

CITY OF FLINT

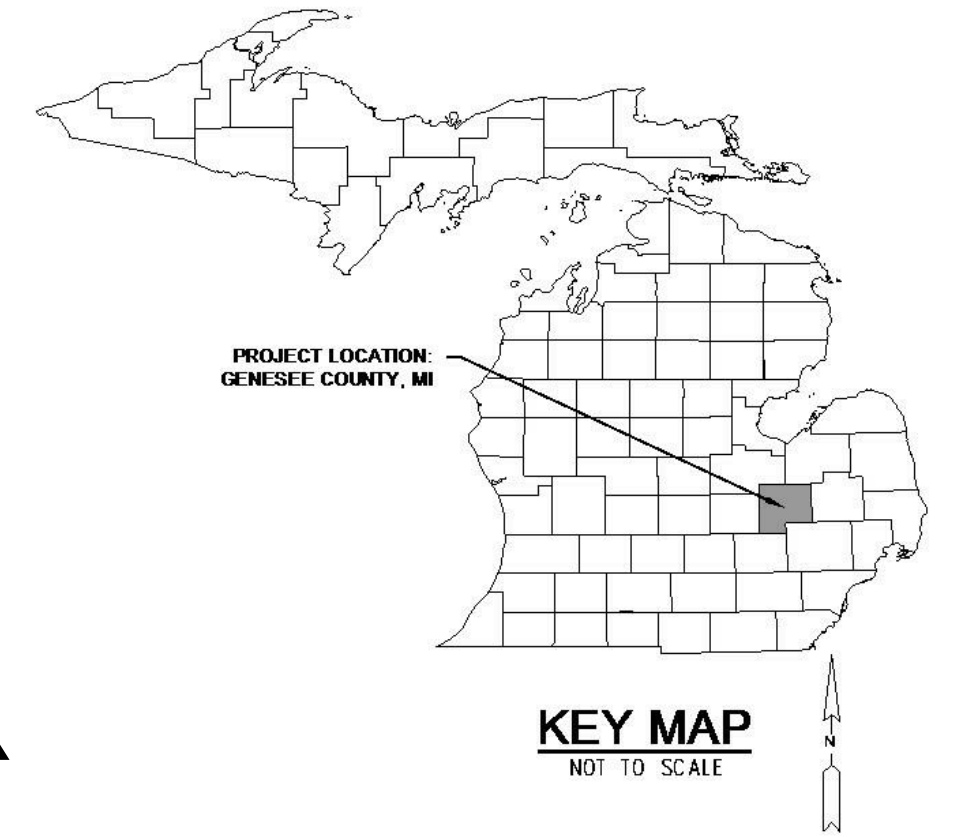
GENESEE COUNTY, MICHIGAN

CONSTRUCTION PLANS FOR

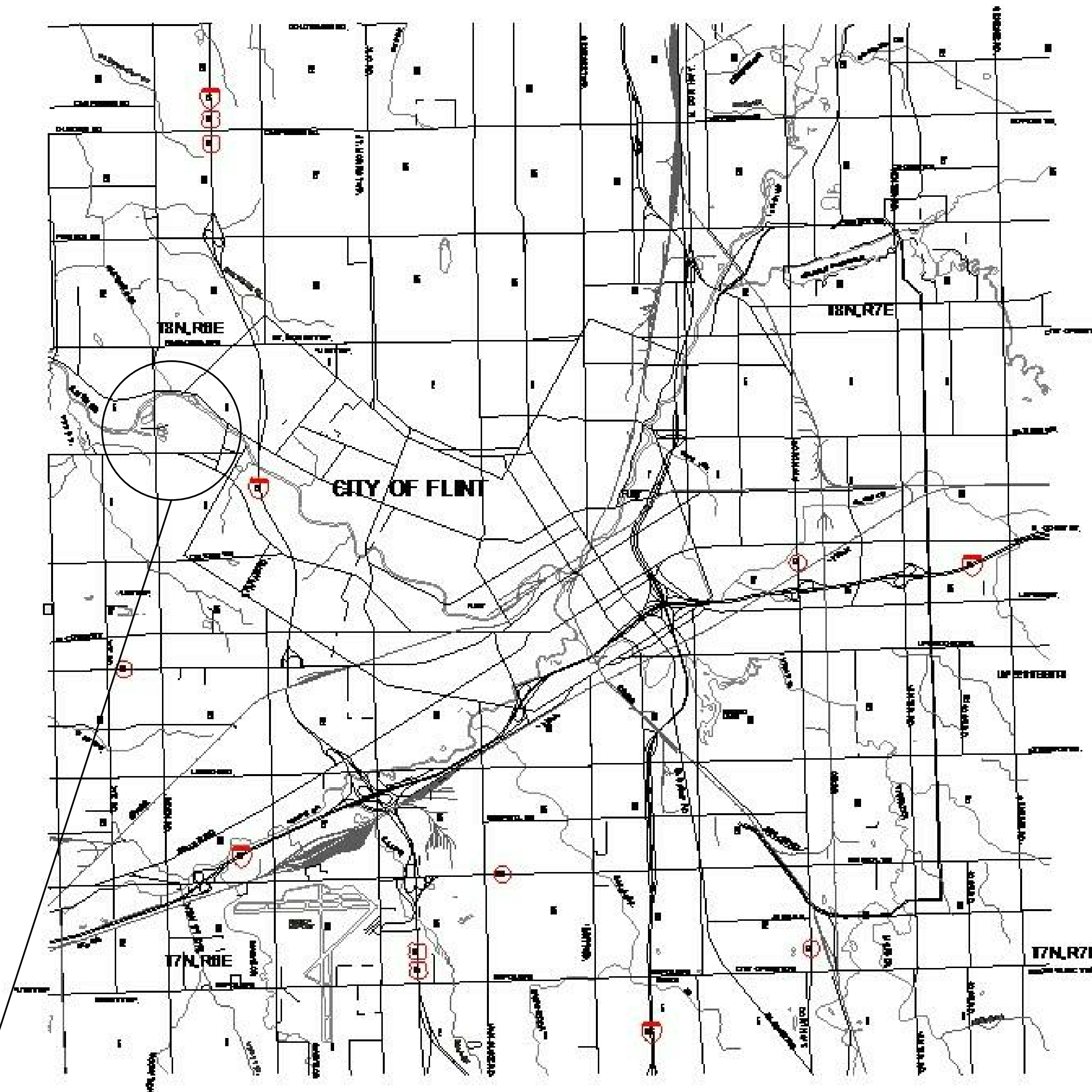
BATTERY B SECONDARY CLARIFIER

FLOW CONTROL PROJECT

COF1077-01F



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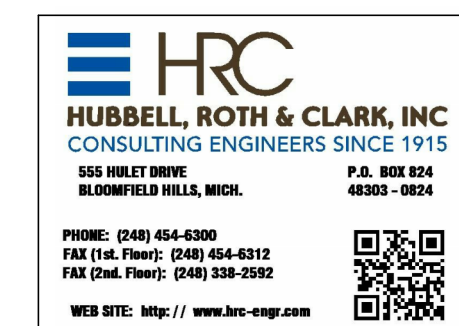
UTILITIES & MUNICIPALITIES

<p>TELEPHONE AT&T ENGINEERING 54 NORTH MILL STREET, P.O. BOX 32 PONTIAC, MICHIGAN 48342 CONTACT: JEFF HEATH PHONE: 248.975.4588</p>	<p>CITY OF FLINT 702 WEST 12TH STREET TRANSPORTATION BUILDING FLINT, MICHIGAN 48502 CONTACT: JOHN DALY PHONE: 810.766.7343</p>
<p>CABLE TV COMCAST CABLEVISION 4908 WALL STREET STERLING HEIGHTS, MICHIGAN 48312 CONTACT: TOM DICKINSON PHONE: 586.853.7412</p>	<p>CITY OF FLINT WATER SERVICE CENTER 3310 EAST COURT STREET FLINT, MICHIGAN 48506 CONTACT: PHONE: 810.766.7202</p>
