER.
- NEMA 4X PULLBOX (PB-1) WALL-MOUNTED FOR ANALOG SIGNALS.
- 2#12, 1#12 GND IN 3/4"C FROM JUNCTION BOX (JB-4) TO BRINE LEVEL CONTROLLER.
- 2#12, 1#12 GND IN 3/4"C FROM JUNCTION BOX (JB-4) TO SALT LEVEL CONTROLLER.
- 2#12, 1#12 GND IN 3/4"C FROM JUNCTION BOX (JB-4) TO TEMPERATURE CONTROLLER.
- 6#10, 1#10 GND IN 1"C FROM PANEL A. CORE DRILL THROUGH EXISTING WALL AND GROUT AROUND CONDUIT PENETRATIONS.
- 1-2/C#18 SHIELED TWISTED PAIR CABLE IN 3/4"C UNDERGROUND FROM SALT LEVEL INDICATOR TO SALT LEVEL CONTROLLER.
- 1-2/C#18 SHIELED TWISTED PAIR CABLE IN 3/4"C UNDERGROUND FROM PRESSURE TRANSDUCER TO BRINE LEVEL CONTROLLER.
- 1-2/C#18 SHIELED TWISTED PAIR CABLE IN 3/4"C UNDERGROUND FROM TEMPERATURE CONTROLLER TO BRINE LEVEL CONTROLLER.
- 1-2/C#18 SHIELED TWISTED PAIR CABLE IN 3/4"C FROM BRINE LEVEL CONTROLLER TO PULLBOX (PB-1).
- 1-2/C#18 SHIELED TWISTED PAIR CABLE IN 3/4"C FROM SALT LEVEL CONTROLLER TO PULLBOX (PB-1).
- 2-2/C#18 SHIELED TWISTED PAIR CABLE IN 3/4"C FROM PULLBOX (PB-1) TO MCP PANEL. CORE DRILL THROUGH EXISTING WALL AND GROUT AROUND CONDUIT PENETRATIONS.
- 2#14, 1#14 GND IN 3/4"C FROM SALT LEVEL CONTROLLER TO MCP PANEL. CORE DRILL THROUGH EXISTING WALL AND GROUT AROUND CONDUIT PENETRATIONS.
- 2#14, 1#14 GND IN 3/4"C FROM BRINE LEVEL CONTROLLER TO SOLENOID VALVE. CORE DRILL THROUGH EXISTING WALL AND GROUT AROUND CONDUIT PENETRATIONS.
- LEVEL CONTROLLER PRESSURE, WALL-MOUNTED.
- 1-2/C#18 SHIELED TWISTED PAIR CABLE IN 3/4"C FROM LEVEL CONTROLLER TO EACH SENSOR. (TYPICAL)
- LEVEL PRESSURE SENSOR. FIELD COORDINATE FINAL LOCATION.
- 4#14, 1#14 GND IN 3/4"C TO MIOX GENERATOR #1.
- 4#14, 1#14 GND IN 3/4"C TO MIOX GENERATOR #2.
- 1-2/C#18 SHIELED TWISTED PAIR CABLE IN 3/4"C FROM LEVEL CONTROLLER TO MCP PANEL.
- HYDROGEN MONITOR WALL-MOUNTED.
- HYDROGEN SENSOR MOUNTED AT CEILING ELEVATION. SEE SPECIFICATIONS FOR INSTALLATION REQUIREMENTS.
- 1-2/C#18 SHIELED TWISTED PAIR CABLE IN 3/4"C FROM HYDROGEN MONITOR TO SENSOR.
- 4#14, 1#14 GND IN 3/4"C FROM HYDROGEN MONITOR TO MIOX GENERATOR #1.
- 4#14, 1#14 GND IN 3/4"C FROM HYDROGEN MONITOR TO MIOX GENERATOR #2.
- 4#14, 1#14 GND IN 3/4"C FROM HYDROGEN MONITOR TO MCP PANEL.
- 1-2/C#18 SHIELED TWISTED PAIR CABLE IN 3/4"C FROM HYDROGEN MONITOR TO MCP PANEL.
- 30#14, 1#14 GND IN 1 1/4"C TO MCP PANEL.
- 6-2/C#18 SHIELED TWISTED PAIR CABLES IN 1"C TO MCP PANEL.
- 2#10, 1#10 GND IN 3/4"C FROM PANEL A.
- 60A/3P, N/F, NEMA 4X NON-METALLIC DISCONNECT SWITCH WALL-MOUNTED. (TYPICAL OF 2)
- 3#2, 1#8 GND IN 1 1/4"C FROM MDP. (TYPICAL)
- 3#2, 1#8 GND IN 1 1/4"C FROM DISCONNECT SWITCH TO MIOX OSG VAULT UNIT. (TYPICAL)
- 4#14, 1#14 GND IN 3/4"C FROM MIOX OSG VALVE UNIT TO MCP PANEL. (TYPICAL)
- 1-CAT 6A CABLE IN 3/4"C FROM MIOX OSG VALVE UNIT TO MCP PANEL. (TYPICAL)
- BRINE STORAGE TANK WATER SUPPLY SOLENOID VALVE. FIELD COORDINATE FINAL LOCATION. PROVIDE 20A/1P WP TOGGLE SWITCH FOR MEANS OF DISCONNECTING.
- 2#12, 1#12 GND IN 3/4"C FROM PANEL A TO BRINE STORAGE TANK WATER SUPPLY SOLENOID VALVE.
- 60A/2P, N/F, NEMA 4X NON-METALLIC DISCONNECT SWITCH WALL-MOUNTED.
- 2#4, 1#8 GND IN 1 1/4"C FROM PANEL LP.
- NEMA 4X, NON-METALLIC ENCLOSED FVNR STARTER FOR BRINE BOOST PUMP (TYPICAL OF 2). SEE CONTROL CIRCUIT NO. 2 ON SHEET E-3.
- 2#12, 1#12 GND IN 3/4"C FROM PANEL A TO BRINE BOOST PUMP STARTER. (TYPICAL OF 2)
- 2#14, 1#14 GND IN 3/4"C FROM BRINE BOOST PUMP 1 STARTER TO MIOX OSG VALVE UNIT #1.
- 2#14, 1#14 GND IN 3/4"C FROM BRINE BOOST PUMP 2 STARTER TO MIOX OSG VALVE UNIT #2.
- 2#12, 1#12 GND IN 3/4"C FROM PANEL A TO HYDROGEN MONITOR RECEPTACLE.
- 2#12, 1#12 GND IN 3/4"C FROM PANEL A TO LEVEL CONTROLLER.
- 2#14, 1#14 GND IN 3/4"C FROM EYEWASH FLOW SWITCH ALARM TO MCP PANEL.
- 2#12, 1#12 GND IN 3/4"C FROM PANEL LP TO EYEWASH FLOW SWITCH AND ALARM.
55. 2#12, 1#12 GND IN 3/4"C FROM PANEL LP TO RECIRCULATING PUMP THROUGH TOGGLE SWITCH.
- 20A/1P WP TOGGLE SWITCH, WALL-MOUNTED. FIELD COORDINATE FINAL LOCATION. (TYPICAL)
- RELOCATED EXISTING STARTERS AND THERMOSTATS FOR RADIENT HEAT. FIELD COORDINATE FINAL LOCATION.
- HOA SWITCH FOR EXHAUST FAN FURNISHED AND INSTALLED UNDER DIVISION 15.
- 2#10, 1#10 GND IN 3/4"C FROM PANEL LP TO HOA SWITCH.

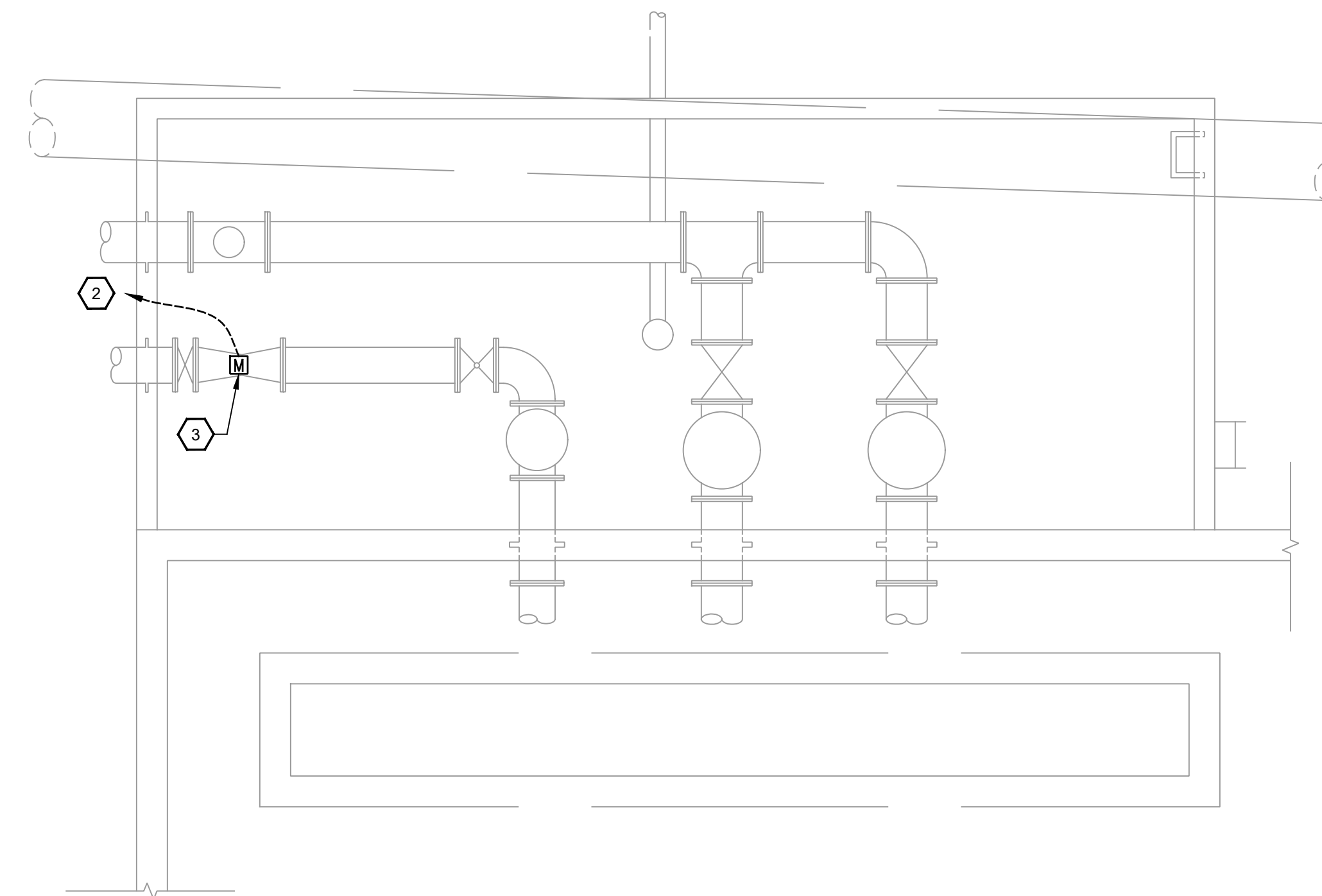


SCALE:	AS SHOWN	REVISION:	BY:	DATE:
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DRAWN BY:	YNR			
CHECKED BY:	TMH			
PROJECT NO:	19008			
DATE:	JANUARY 2024			
CAD DWG ID:				



UPPER PLAN
SCALE 1/4" = 1'-0"

E-10.1
E-10



LOWER PLAN
SCALE 1/4" = 1'-0"

E-10.2
E-10

KEYNOTES:

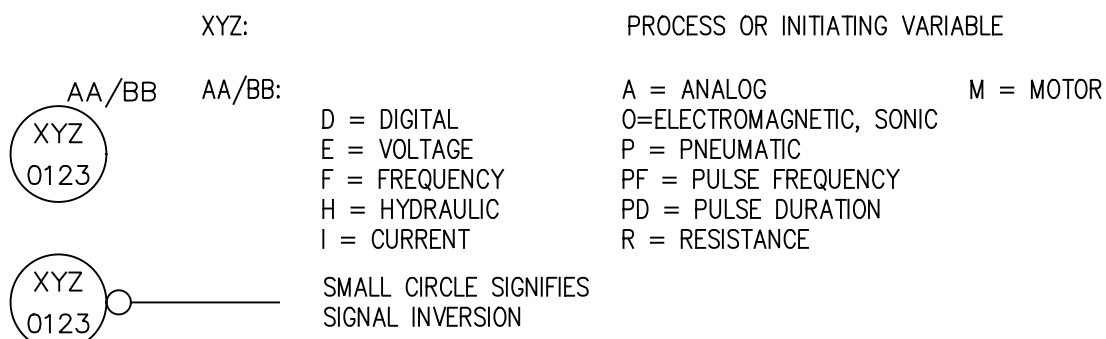
1. NEW FLOWMETER TRANSMITTER MOUNTED TO HANDRAIL.
2. MFR. CABLE IN 3/4" RIGID ALUMINUM CONDUIT SLEEVE TO TRANSMITTER ABOVE. CORE DRILL EXISTING CONCRETE TOP SLAB AND GROUT AROUND CONDUIT PENETRATION.
3. REPLACE EXISTING 14" VENTURI FLOWMETER WITH NEW 14" MAGNETIC FLOWMETER. INTERCEPT EXISTING SHIELDED TWISTED PAIR CABLE AND ROUTE TO NEW TRANSMITTER.
4. 2#10, 1#10 GND IN EXISTING 2 1/2" C FROM PANEL A TO EXISTING JUNCTION BOX. SEE DRAWING E-5 FOR CONTINUATION.
5. 2#10, 1#10 GND IN 3/4" C FROM EXISTING JUNCTION BOX TO FLOWMETER.
6. FURNISH AND INSTALL LAMINATED TAG ON EXISTING FINISHED WATER PUMPS DISCONNECT SWITCHES: "DO NOT OPERATE DISCONNECT SWITCH WHILE PUMP IS RUNNING"