<p>ELECTRIC CONSUMERS ENERGY - ELECTRIC 3201 EAST COURT STREET FLINT, MICHIGAN 48501 CONTACT: MARCEY CONN PHONE: 810.760.3506</p>	<p>CITY OF FLINT ENGINEERING 702 WEST 12TH STREET FLINT, MICHIGAN 48502 CONTACT: MARK ADAS PHONE: 810.766.7135</p>
<p>GAS CONSUMERS ENERGY 3201 EAST COURT STREET FLINT, MICHIGAN 48501 CONTACT: SALVATORE DELISI PHONE: 810.760.3486</p>	<p>SOIL EROSION & SEDIMENTATION CONTROL GDDC-WWS G-4610 BEECHER ROAD FLINT, MICHIGAN 48532 CONTACT: MARK STEPHENS PHONE: 810.732.7870</p>

2023.06.24 ISSUED FOR BIDS

COVER SHEET

JOB NO. COF1077-01F	SHEET G-001
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PREPARED UNDER THE SUPERVISION OF:



CITY OF FLINT WATER
POLLUTION CONTROL FACILITY
PROJECT LOCATION:
G-4652 BEECHER RD
FLINT, MI 48532

LOCATION MAP

SCALE: NONE
CITY OF FLINT
GENESEE COUNTY, MI
SECTION 4, T7N, R6E



Know what's below.
Call before you dig.