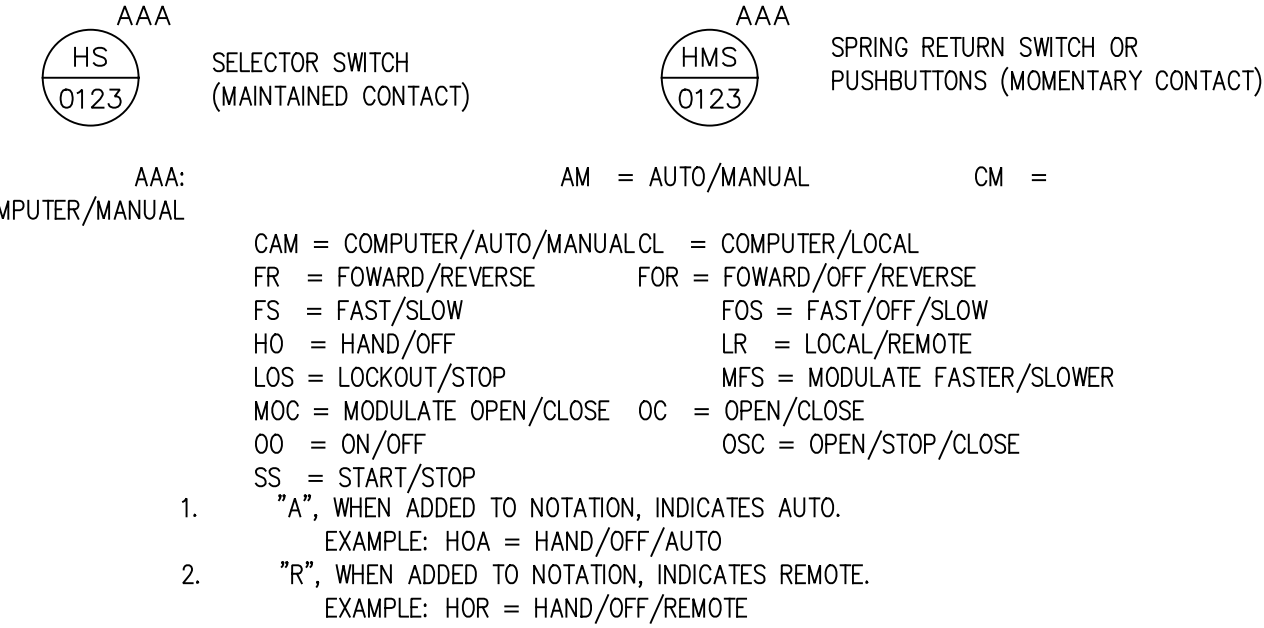
SCALE:	AS SHOWN	REVISION:	BY:	DATE:
DESIGNED BY:	DNR			
DRAWN BY:	YMR			
CHECKED BY:	TMH			
PROJECT NO:	19008			
DATE:	JANUARY 2024			
CAD DWG ID:				

EXPLANATORY NOTATIONS

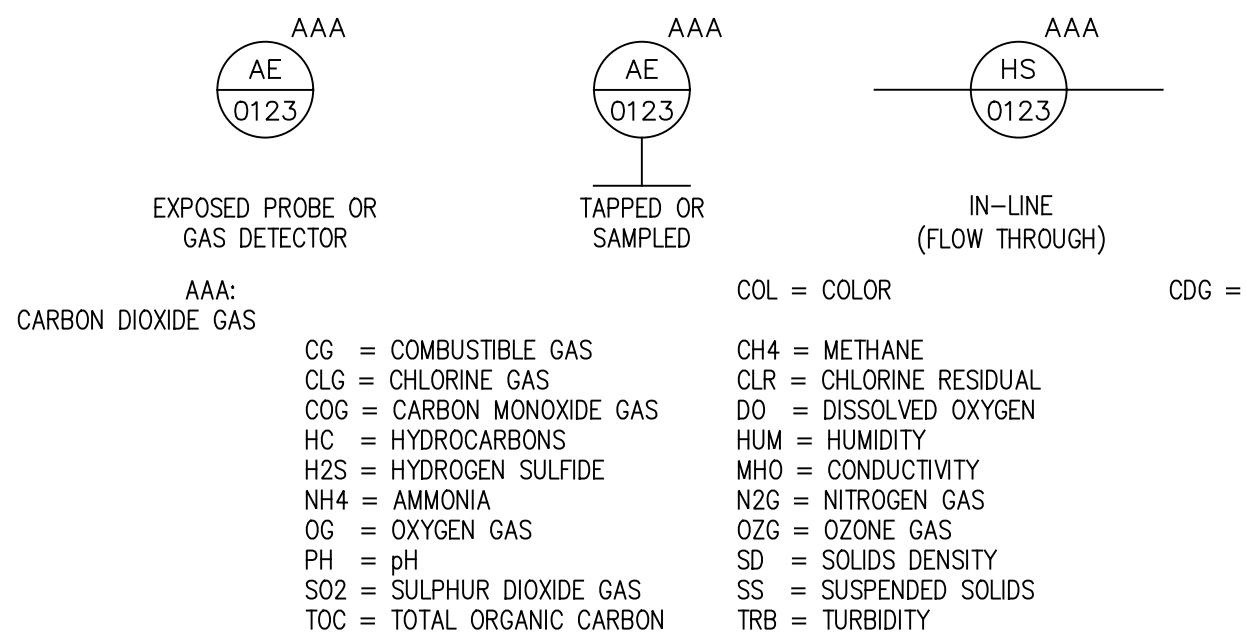
SIGNAL CONVERTERS



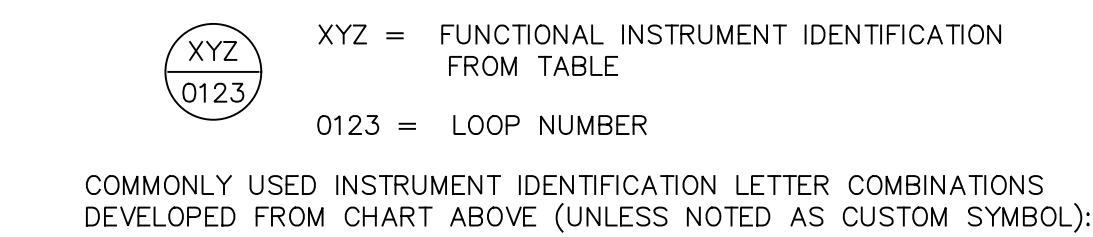
HAND SWITCHES



ANALYSIS INSTRUMENTS



INSTRUMENT TAGGING



COMBINATION	DESCRIPTION
AE	ANALYZER PRIMARY ELEMENT
FE	FLOW PRIMARY ELEMENT
LE	LEVEL PRIMARY ELEMENT
PE	PRESSURE PRIMARY ELEMENT
FCV	FLOW CONTROL VALVE (FINAL ELEMENT)
FIT	FLOW INDICATING TRANSMITTER
LIT	LEVEL INDICATING TRANSMITTER
AIT	ANALYSIS INDICATING TRANSMITTER
PIT	PRESSURE INDICATING TRANSMITTER
FAL	FLOW ALARM LOW
LAH	LEVEL ALARM HIGH
PI	PRESSURE INDICATOR
LI	LEVEL INDICATOR
FIR	FLOW INDICATING RECORDER
FIRQ	FLOW INDICATING RECORDER WITH TOTALIZER
FIC	FLOW INDICATING CONTROLLER
KC	TIMER
CR	CONTROL RELAY
I/I	CURRENT TO CURRENT CONVERTER (LOOP ISOLATOR)
FY	FLOW COMPUTING RELAY
UT	TELEPHONE DIALER
MN	MOTOR STATUS
MO	MOTOR OVERLOAD
FMR	FM RADIO (CUSTOM SYMBOL)
RTU	REMOTE TERMINAL UNIT (CUSTOM SYMBOL)
MTU	MASTER TERMINAL UNIT (CUSTOM SYMBOL)
PS	POWER SUPPLY (CUSTOM SYMBOL)
I/O	INPUT/OUTPUT MODULE (CUSTOM SYMBOL)
PT	PRESSURE TRANSDUCER (CUSTOM SYMBOL)
A/D	ANALOG TO DIGITAL CONVERTER (CUSTOM SYMBOL)
D/A	DIGITAL TO ANALOG CONVERTER (CUSTOM SYMBOL)
PCM	PUMP CONTROL MODULE (CUSTOM SYMBOL)
TSG	THUMBWHEEL SETPOINT GENERATOR (CUSTOM SYMBOL)
MNC	MOTOR CALLED FOR
MNF	MOTOR FAILED
DFA	DATA FAIL ALARM

ABBREVIATIONS/ACRONYMS

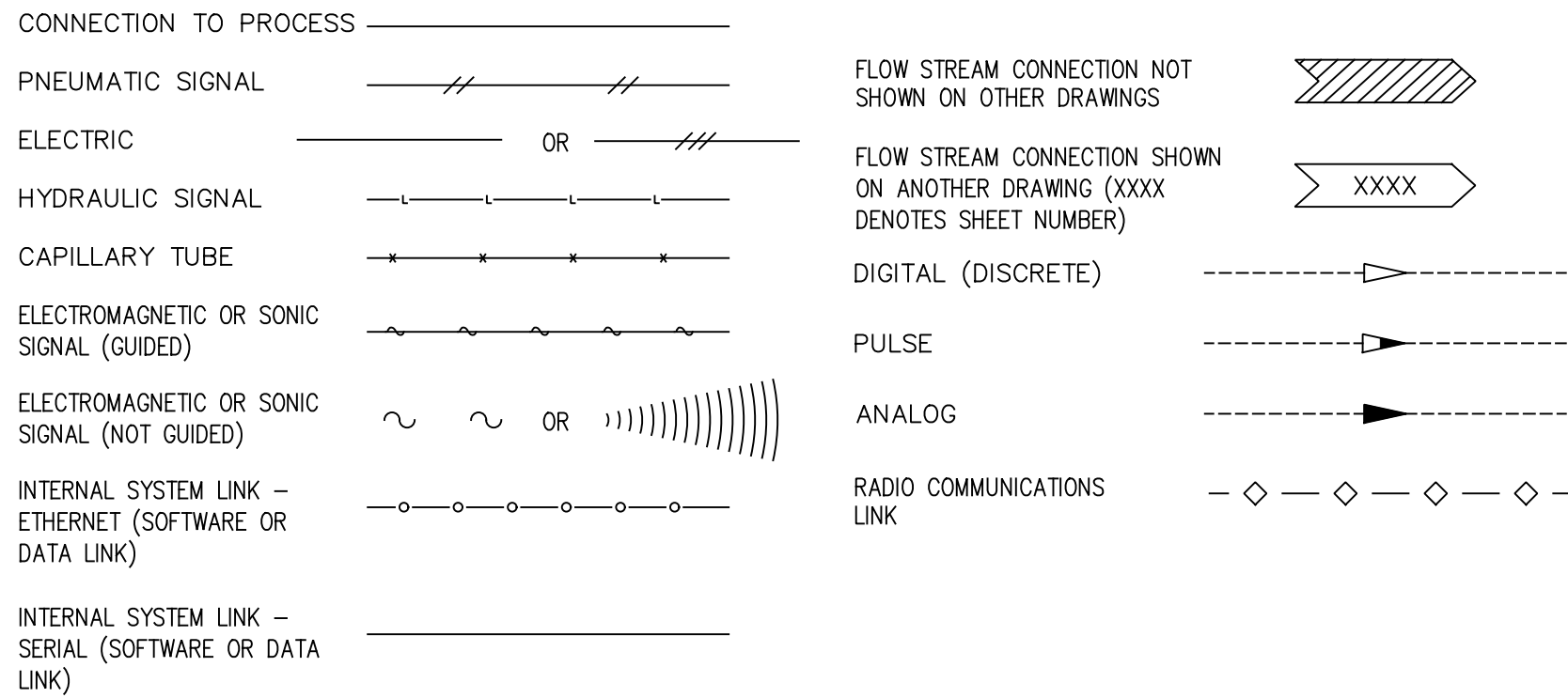
AS	AIR SUPPLY	ES	ELECTRIC SUPPLY
GS	GAS SUPPLY	HS	HYDRAULIC SUPPLY
WS	WATER SUPPLY	CO	CONTACT OUTPUT
CI	CONTACT INPUT	PD	POSITIVE DISPLACEMENT
FMR	FM RADIO	MTU	MASTER TERMINAL UNIT
ISR	INTRINSICALLY SAFE RELAY	RTU	REMOTE TERMINAL UNIT