GENERAL NOTES

- 1. DIMENSIONS AND ELEVATIONS OF EXISTING STRUCTURES ARE BASED ON PREVIOUS CONTRACT DRAWINGS. CONTRACTOR IS RESPONSIBLE FOR VERIFYING W/FIELD MEASUREMENTS ALL DIMENSIONS AND ELEVATIONS FOR FABRICATION AND/OR MODIFICATIONS OR ADDITIONS BEING MADE UNDER THIS CONTRACT. ANY DISCREPANCIES SHALL BE PRESENTED TO THE OWNER AND ANY DESIGN CONFLICTS SHALL BE RESOLVED WITH OWNER PRIOR TO FABRICATIONS OR CONSTRUCTION OF IMPACTED ITEMS.
2. ALL EXISTING DIMENSIONS AND ELEVATIONS SHOWN WITH THE +/- SYMBOL, ARE APPROXIMATE AND SHALL BE VERIFIED IN FIELD BY THE CONTRACTOR BEFORE FABRICATION AND CONSTRUCTION.
3. ALL DIMENSIONS OR ELEVATIONS MARKED WITH AN ASTERISK "*" SHALL BE DETERMINED OR VERIFIED WITH EQUIP. MFR. CERTIFIED SHOP DRAWINGS OR FIELD MEASUREMENTS OF EXISTING CONSTRUCTION BEFORE FABRICATION AND CONSTRUCTION.
4. ALL ADHESIVE ANCHORING SYSTEMS FOR POST-INSTALLED ANCHORS AND/OR REINFORCING DOWELS IN CONCRETE OR MASONRY SHALL BE "HIT-HY 200 ADHESIVE ANCHORING SYSTEM" BY HILTI AT SIZE AND SPACING INDICATED ON DRAWINGS.

CODES AND LOADS

- 1. ALL STRUCTURES SHALL BE DESIGNED IN ACCORDANCE WITH THE FOLLOWING CODES:
A. CODE REQUIREMENTS FOR ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES - AMERICAN CONCRETE ASSOCIATION ACI 350 (2006)
2. DESIGN LOADS (GENERAL)
A. ELEVATED SLAB & SLABS ON GRADE - LIVE LOADS - 150 PSF
B. ELEVATED PLATFORM LIVE LOADS - 150 PSF
C. SNOW LOADS, PER ASCE 7-16 (OCCUPANCY CATEGORY III)
1. GROUND SNOW LOAD - 30 PSF
2. SNOW EXPOSURE FACTOR - Ce = 0.9
3. SNOW THERMAL FACTOR - Ct = 1.0
4. SNOW IMPORTANCE FACTOR - I = 1.1
5. FLAT ROOF SNOW LOAD - Pf = 21.0 PSF
D. WIND LOADS
1. BASIC WIND SPEED (3-SECOND)=120 MPH
2. WIND EXPOSURE CATEGORY C
3. HEIGHT AND EXPOSURE FACTOR: 1.4
E. LATERAL EARTH PRESSURES DRAINED CONDITION
1. ACTIVE PRESSURE - Pa = 40.0 PSF; Ka = 0.32
2. AT REST PRESSURE - Po = 60.0 PSF; Ko = 0.48
3. PASSIVE PRESSURE - Pp = 375 PSF; Kp = 3.12
F. LATERAL EARTH PRESSURE - UNDRAINED CONDITION
1. ACTIVE PRESSURE - Pa = 84.0 PSF
2. AT REST PRESSURE - Po = 94.0 PSF
3. PASSIVE PRESSURE - Pp = 267 PSF
G. 100 YEAR FLOOD ELEVATION - GRADE