INSTRUMENT SYMBOL IDENTIFICATION LETTERS TABLE				
FIRST-LETTER		SUCCEEDING-LETTERS		
MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A ANALYSIS		ALARM		
B BURNER, COMBUSTION			CLOSE, STOP, DECREASE	
C CONTROL			CONTROL	
D	DIFFERENTIAL		OPEN, START, INCREASE	
E VOLTAGE		SENSOR (PRIMARY ELEMENT)		
F FLOW RATE	RATIO (FRACTION)			FAIL
G		GLASS, VIEWING DEVICE		
H HAND				HIGH OR OPEN
I CURRENT (ELECTRICAL)	SCAN	INDICATE		
J POWER				
K TIME, TIME SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	
L LEVEL		LIGHT		LOW OR CLOSE
M MOTOR, MOTION	MOMENTARY		MOTOR	MIDDLE INTERMEDIATE
N				STATUS (ON-OFF)
O		ORIFICE, RESTRICTION		OVERLOAD
P PRESSURE, VACUUM	INTEGRATE, TOTALIZE	POINT (TEST) CONNECTION		PUMP
Q QUANTITY		RECORD		RELAY
R RADIATION	SAFETY		SWITCH	
S SPEED, FREQUENCY			TRANSMIT	
T TEMPERATURE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
U MULTIVARIABLE				
V VIBRATION, MECHANICAL ANALYSIS	VELOCITY	VALVE, DAMPER, LOUVER		
W WEIGHT, FORCE		WELL		
X	X AXIS		RELAY, COMPUTE, CONVERT	
Y EVENT, STATE OR PRESENCE	Y AXIS		DRIVER, ACTUATOR	
Z POSITION, DIMENSION	Z AXIS		FINAL CONTROL ELEMENT	

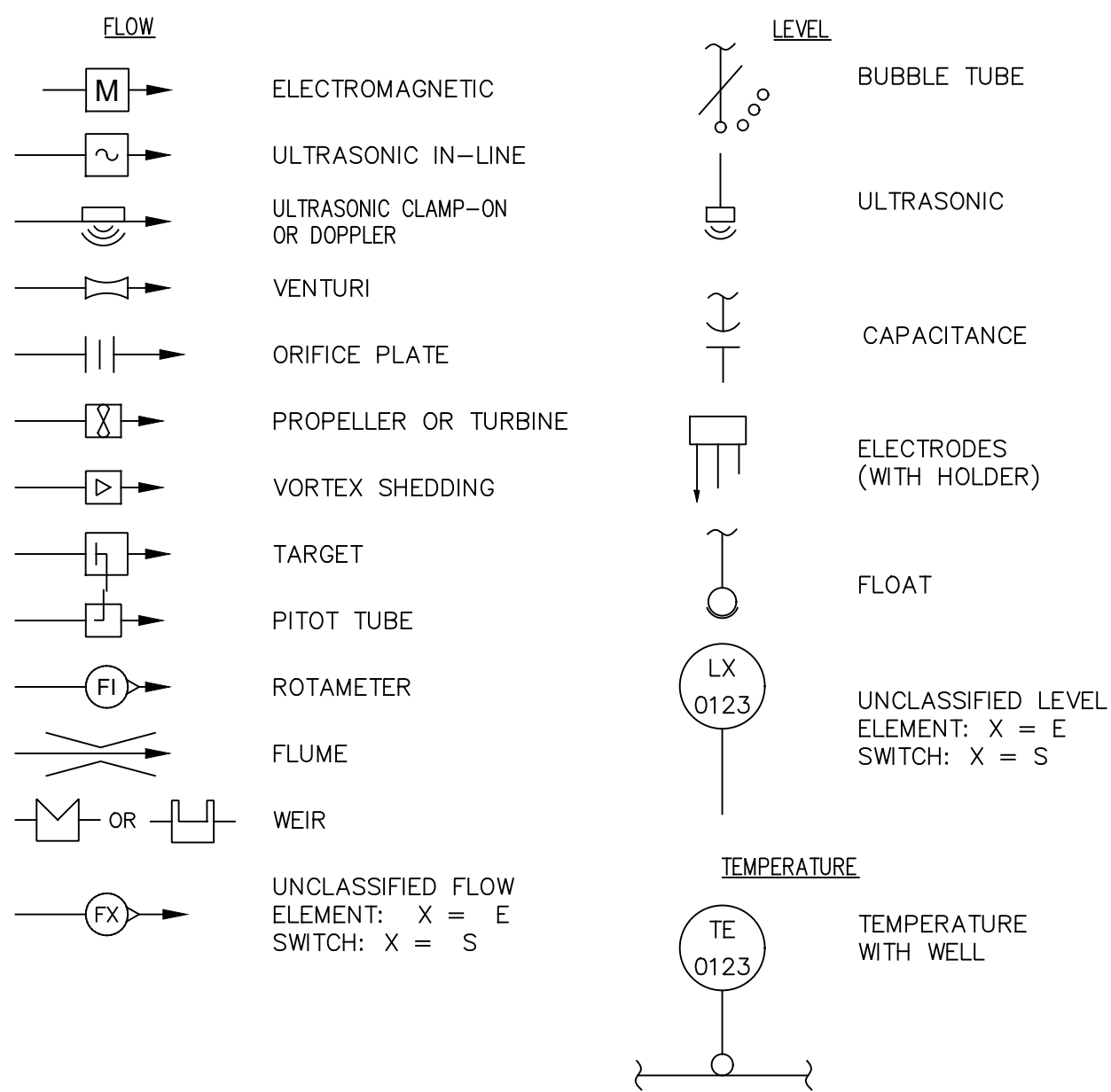
GENERAL INSTRUMENT AND FUNCTION SYMBOLS

	DISCRETE INSTRUMENT	SHARED DISPLAY/SHARED CONTROL	COMPUTER FUNCTION	PLC FUNCTION
FIELD MOUNTED	XYZ 0123	XYZ 0123	XYZ 0123	
FRONT OF PANEL MOUNTED	XYZ 0123	XYZ 0123	XYZ 0123	
INTERIOR OF PANEL MOUNTED	XYZ 0123	XYZ 0123	XYZ 0123	
MOTOR CONTROL CENTER MOUNTED	XYZ 0123	XYZ 0123	XYZ 0123	
INSTRUMENTS SHARING A COMMON HOUSING	XYZ 0123	XYZ 0123	XYZ 0123	
ANNUNCIATOR	XYZ 0123	XYZ 0123	XYZ 0123	
OPERATOR ACCESSIBLE				WXYZ 02345
NOT ACCESSIBLE BY OPERATOR				WXYZ 02345

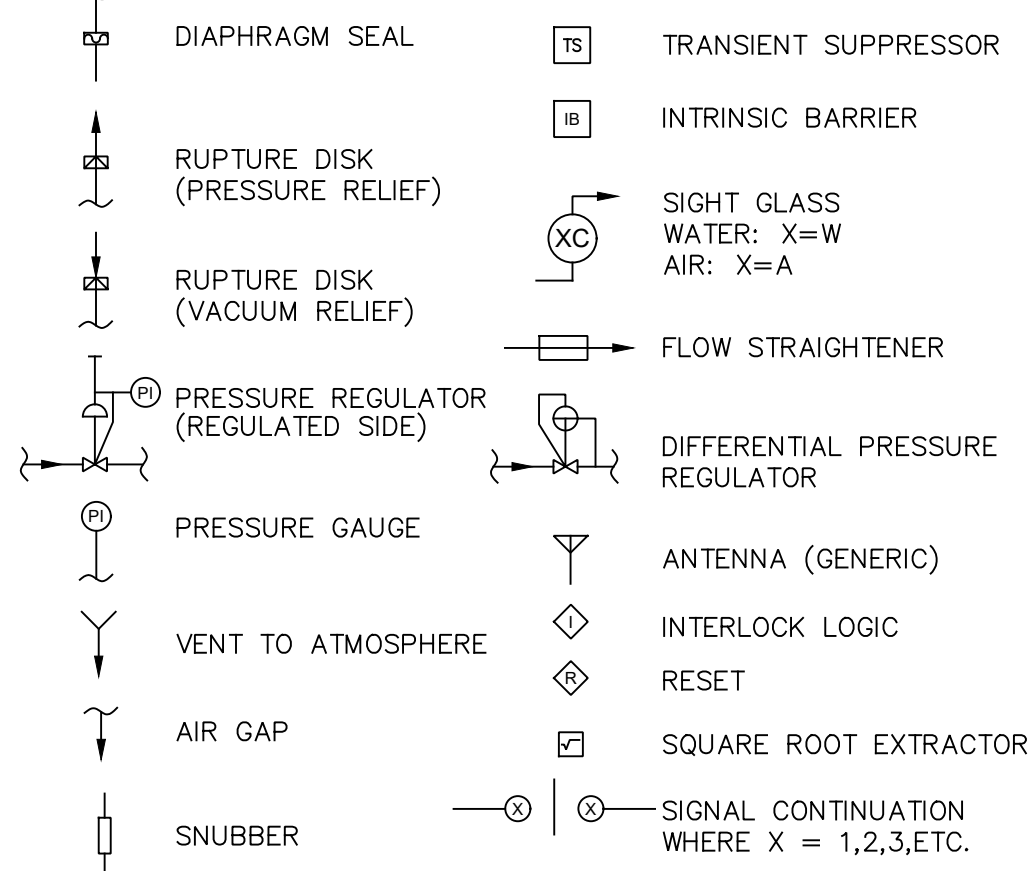
INSTRUMENT LINE SYMBOLS



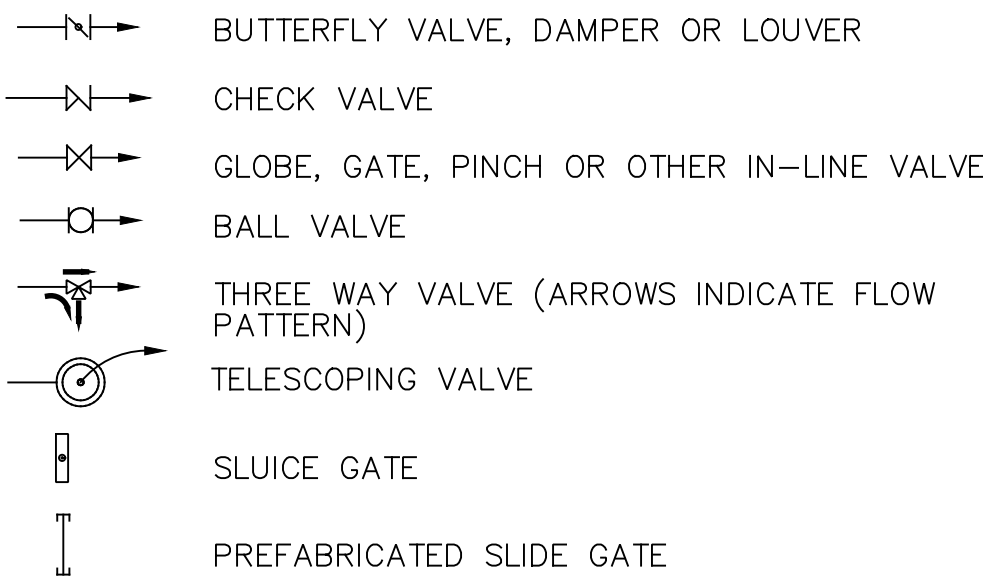
PRIMARY ELEMENT SYMBOLS



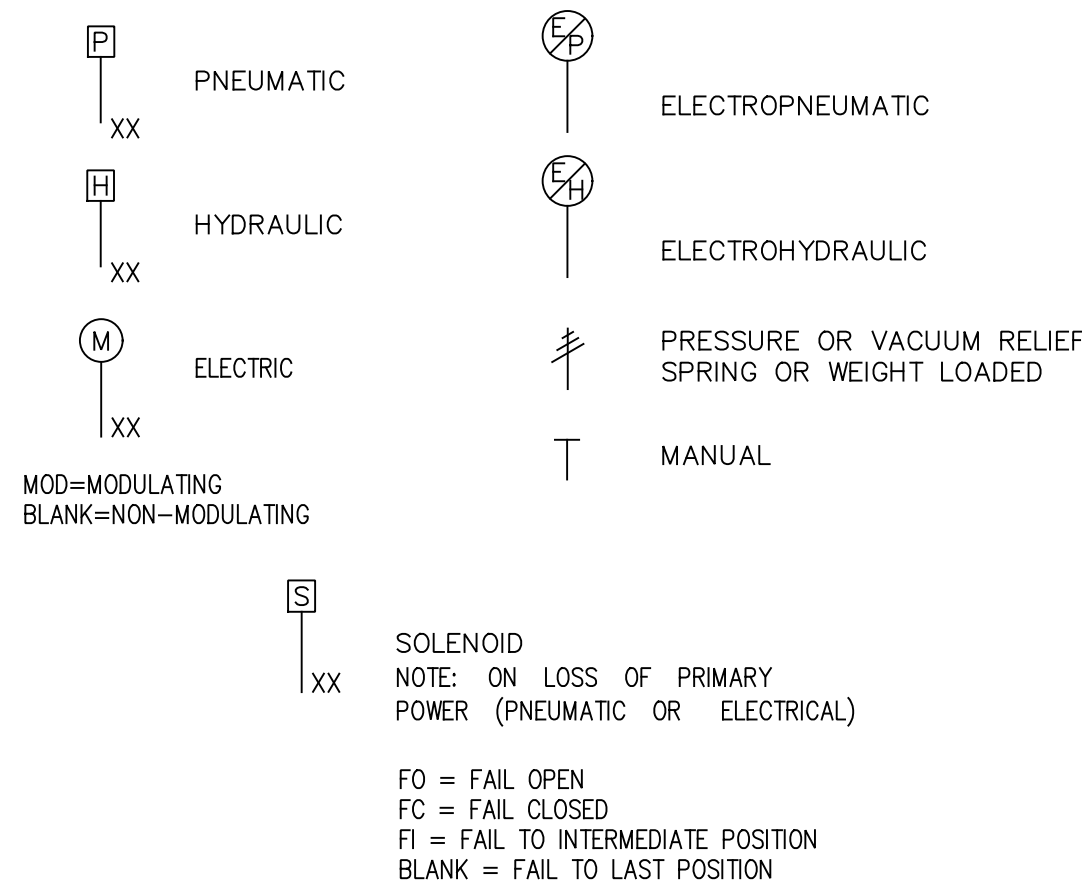
MISCELLANEOUS SYMBOLS



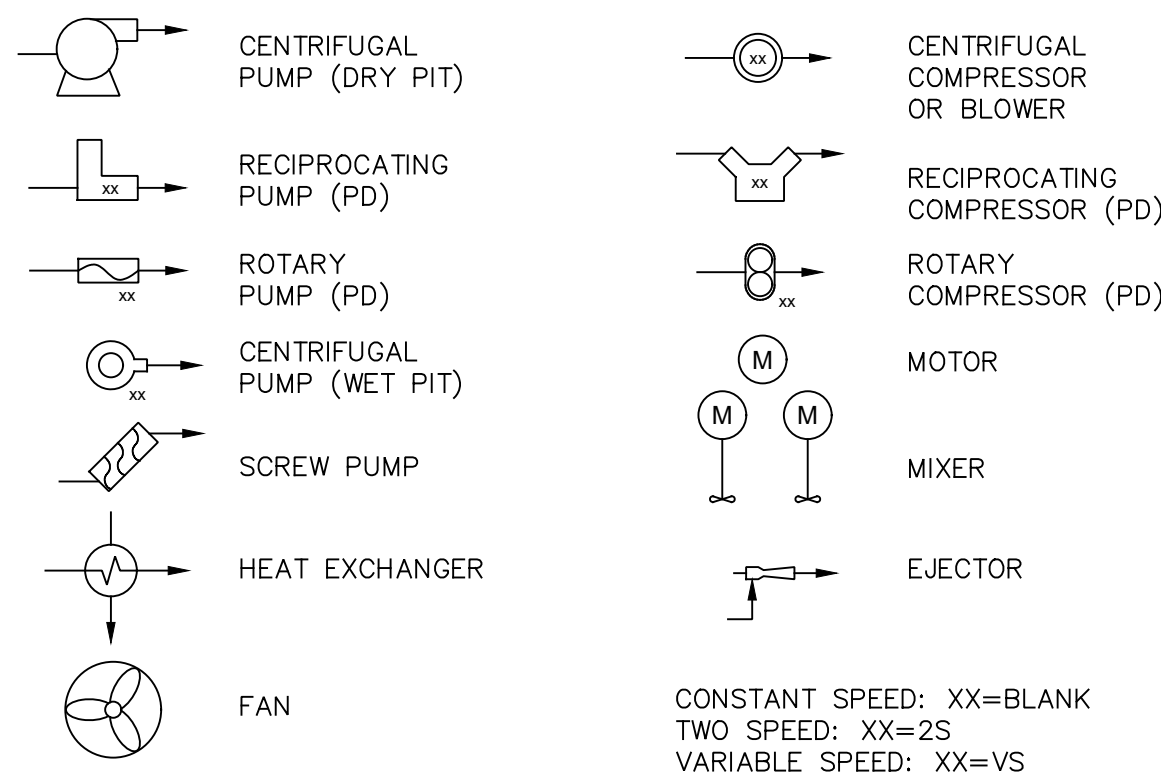
VALVE & GATE SYMBOLS



ACTUATOR SYMBOLS



EQUIPMENT SYMBOLS

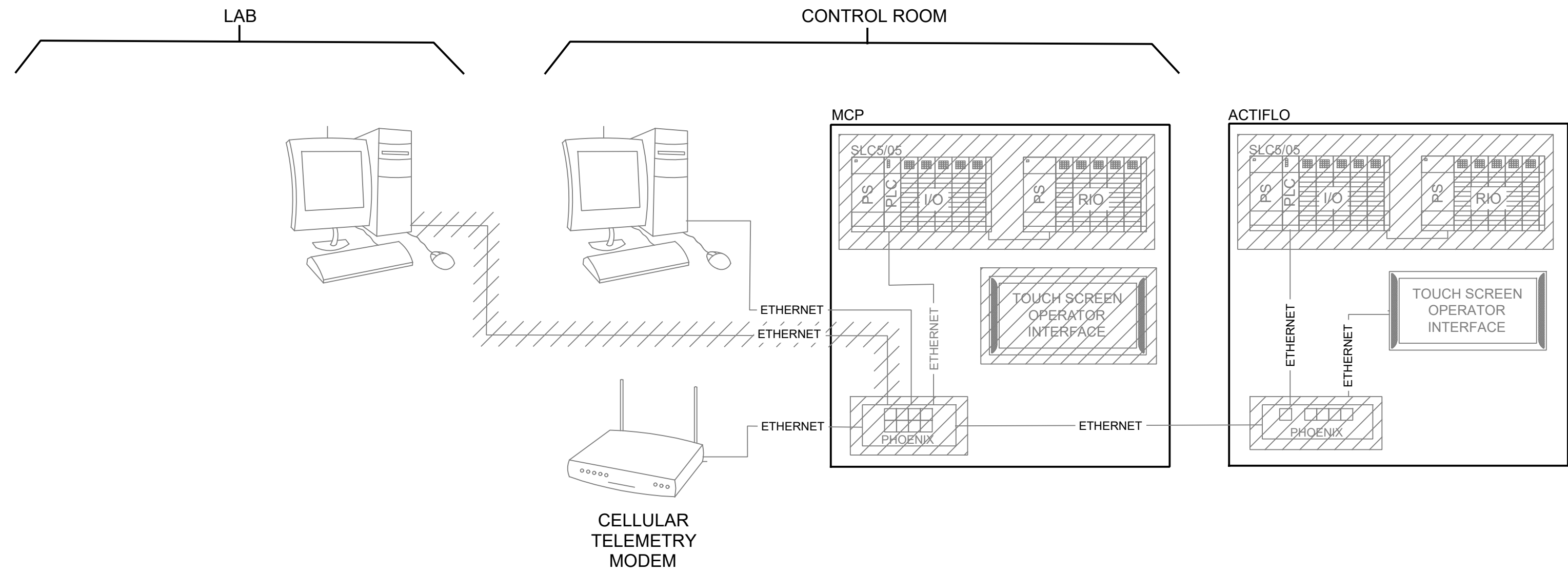


GENERAL NOTES:

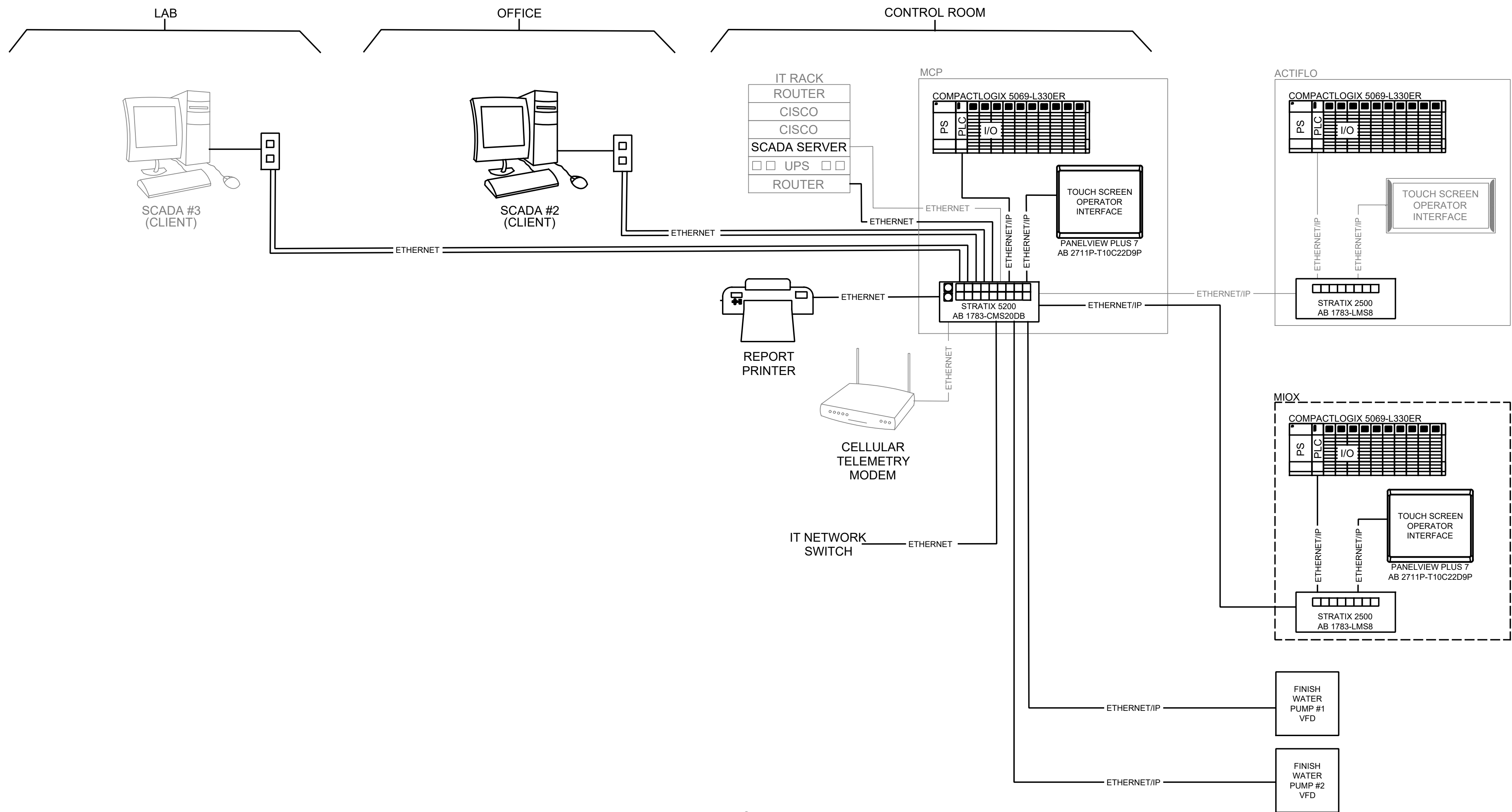
SEE DIVISION 13 OF THE SPECIFICATIONS FOR FURTHER INSTRUMENTATION REQUIREMENTS.

THIS IS A GENERAL GUIDE TO READING INSTRUMENT SOCIETY OF AMERICA (ISA) FORMAT P&ID OR LOOP DIAGRAMS. THESE SYMBOLS AND TECHNIQUES ARE MOSTLY EXTRACTED FROM ISA STANDARD 55.1. THIS IS NOT, HOWEVER, A COMPLETE OR EXACT DUPLICATION OF 55.1. NOT ALL SYMBOLS SHOWN ARE USED ON THIS PROJECT. SOME SYMBOLS MAY BE USED THAT ARE NOT SHOWN. CONSULT THE ENGINEER OR ISA STANDARD 55.1 FOR CLARIFICATIONS.

THROUGHOUT THESE DRAWINGS, UNLESS OTHERWISE NOTED, ITEMS IN LIGHT PRINT ARE EXISTING. ITEMS IN HEAVY PRINT ARE NEW.