DEMOLITION

- 1. THE CONTRACTOR SHALL TAKE ALL NECESSARY MEASURES TO PREVENT DAMAGE TO EXISTING STRUCTURES, WHICH ARE TO REMAIN, DURING DEMOLITION WORK. ALL DAMAGE SHALL BE REPAIRED TO THE COMPLETE SATISFACTION OF THE ENGINEER AT THE CONTRACTOR'S EXPENSE.
2. WHEN REMOVING EXISTING CONCRETE BY CUTTING OR CHIPPING THE CONTRACTOR SHALL ONLY REMOVE REINFORCING BARS WHICH CANNOT BE BENT INTO AREAS WHERE NEW CONCRETE WOULD COMPLETELY COVER THEM.
3. IF FRACTURE OF ADJACENT CONCRETE OCCURS DURING DEMOLITION/ ALTERATION WORK, THE REPAIR SHALL BE WITH AN ENGINEER APPROVED PRESSURE INJECTED EPOXY, TO THE COMPLETE SATISFACTION OF THE ENGINEER, AT THE CONTRACTOR'S EXPENSE.
4. CONTRACTOR SHALL PROVIDE WRITTEN PLAN AND DESCRIPTION OF ALL DEMOLITION, MODIFICATION, OR ALTERATION WORK ON EXISTING STRUCTURES FOR REVIEW AND ACCEPTANCE PRIOR TO BEGINNING WORK.
5. ANY REMAINING EXPOSED REINFORCING STEEL AFTER DEMO SHALL BE COATED WITH CORROSION INHIBITING COMPOUND. USE SIKA ARMATEC 110 EPOCEM OR APPROVED EQUAL.

METALS

STEEL

- 1. STRUCTURAL STEEL AND MISCELLANEOUS METALS DESIGN SHALL CONFORM TO THE SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS, AISI/ANSI 360.
2. ALL STRUCTURAL STEEL W SHAPES SHALL CONFORM TO ASTM A-992, GRADE 50. MISCELLANEOUS METALS SHALL CONFORM TO ASTM A-36.
3. BOLTS SHALL BE A MINIMUM 3/4" DIAMETER, ASTM A325N, TYPE 1, GALVANIZED, UNLESS NOTED OTHERWISE. PROVIDE COMPATIBLE A563 GRADE DH, HEAVY HEX NUTS, AND F436 GRADE 1 WASHERS.
4. ALL GALVANIZED STEEL SHALL BE HOT-DIP GALVANIZED CONFORMING TO ASTM A123, UNO.
5. ALL 1-1/2" DEEP STEEL GRATING INDICATED ON PLANS SHALL BE TYPE 15-SG14 GRATING AND SHALL HAVE A MINIMUM ALLOWABLE WORKING STRESS OF 12,000 PSI WITH THE FOLLOWING MINIMUM SECTION PROPERTIES:
Sx = 0.90 IN^3/FT
Ix = 0.675 IN^4/FT
6. ALL GRATING PENETRATIONS SHALL BE CUT NEATLY AND A RECTANGULAR BAND BAR OF THE SAME HEIGHT AND MATERIAL SHALL BE INSTALLED BY WELDING.
7. ALL GRATING SHALL BE SECURED TO FRAMING MEMBERS USING GALV. STEEL SADDLE CLIPS AND 1/4" DIA. GALV. STEEL TEK SCREWS AS SPECIFIED BY GRATING MANUFACTURER.

STRUCTURAL ABBREVIATIONS

Table with 4 columns: Abbreviation, Full Name, Abbreviation, Full Name. Includes terms like ALT ALTERNATE, ALUM ALUMINUM, B BOTTOM, BLDG BUILDING, BM BEAM, BSMT BASEMENT, CJ CONSTRUCTION JOINT, CL CENTERLINE, CLR CLEAR, COL COLUMN, CONC CONCRETE, CONST CONSTANT, CONSTR CONSTRUCTION, CONT CONTINUOUS, CLSM CONTROLLED LOW STRENGTH MATERIAL, CMU CONCRETE MASONRY UNIT, COR CORNER, CY CUBIC YARD, DBR DOWEL BAR REPLACEMENT, DET DETAIL, DIA DIAMETER, DIAG DIAGONAL, DISC DISCONTINUOUS, DWLS DOWELS, EJ EXPANSION JOINT, EE EACH END, EF EACH FACE, ES EACH SIDE, EQ EQUAL, EW EACH WAY, EA EACH, EL ELEVATION, EX EXISTING, EXT EXTERIOR/ EXTENSION, FC FILLET CONCRETE, FD FLOOR DRAIN, FF FAR FACE, FS FAR SIDE, FIN FINISH, FL FLOOR, FND FOUNDATION, FT FEET, GALV GALVANIZED, GR GRADE, GVV GROSS VEHICLE WEIGHT, H HORIZONTAL, HC HOLLOW CORE, HP HIGH POINT, HPC HIGH PERFORMANCE COATING, HK HOOK, HT HEIGHT, ID INSIDE DIAMETER, IE INVERT ELEVATION, IF INSIDE FACE, IN INCHES, INT INTERIOR, JT JOINT, KIP THOUSAND POUNDS, KSI KIPS PER SQUARE INCH, KB KNEE BRACE, L LENGTH, LP LOW POINT, LGHT LENGTH, MAX MAXIMUM, MIN MINIMUM, MCP MULTIPLE CORROSION PROTECTION, MO MASONRY OPENING, NA NOT APPLICABLE, NF NEAR FACE, NS NEAR SIDE, NTS NOT TO SCALE, NIC NOT IN CONTRACT, OC ON CENTER, OD OUT SIDE DIAMETER, OF OUT SIDE FACE, OPNG OPENING, PSF POUNDS PER SQ. FEET, PSI POUNDS PER SQUARE INCH, PT PRESSURE TREATED, REINF REINFORCEMENT, RE REFER TO, REM REMOVABLE, SHTS SHEETS, SIM SIMILAR, SJ SLAB CONTROL JOINT, SS STAINLESS STEEL, STIR STIRRUPS, STRUCT STRUCTURAL, T/ TOP, TERS TEMPORARY EARTH RETENTION SYSTEM, THK THICK, TOS ELEVATION TOP OF STRUCTURAL STEEL, TYP TYPICAL, UNO UNLESS NOTED OTHERWISE, V VERTICAL, W WIDTH, WP WORK POINT

Table with 2 columns: REVISION, DATE. Includes a large empty space for descriptions and a small section for REVISION, DATE.



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CITY OF FLINT
BATTERY B SECONDARY CLARIFIER FLOW CONTROL PROJECT
STRUCTURAL GENERAL NOTES

ISSUED FOR: BIDS
DATE: 2023.06.24
BY: TSW

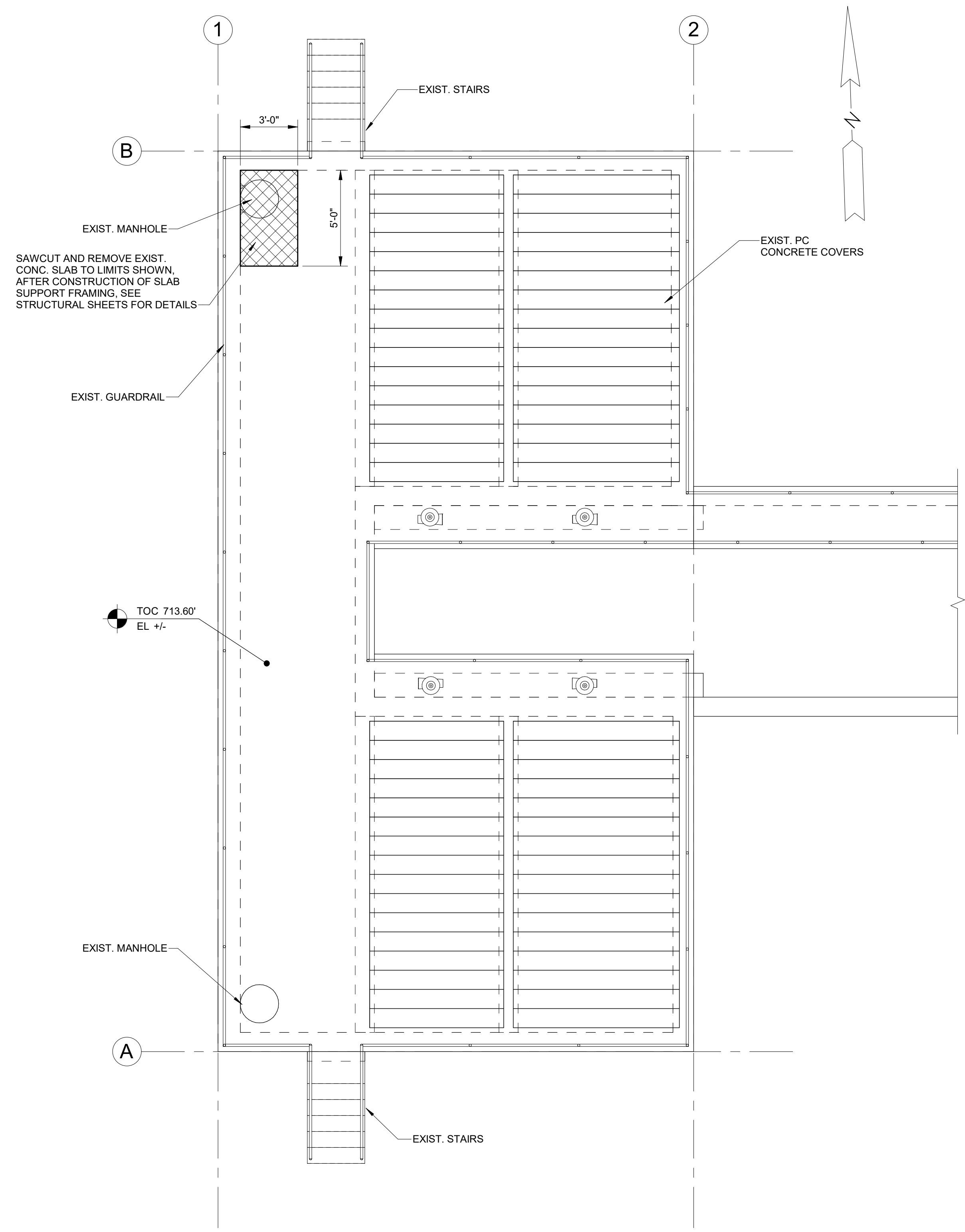
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SHEET S-100