DEMOLITION PLAN
 NOT TO SCALE



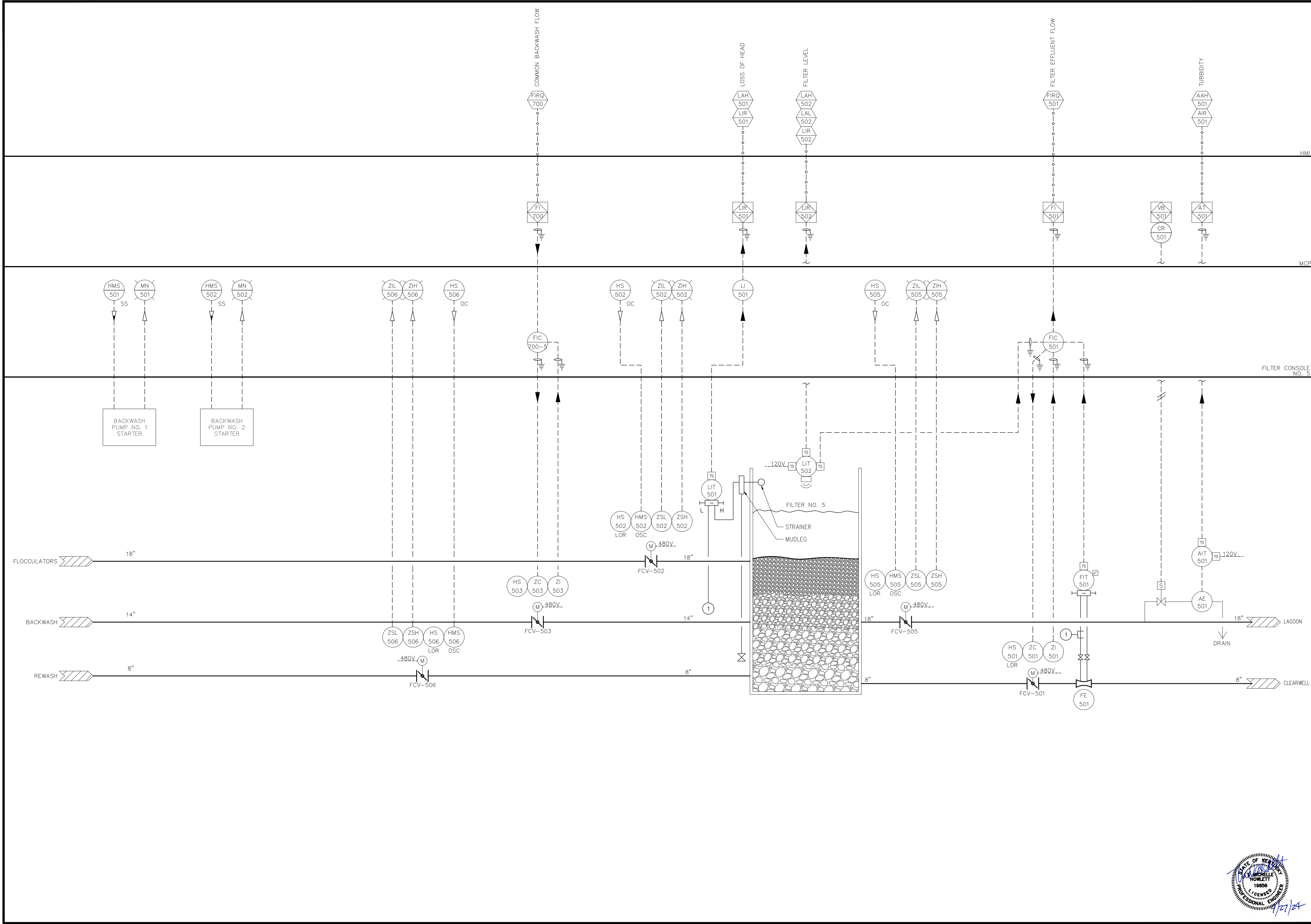
LEGEND

EXISTING _____
 NEW _____

NETWORK PLAN
 NOT TO SCALE



SCALE:	AS SHOWN	REVISION:	BY:	DATE:
DESIGNED BY:	BFA			
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CHECKED BY:	TMH			
PROJECT NO:	19008			
DATE:	JANUARY 2024			
CAD DWG ID:				



SCALE:	AS SHOWN	DESIGNED BY:	DATE:
	BPA		
	JOS		
	TMH		
	19008		
	JANUARY 2024		
	CAD DWG ID:		

LONDON UTILITY COMMISSION
P.O. BOX 918
801 N. MAIN STREET
LONDON, KENTUCKY 40341

FILTER 5
PROCESS AND INSTRUMENTATION DIAGRAM
LONDON WATER TREATMENT PLANT IMPROVEMENTS



I/O SCHEDULES: MAIN CONTROL PANEL

R	S	P	FUNCTION	TYPE
1	0	5069-L330ER	CompactLogix Processor	
1	1	5069-IA16	16-POINT AC INPUT MODULE	
1	1	0	NEW BACKWASH PUMP RUNNING	DI
1	1	1	CARBON FEEDER #1 RUNNING	DI
1	1	2	CARBON FEEDER #2 RUNNING	DI
1	1	3	FLUORIDE PUMP #1 RUNNING	DI
1	1	4	FLUORIDE PUMP #2 RUNNING	DI
1	1	5	SEDIMENTATION TANK LEVEL (FS-601)	DI
1	1	6	EXISTING CLEARWELL HIGH LEVEL	DI
1	1	7	EXISTING CLEARWELL LOW LEVEL	DI
1	1	8	MIOX EYEWASH	DI
1	1	9	SPARE	DI
1	1	10	SPARE	DI
1	1	11	SPARE	DI
1	1	12	SPARE	DI
1	1	13	SPARE	DI
1	1	14	SPARE	DI
1	1	15	SPARE	DI
1	2	5069-IA16	16-POINT AC INPUT MODULE	
1	2	0	SPARE	DI
1	2	1	SPARE	DI
1	2	2	SPARE	DI
1	2	3	SPARE	DI
1	2	4	SPARE	DI
1	2	5	SPARE	DI
1	2	6	SPARE	DI
1	2	7	SPARE	DI
1	2	8	SPARE	DI
1	2	9	SPARE	DI
1	2	10	SPARE	DI
1	2	11	SPARE	DI
1	2	12	SPARE	DI
1	2	13	SPARE	DI
1	2	14	SPARE	DI
1	2	15	SPARE	DI
1	3	5069-OW16	16-POINT DIGITAL OUTPUT MODULE	
1	3	0	NEW FINISHED WATER PUMP #1 RUNNING PILOT LIGHT (MCP)	DO
1	3	1	NEW FINISHED WATER PUMP #1 START/STOP	DO
1	3	2	NEW FINISHED WATER PUMP #1 LOW-LEVEL CUTOFF	DO
1	3	3	NEW FINISHED WATER PUMP #2 RUNNING PILOT LIGHT (MCP)	DO
1	3	4	NEW FINISHED WATER PUMP #2 START/STOP	DO
1	3	5	NEW FINISHED WATER PUMP #2 LOW-LEVEL CUTOFF	DO
1	3	6	CARBON FEEDER START	DO
1	3	7	NEW BACKWASH PUMP START	DO
1	3	8	NEW BACKWASH PUMP LOW-LEVEL CUTOFF	DO
1	3	9	FLUORIDE PUMP #1 RUNNING PANEL LIGHT (MCP)	DO
1	3	10	FLUORIDE PUMP #2 RUNNING PANEL LIGHT (MCP)	DO
1	3	11	TURBIDITY METER SOLENOID VALVE CLOSE	DO
1	3	12	CHLORINE SOLENOID VALVE #1 OPEN	DO
1	3	13	CHLORINE SOLENOID VALVE #2 OPEN	DO
1	3	14	RAW WATER CHLORINE VALVE #3 OPEN	DO
1	3	15	SPARE	DO
1	4	5069-OW16	16-POINT DIGITAL OUTPUT MODULE	
1	4	0	SPARE	DO
1	4	1	SPARE	DO
1	4	2	SPARE	DO
1	4	3	SPARE	DO
1	4	4	SPARE	DO
1	4	5	SPARE	DO
1	4	6	SPARE	DO
1	4	7	SPARE	DO
1	4	8	SPARE	DO
1	4	9	SPARE	DO
1	4	10	SPARE	DO
1	4	11	SPARE	DO
1	4	12	SPARE	DO
1	4	13	SPARE	DO
1	4	14	SPARE	DO
1	4	15	SPARE	DO
1	5	5069-IF8	8-POINT ANALOG INPUT MODULE	
1	5	0	FILTER #1 TURBIDITY (AI-100 / 0-10 NTU)	AI
1	5	1	FILTER #2 TURBIDITY (AI-200 / 0-10 NTU)	AI
1	5	2	FILTER #3 TURBIDITY (AI-300 / 0-10 NTU)	AI
1	5	3	FILTER #4 TURBIDITY (AI-400 / 0-10 NTU)	AI
1	5	4	FILTER #5 TURBIDITY (AI-501 / 0-10 NTU)	AI
1	5	5	FILTER #1 LEVEL-HEAD LOSS (LI-100 / 0-10 FT)	AI
1	5	6	FILTER #2 LEVEL-HEAD LOSS (LI-200 / 0-10 FT)	AI
1	5	7	FILTER #3 LEVEL-HEAD LOSS (LI-300 / 0-10 FT)	AI

I/O SCHEDULES: MAIN CONTROL PANEL (CONTINUED)

R	S	P	FUNCTION	TYPE
1	6	5069-IF8	8-POINT ANALOG INPUT MODULE	
1	6	0	FILTER #4 LEVEL-HEAD LOSS (LI-400 / 0-10 FT)	AI
1	6	1	FILTER #5 HEAD LOSS (LI-501 / 0-10 FT)	AI
1	6	2	FILTER #1 EFFLUENT FLOW (FI-101 / 0-1500 GPM)	AI
1	6	3	FILTER #2 EFFLUENT FLOW (FI-201 / 0-1500 GPM)	AI
1	6	4	FILTER #3 EFFLUENT FLOW (FI-301 / 0-1500 GPM)	AI
1	6	5	FILTER #4 EFFLUENT FLOW (FI-401 / 0-1500 GPM)	AI
1	6	6	FILTER #5 EFFLUENT FLOW (FI-501 / 0-1500 GPM)	AI
1	6	7	COMB FILTER EFFLUENT TURBIDITY (AI-602 / 0-10 NTU)	AI
1	7	5069-IF8	8-POINT ANALOG INPUT MODULE	
1	7	0	FINISHED WATER FLOW (FI-600 / 0-5000 GPM)	AI
1	7	1	FINISHED WATER CHLORINE RESIDUAL	AI
1	7	2	FINISHED WATER TURBIDITY (0-10 NTU)	AI
1	7	3	POST ACTIFLO TURBIDITY (AI-601 / 0-10 NTU)	AI
1	7	4	BACKWASH FLOW (FI-700 / 0-6500 GPM)	AI
1	7	5	FLUORIDE SCALE WEIGHT (0-1000 LBS)	AI
1	7	6	CLEARWELL LEVEL (LI-600 / 0-10 FT)	AI
1	7	7	PLANT DISCHARGE PRESSURE	AI
1	8	5069-IF8	8-POINT ANALOG INPUT MODULE	
1	8	0	ROLLING ACRES TANK LEVEL (LI-610 / 0-10 FT)	AI
1	8	1	NORTHLAND TANK LEVEL (LI-605 / 0-50 FT)	AI
1	8	2	FILTER #5 LEVEL (LI-502 / 0-10.0 FT)	AI
1	8	3	BRINE LEVEL	AI
1	8	4	SALT LEVEL	AI
1	8	5	OXIDANT TANK NO. 1 LEVEL	AI
1	8	6	OXIDANT TANK NO. 2 LEVEL	AI
1	8	7	HYDROGEN MONITOR	AI
1	9	5069-IF8	8-POINT ANALOG INPUT MODULE	
1	9	0	SPARE	AI
1	9	1	SPARE	AI
1	9	2	SPARE	AI
1	9	3	SPARE	AI
1	9	4	SPARE	AI
1	9	5	SPARE	AI
1	9	6	SPARE	AI
1	9	7	SPARE	AI
1	10	5069-OF8	8-POINT ANALOG OUTPUT MODULE	
1	10	0	FILTER #1 EFFLUENT FLOW REMOTE SETPOINT	AO
1	10	1	FILTER #2 EFFLUENT FLOW REMOTE SETPOINT	AO
1	10	2	FILTER #3 EFFLUENT FLOW REMOTE SETPOINT	AO
1	10	3	FILTER #4 EFFLUENT FLOW REMOTE SETPOINT	AO
1	10	4	FILTER #5 EFFLUENT FLOW REMOTE SETPOINT (FI-700)	AO
1	10	5	SPARE	AO
1	10	6	SPARE	AO
1	10	7	SPARE	AO
1	11	5069-OF8	8-POINT ANALOG OUTPUT MODULE	
2	11	0	SPARE	AO
2	11	1	SPARE	AO
2	11	2	SPARE	AO
2	11	3	SPARE	AO
2	11	4	SPARE	AO
2	11	5	SPARE	AO
2	11	6	SPARE	AO
2	11	7	SPARE	AO
			ETHERNET/IP BASED I/O	
		VFD	NEW FINISHED WATER PUMP #1 HOA-AUTO	DI
		VFD	NEW FINISHED WATER PUMP #1 OVERTEMP	DI
		VFD	NEW FINISHED WATER PUMP #1 RUNNING	DI
		VFD	NEW FINISHED WATER PUMP #1 VFD FAULT	DI
		VFD	NEW FINISHED WATER PUMP #1 SPEED FEEDBACK (0-100%)	AI
		VFD	NEW FINISHED WATER PUMP #1 SPEED CONTROL (0-100%)	AO
		VFD	NEW FINISHED WATER PUMP #2 HOA-AUTO	DI
		VFD	NEW FINISHED WATER PUMP #2 RUNNING	DI
		VFD	NEW FINISHED WATER PUMP #2 VFD FAULT	DI
		VFD	NEW FINISHED WATER PUMP #2 SPEED FEEDBACK (0-100%)	AI
		VFD	NEW FINISHED WATER PUMP #2 SPEED CONTROL (0-100%)	AO

Note: BOLD denotes new PLC I/O.



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I/O SCHEDULES 1
LONDON WATER TREATMENT PLAN IMPROVEMENTS

SHEET NUMBER:

I/O SCHEDULES: ACTIFLO

R	S	P	FUNCTION	TYPE
1	0	5069-L330ER	CompactLogix Processor	
1	1	5069-IF8	8-POINT ANALOG INPUT MODULE	
1	1	0	RAW WATER FLOW (FIT-503)	AI
1	1	1	RAW WATER pH (AIT-501)	AI
1	1	2	RAW WATER TURBIDITY (AIT-503)	AI
1	1	3	COAGULATED pH (AIT-502)	AI
1	1	4	TRAIN #1 TURBIDITY (AIT-504)	AI
1	1	5	TRAIN #2 TURBIDITY (AIT-505)	AI
1	1	6	POLYMER FEED PUMP #1 SPEED (SR-4000)	AI
1	1	7	POLYMER FEED PUMP #2 SPEED (SR-4010)	AI
1	2	5069-IF8	8-POINT ANALOG INPUT MODULE	
1	2	0	FERRIFLOC (ALUM) FEED PUMP #1 SPEED (SR-5000)	AI
1	2	1	FERRIFLOC (ALUM) FEED PUMP #2 SPEED (SR-5010)	AI
1	2	2	CAUSTIC FEED PUMP #1 SPEED (SR-6000)	AI
1	2	3	CAUSTIC FEED PUMP #2 SPEED (SR-6010)	AI
1	2	4	SPARE	AI
1	2	5	SPARE	AI
1	2	6	SPARE	AI
1	2	7	SPARE	AI
1	3	5069-OF8	8-POINT ANALOG OUTPUT MODULE	
1	3	0	POLYMER FEED PUMP #1 SPEED CONTROL (SC-4000)	AI
1	3	1	POLYMER FEED PUMP #2 SPEED CONTROL (SC-4010)	AI
1	3	2	FERRIFLOC FEED PUMP #1 SPEED CONTROL (SC-5000)	AI
1	3	3	FERRIFLOC FEED PUMP #2 SPEED CONTROL (SC-5010)	AI
1	3	4	CAUSTIC FEED PUMP #1 SPEED CONTROL (SC-6000)	AI
1	3	5	CAUSTIC FEED PUMP #2 SPEED CONTROL (SC-6010)	AI
1	3	6	SPARE	AI
1	3	7	SPARE	AI
1	2	5069-IB16	16-POINT DC INPUT MODULE	
1	4	0	ALARM RESET (PB-1)	DI
1	4	1	ALARM ACKNOWLEDGE (PB-2)	DI
1	4	2	UPS POWER ON (CRUPS-1)	DI
1	4	3	COAGLUATION TANK MIXER RUNNING (RS-1000)	DI
1	4	4	COAGLUATION TANK MIXER OVERLOAD (XS-1000)	DI
1	4	5	COAGULATION TANK HOA-AUTO (HS-1000)	DI
1	4	6	TRAIN #1 ISOLATION GATE FULL OPEN (OS-1010)	DI
1	4	7	TRAIN #1 ISOLATION GATE FULL CLOSED (CS-1010)	DI
1	4	8	TRAIN #2 ISOLATION GATE FULL OPEN (OS-1020)	DI
1	4	9	TRAIN #2 ISOLATION GATE FULL CLOSED (CS-1020)	DI
1	4	10	TRAIN #1 INJECTION TANK MIXER RUNNING (RS-2000)	DI
1	4	11	TRAIN #1 INJECTION TANK MIXER FAIL (XS-2000)	DI
1	4	12	TRAIN #1 INJECTION TANK MIXER HOA-AUTO (HS-2000)	DI
1	4	13	TRAIN #1 SAND/SLUDGE PUMP #1 RUNNING (RS-2020)	DI
1	4	14	TRAIN #1 SAND/SLUDGE PUMP #1 OVERLOAD (XS-2020)	DI
1	4	15	TRAIN #1 SAND/SLUDGE PUMP #1 HOA-AUTO (HS-2020)	DI
1	5	5069-IB16	16-POINT DC INPUT MODULE	
1	5	0	TRAIN #1 SAND/SLUDGE PUMP #1 HIGH DISCHARGE PRESSURE (PSH-2020)	DI
1	5	1	TRAIN #1 SAND/SLUDGE PUMP #1 LOW DISCHARGE PRESSURE (PSL-2020)	DI
1	5	2	SPARE	DI
1	5	3	TRAIN #1 SAND/SLUDGE PUMP #2 RUNNING (RS-2030)	DI
1	5	4	TRAIN #1 SAND/SLUDGE PUMP #2 OVERLOAD (XS-2030)	DI
1	5	5	TRAIN #1 SAND/SLUDGE PUMP #2 HOA-AUTO (HS-2030)	DI
1	5	6	TRAIN #1 SAND/SLUDGE PUMP #2 HIGH DISCHARGE PRESSURE (PSH-2030)	DI
1	5	7	TRAIN #1 SAND/SLUDGE PUMP #2 LOW DISCHARGE PRESSURE (PSL-2030)	DI
1	5	8	SPARE	DI
1	5	9	TRAIN #2 INJECTION TANK MIXER RUNNING (RS-3000)	DI
1	5	10	TRAIN #2 INJECTION TANK MIXER OVERLOAD (XS-3000)	DI
1	5	11	TRAIN #2 INJECTION TANK MIXER HOA-AUTO (HS-3000)	DI
1	5	12	TRAIN #2 SAND/SLUDGE PUMP #1 RUNNING (RS-3020)	DI
1	5	13	TRAIN #2 SAND/SLUDGE PUMP #1 OVERLOAD (XS-3020)	DI
1	5	14	TRAIN #2 SAND/SLUDGE PUMP #1 HOA-AUTO (HS-3020)	DI
1	5	15	TRAIN #2 SAND/SLUDGE PUMP #1 HIGH DISCHARGE PRESSURE (PSH-3020)	DI
1	6	5069-IB16	16-POINT DC INPUT MODULE	
1	6	0	TRAIN #2 SAND/SLUDGE PUMP #1 LOW DISCHARGE PRESSURE (PSL-3020)	DI
1	6	1	SPARE	DI
1	6	2	TRAIN #2 SAND/SLUDGE PUMP #2 RUNNING (RS-3030)	DI
1	6	3	TRAIN #2 SAND/SLUDGE PUMP #2 OVERLOAD (XS-3030)	DI
1	6	4	TRAIN #2 SAND/SLUDGE PUMP #2 HOA-AUTO (HS-3030)	DI
1	6	5	TRAIN #2 SAND/SLUDGE PUMP #2 HIGH DISCHARGE PRESSURE (PSH-3030)	DI
1	6	6	TRAIN #2 SAND/SLUDGE PUMP #2 LOW DISCHARGE PRESSURE (PSL-3030)	DI
1	6	7	SPARE	DI
1	6	8	POLYMER FEED PUMP #1 RUNNING (RS-4000)	DI
1	6	9	POLYMER FEED PUMP #1 HOA-AUTO (HS-4000)	DI
1	6	10	POLYMER FEED PUMP #2 RUNNING (RS-4010)	DI
1	6	11	POLYMER FEED PUMP #2 HOA-AUTO (HS-4010)	DI
1	6	12	POLYMER FEED LOW FLOW ALARM (LFS-4015)	DI
1	6	13	FERRIFLOC (ALUM) FEED PUMP #1 RUNNING (RS-5000)	DI
1	6	14	FERRIFLOC (ALUM) FEED PUMP #1 HOA-AUTO (HS-5000)	DI
1	6	15	SPARE	DI

I/O SCHEDULES: ACTIFLO (CONTINUED)

R	S	P	FUNCTION	TYPE
1	7	5069-IB16	16-POINT DC INPUT MODULE	
1	7	0	FERRIFLOC (ALUM) FEED PUMP #2 RUNNING (RS-5010)	DI
1	7	1	FERRIFLOC (ALUM) FEED PUMP #2 HOA-AUTO (HS-5010)	DI
1	7	2	CAUSTIC FEED PUMP #1 RUNNING (RS-6000)	DI
1	7	3	CAUSTIC FEED PUMP #1 HOA-AUTO (HS-6000)	DI
1	7	4	CAUSTIC FEED PUMP #2 RUNNING (RS-6010)	DI
1	7	5	CAUSTIC FEED PUMP #2 HOA-AUTO (HS-6010)	DI
1	7	6	CAUSTIC FEED LOW FLOW ALARM (LFS-6015)	DI
1	7	7	TRAIN #1 START P.B. (PB-3)	DI
1	7	8	TRAIN #1 STOP P.B. (PB-4)	DI
1	7	9	TRAIN #2 START P.B. (PB-5)	DI
1	7	10	TRAIN #2 STOP P.B. (PB-6)	DI
1	7	11	TRAIN #1 MATURATION MIXER RUNNING (RS-M2010)	DI
1	7	12	TRAIN #2 MATURATION MIXER RUNNING (RS-3010)	DI
1	7	13	RAW WATER VALVE FULL CLOSED	DI
1	7	14	RAW WATER VALVE FULL CLOSED	DI
1	7	15	SPARE	DI
1	8	5069-IB16	16-POINT DC INPUT MODULE	
1	8	0	SPARE	DI
1	8	1	SPARE	DI
1	8	2	SPARE	DI
1	8	3	SPARE	DI
1	8	4	SPARE	DI
1	8	5	SPARE	DI
1	8	6	SPARE	DI
1	8	7	SPARE	DI
1	8	8	SPARE	DI
1	8	9	SPARE	DI
1	8	10	SPARE	DI
1	8	11	SPARE	DI
1	8	12	SPARE	DI
1	8	13	SPARE	DI
1	8	14	SPARE	DI
1	8	15	SPARE	DI
1	9	5069-OB16	16-POINT DIGITAL OUTPUT MODULE	
1	9	0	ALARM HORN	DO
1	9	1	ALARM RESET P.B. LIGHT	DO
1	9	2	COAGULATION MIXER START/STOP (M1000)	DO
1	9	3	TRAIN #1 INJECTION MIXER START/STOP (M2000)	DO
1	9	4	TRAIN #1 SAND SLUDGE PUMP #1 START/STOP (P2020)	DO
1	9	5	TRAIN #1 SAND SLUDGE PUMP #2 START/STOP (P2030)	DO
1	9	6	TRAIN #2 INJECTION MIXER START/STOP (M3000)	DO
1	9	7	TRAIN #2 SAND SLUDGE PUMP #1 START/STOP (P3020)	DO
1	9	8	TRAIN #2 SAND SLUDGE PUMP #2 START/STOP (P3030)	DO
1	9	9	POLYMER FEED PUMP #1 START/STOP (P4000)	DO
1	9	10	POLYMER FEED PUMP #2 START/STOP (P4010)	DO
1	9	11	FERRIFLOC (ALUM) FEED PUMP #1 START/STOP (P5000)	DO
1	9	12	FERRIFLOC (ALUM) FEED PUMP #2 START/STOP (P5010)	DO
1	9	13	CAUSTIC FEED PUMP #1 START/STOP (P6000)	DO
1	9	14	CAUSTIC FEED PUMP #2 START/STOP (P6010)	DO
1	9	15	SODIUM THIOSULFATE PUMP START/STOP	DO
1	10	5069-OB16	16-POINT DIGITAL OUTPUT MODULE	
1	10	0	TRAIN #1 START PUSHBUTTON LIGHT (PB-3)	DO
1	10	1	TRAIN #2 START PUSHBUTTON LIGHT (PB-5)	DO
1	10	2	SPARE - CR19	DO
1	10	3	TRAIN #1 MATURATION MIXER START/STOP (M2010)	DO
1	10	4	SPARE - CR21	DO
1	10	5	TRAIN #2 MATURATION MIXER START/STOP (M3010)	DO
1	10	6	SPARE - CR23	DO
1	10	7	SPARE - CR24	DO
1	10	8	SPARE - CR25	DO
1	10	9	SPARE - CR26	DO
1	10	10	SPARE - CR27	DO
1	10	11	SPARE - CR28	DO
1	10	12	SPARE - CR29	DO
1	10	13	SPARE - CR30	DO
1	10	14	SPARE - CR31	DO
1	10	15	SPARE - CR32	DO