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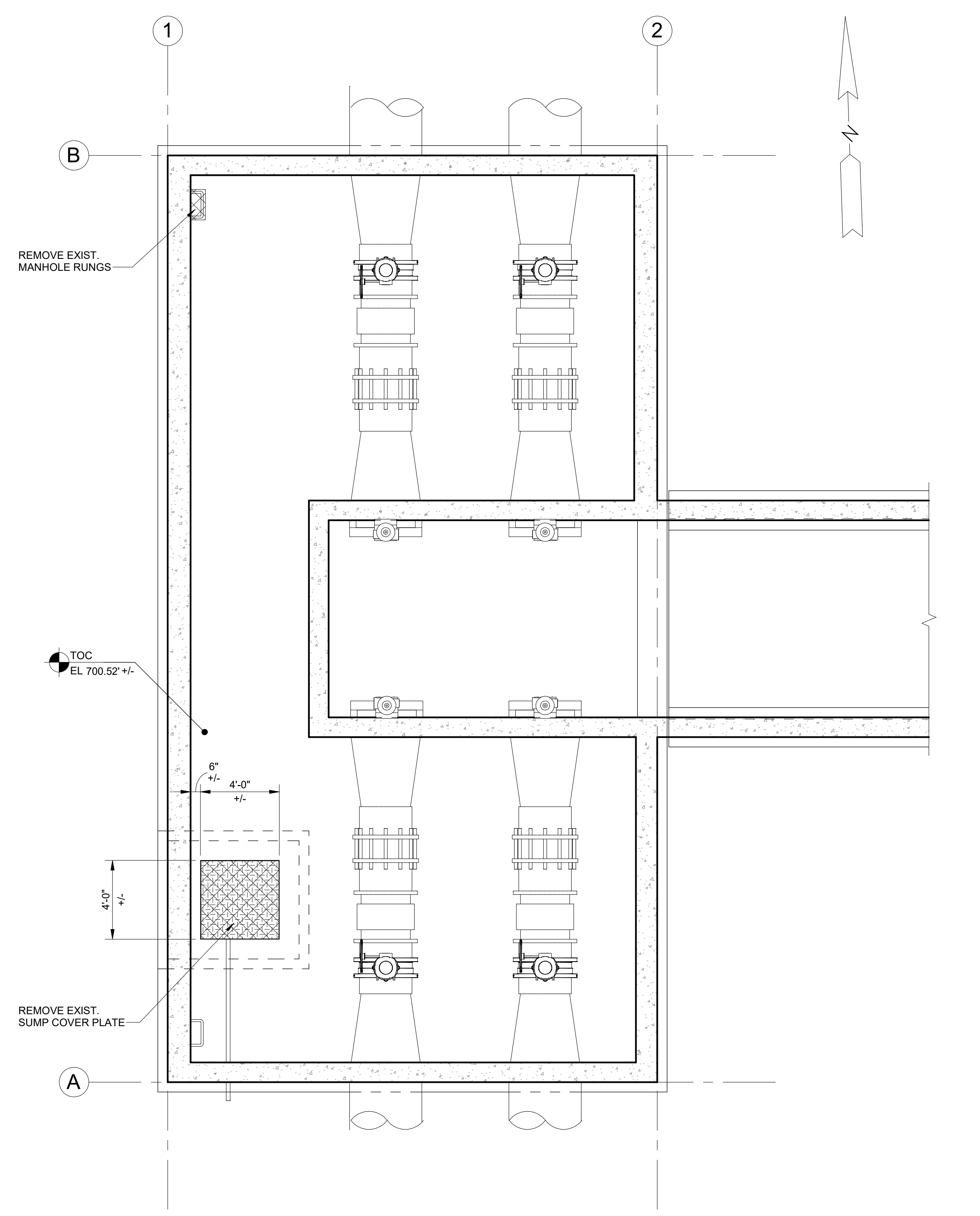
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FLOW CONTROL VAULT TOP SLAB DEMO PLAN (EL 713.60-FT)
 SCALE: 1/4" = 1'-0"