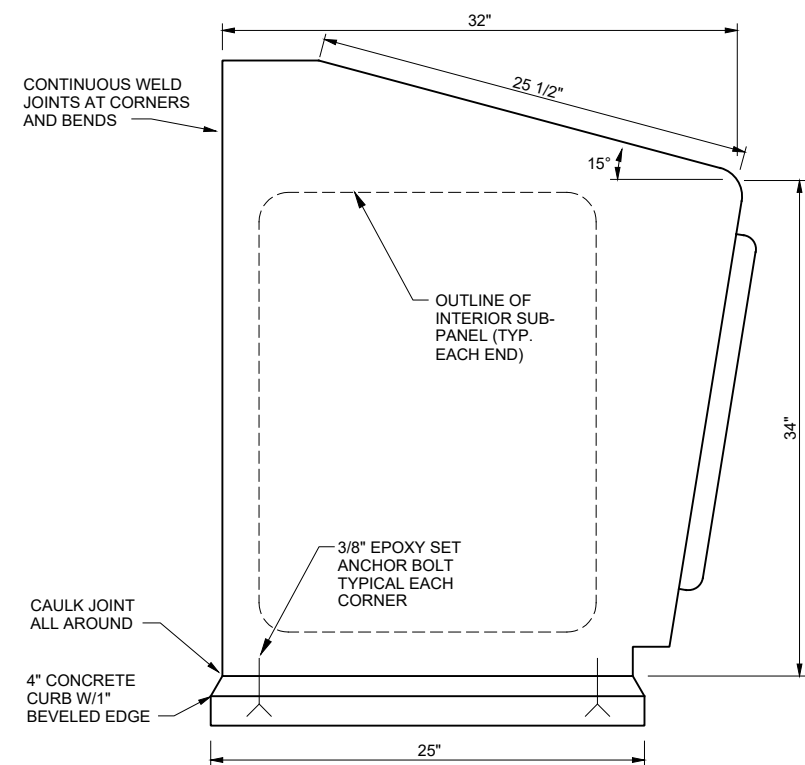


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DRAWN BY:	JDS			
CHECKED BY:	TMH			
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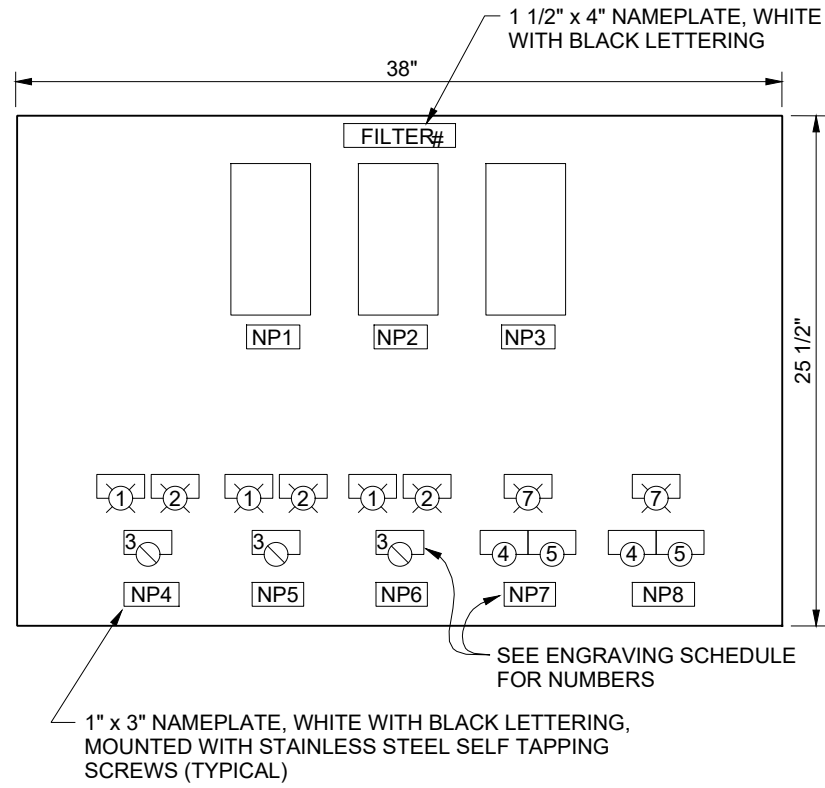
I/O SCHEDULES 2
LONDON WATER TREATMENT PLAN IMPROVEMENTS

SHEET NUMBER:



FILTER CONSOLE - SIDE ELEVATION

NOT TO SCALE
(1 REQUIRED THIS CONTRACT)



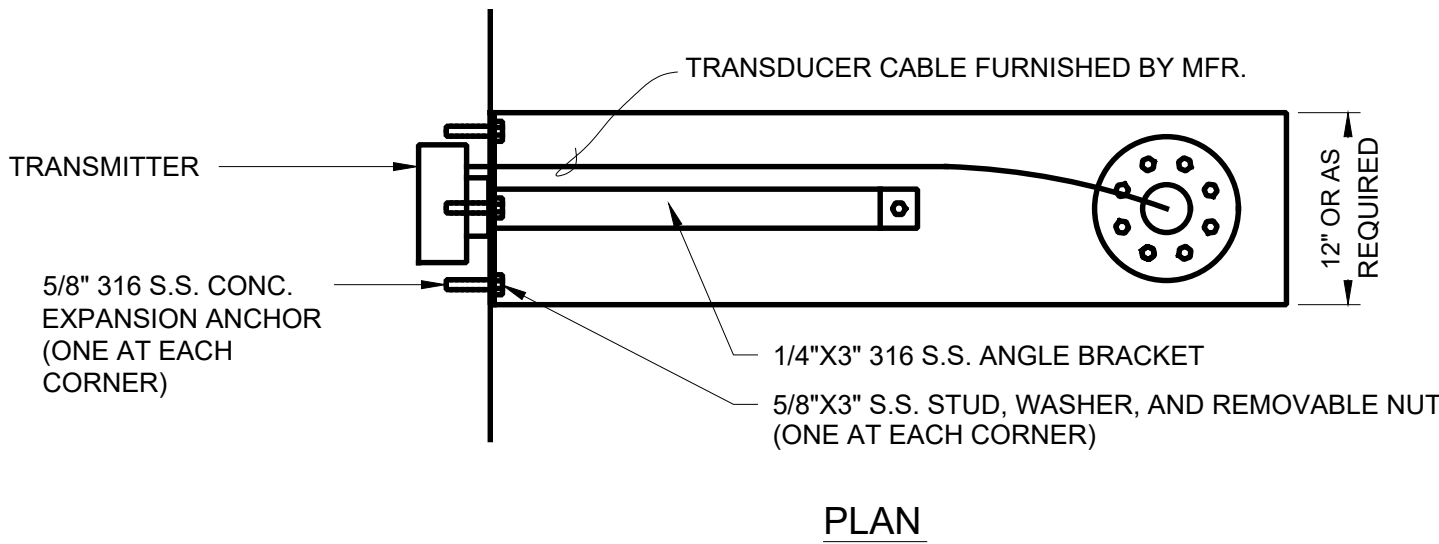
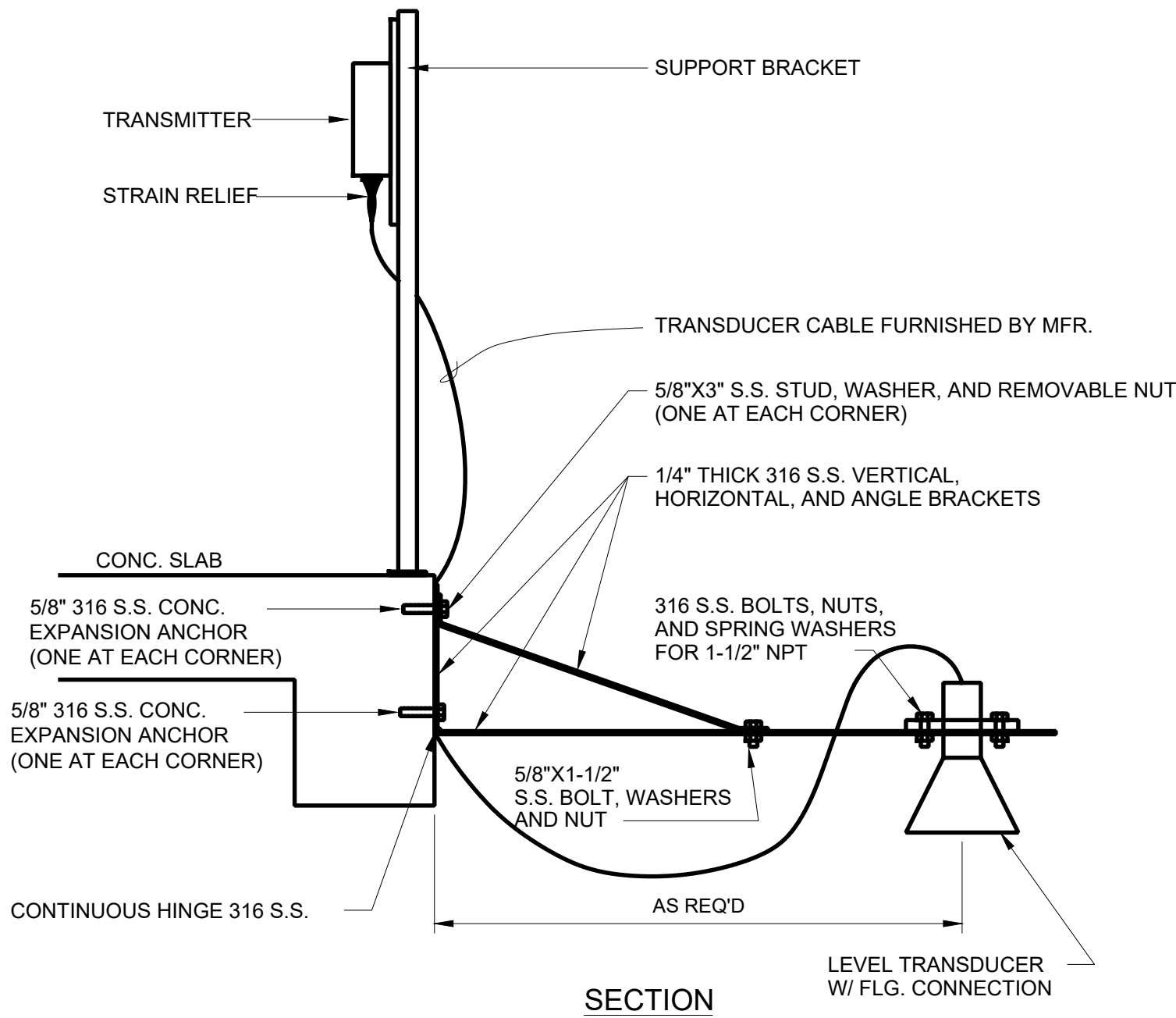
FILTER CONSOLE - FACE

NOT TO SCALE
(1 REQUIRED THIS CONTRACT)

FILTER CONSOLE ENGRAVING SCHEDULE		
MARK	DEVICE	ENGRAVING
NP1	FLOW INDICATING CONTROLLER - 3" x 6"	FILTER FLOW CONTROLLER
NP2	3" x 6" DUAL INPUT INDICATOR	FILTER LOSS OF HEAD/FILTER EFFLUENT TURBIDITY
NP3	3" x 6" FLOW INDICATING CONTROLLER	BACKWASH FLOW CONTROLLER
NP4	NAMEPLATE ONLY	FILTER INFLUENT VALVE
NP5	NAMEPLATE ONLY	FILTER BACKWASH WASTE VALVE
NP6	NAMEPLATE ONLY	FILTER REWASH VALVE
NP7	NAMEPLATE ONLY	BACKWASH PUMP NO. 1
NP8	NAMEPLATE ONLY	BACKWASH PUMP NO. 2
1	GREEN PILOT LIGHT	OPEN
2	RED PILOT LIGHT	CLOSED
3	POSITION SELECTOR SWITCH (MAINTAINED)	OPEN - CLOSE
4	PUSHBUTTON (NON-MAINTAINED)	STOP
5	PUSH BUTTON (NON-MAINTAINED)	START
6	2 POSITION SELECTOR SWITCH (MAINTAINED)	ON - OFF
7	GREEN PILOT LIGHT	ON

NOTES:
CONSOLES ARE TO BE CONSTRUCTED OF STAINLESS STEEL WITH STIFFENERS PROVIDED AS NECESSARY TO PREVENT SAGGING OF FACEPLATE. PROVIDE GASKETED DOORS FOR FRONT ACCESS ONLY. (GASKETS SHALL BE IMPERVIOUS TO CHLORINE GAS.) DRILL IN NECESSARY TIES TO ANCHOR NEW FOUNDATION. POUR NEW FOUNDATION TO MATCH DIMENSIONS OF NEW CONSOLE PER ACCEPTED SHOP DRAWINGS. POUR CONCRETE IN EXISTING OPENINGS UNDER FILTER CONSOLES BUT INSTALL 2 SPARE EMPTY 2" CONDUITS TO FLOOR BELOW, BEFORE POURING. CAP CONDUIT INSIDE CONSOLES. SEAL ALL CONDUITS AROUND WIRES INSIDE CONSOLES.

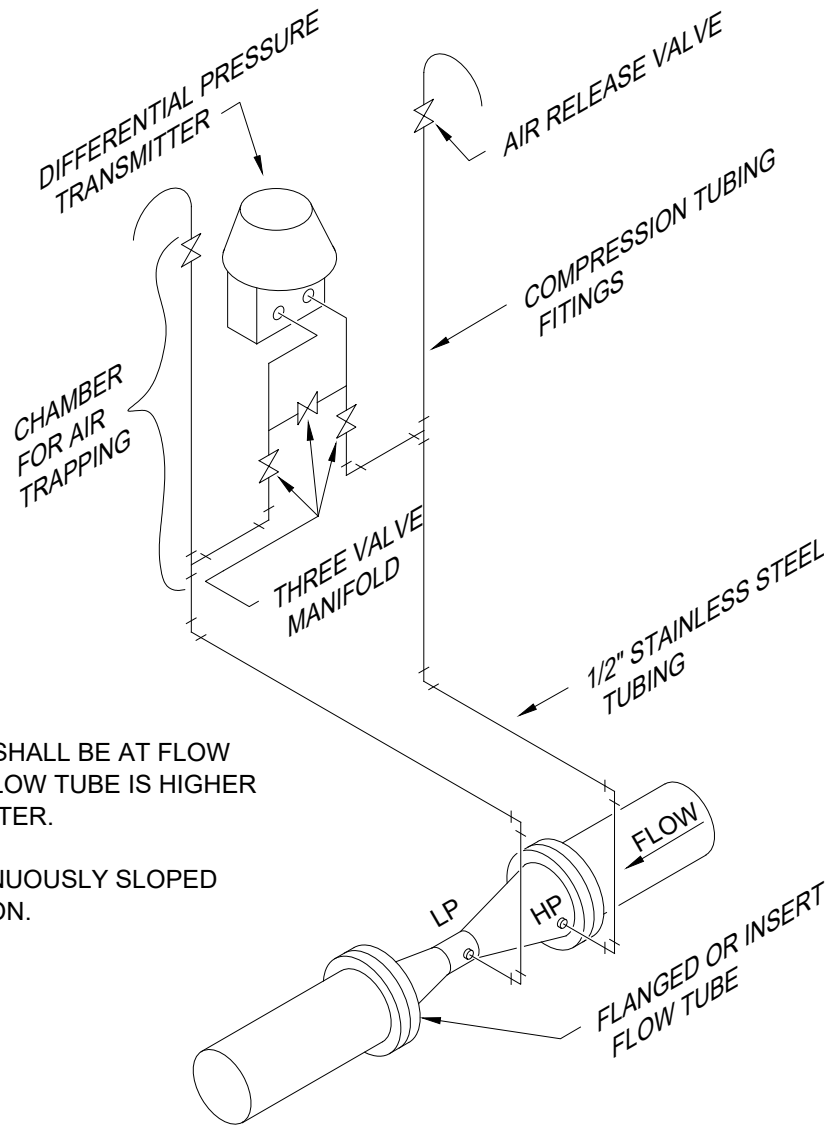
FILTER CONSOLE DETAIL



APPLIES TO FILTER NO. 5

RADAR LEVEL METER MOUNTING

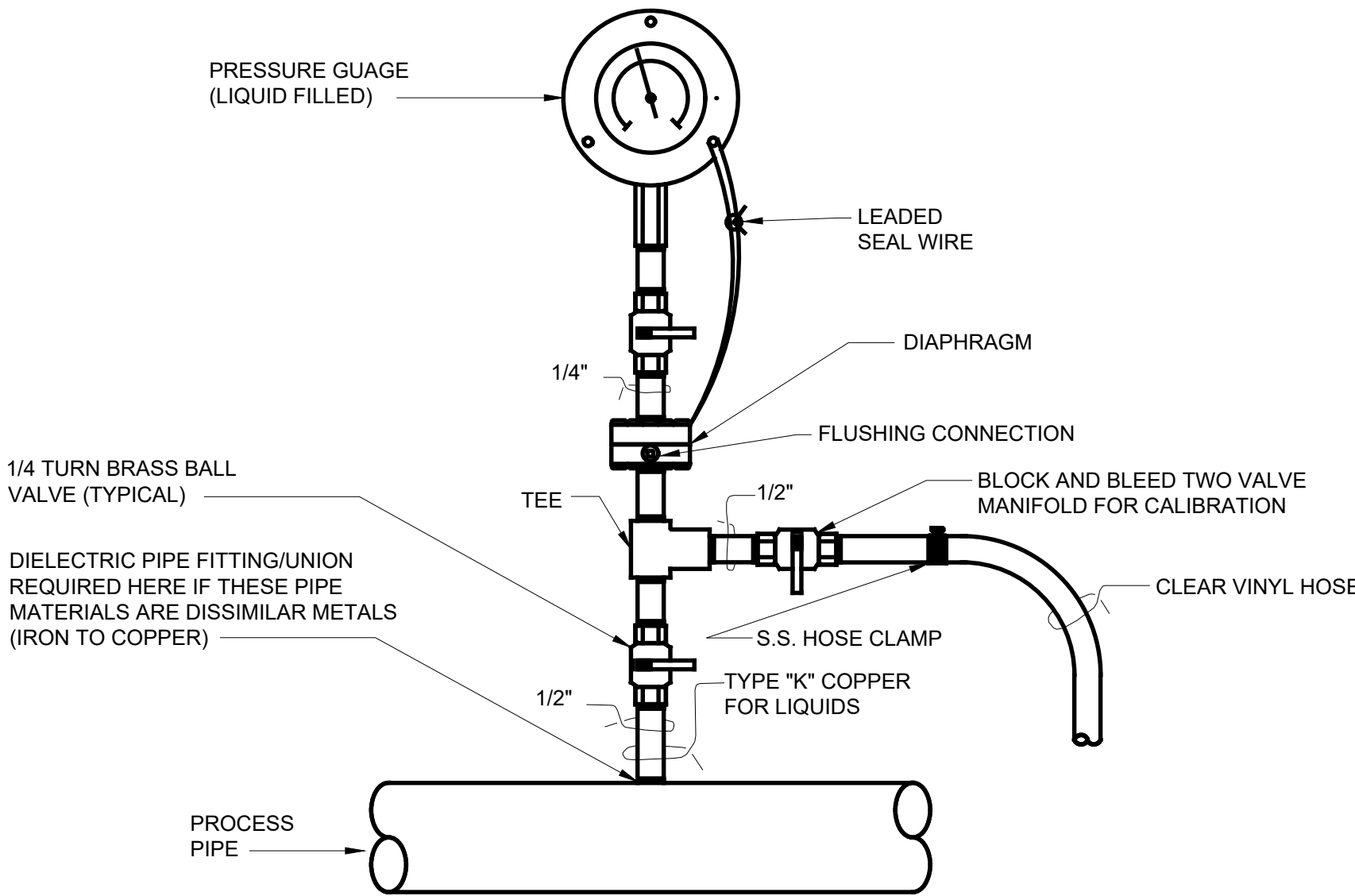
NOT TO SCALE



NOTE:
AIR CHAMBERS SHALL BE AT FLOW TUBE, WHERE FLOW TUBE IS HIGHER THAN TRANSMITTER.
ALL PIPE CONTINUOUSLY SLOPED IN ONE DIRECTION.

FLOW TUBE PIPING SCHEMATIC

NOT TO SCALE

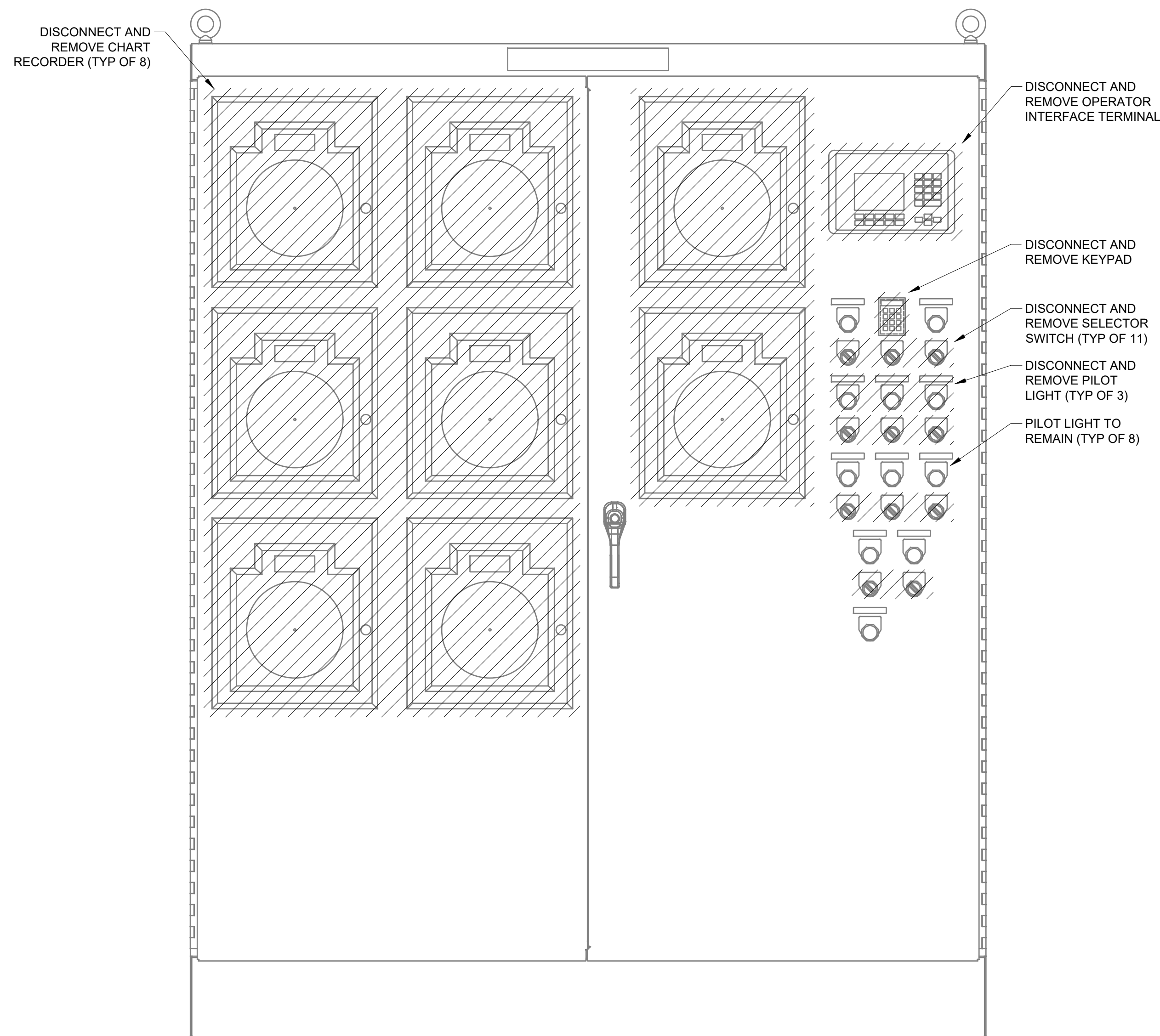


PRESSURE GAUGE PIPING DETAIL

NOT TO SCALE

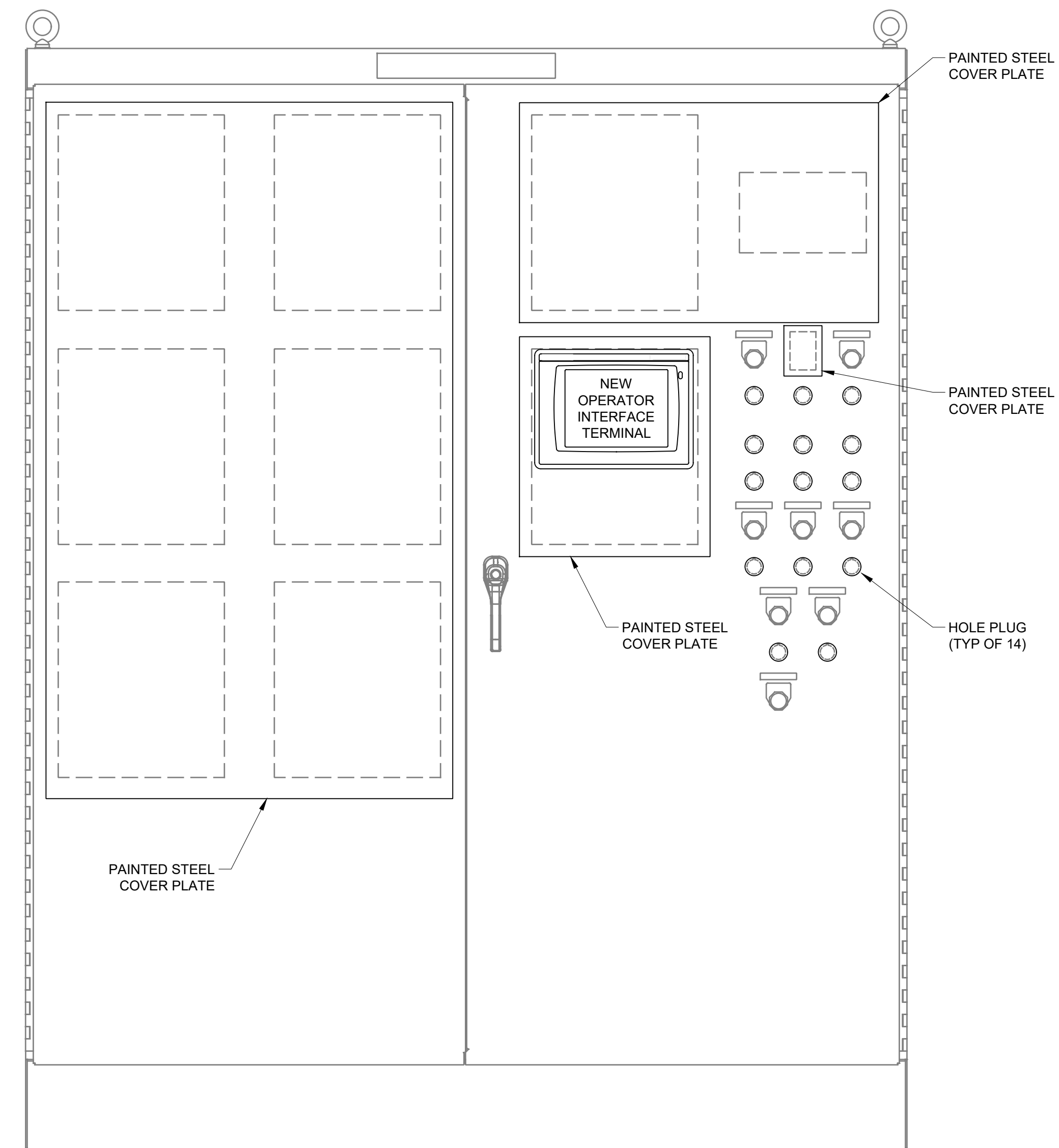


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EXISTING MAIN CONTROL PANEL - DEMOLITION

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



EXISTING MAIN CONTROL PANEL - MODIFICATIONS

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



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INSTRUMENTATION DETAILS 2

LONDON WATER TREATMENT PLAN IMPROVEMENTS