- EXTENT OF DEMOLITION & REMOVAL



FLOW CONTROL VAULT FDN SLAB DEMO PLAN (EL 700.52-FT)
 SCALE: 1/4" = 1'-0"

- EXTENT OF DEMOLITION & REMOVAL

REV#	DATE	DESCRIPTION	BY



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**CITY OF FLINT
 BATTERY B SECONDARY CLARIFIER FLOW
 CONTROL PROJECT**

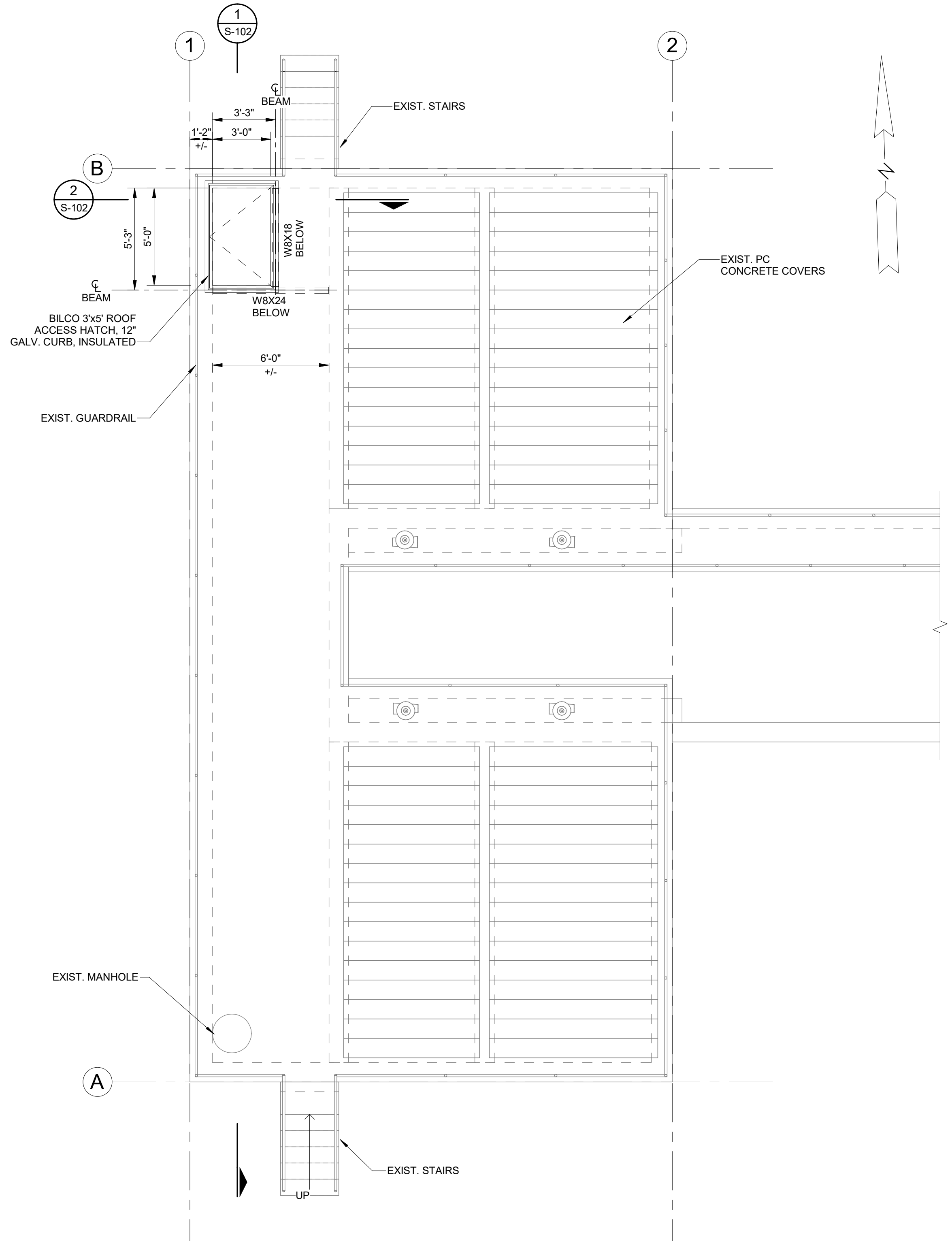
STRUCTURAL DEMO - PLAN

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SX-100

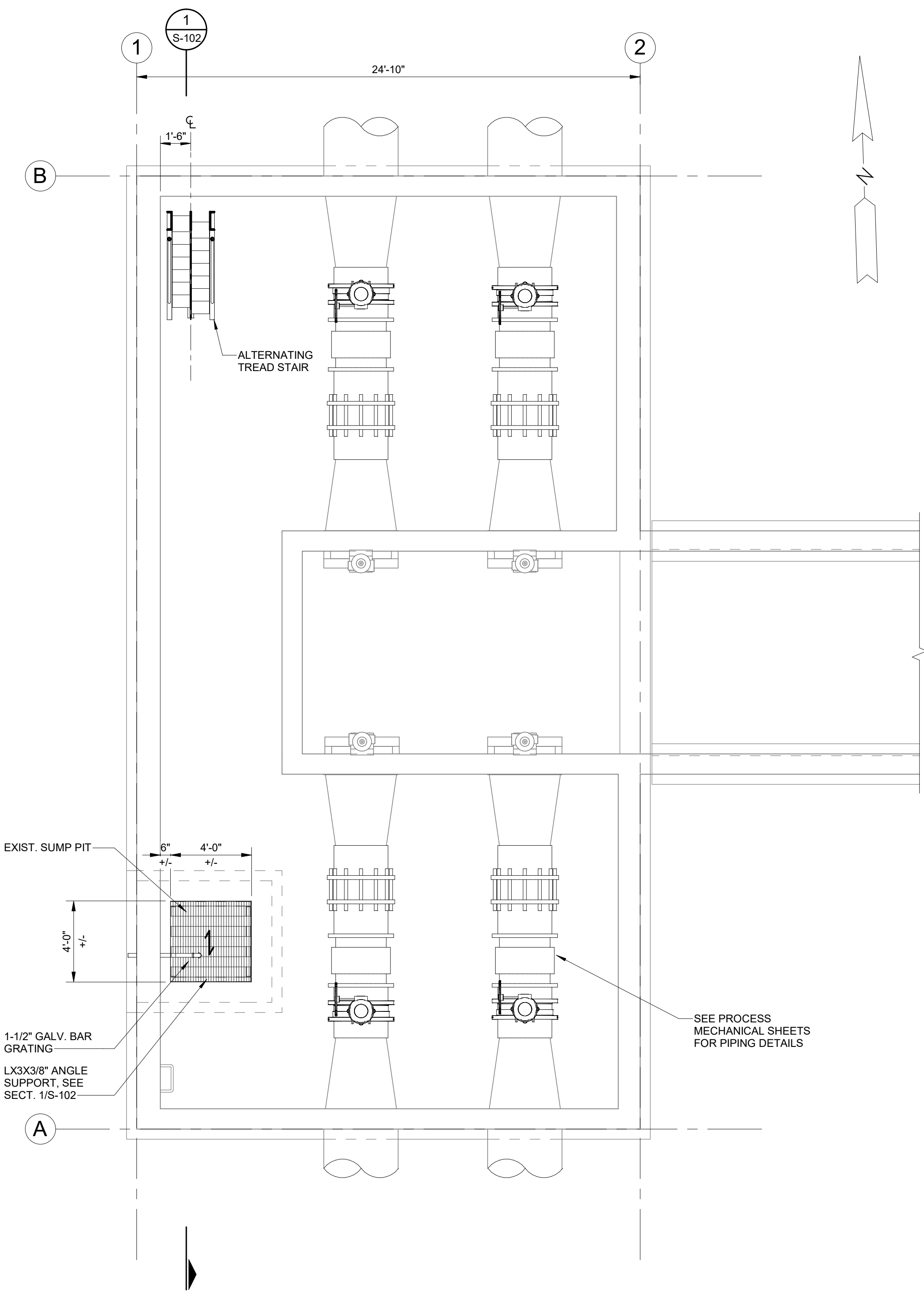
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- NOTES:
- 1) ALL PROPOSED STEEL FRAMING, BOLTS AND CONNECTION HARDWARE TO BE HOT-DIP GALVANIZED.
 - 2) STEEL FRAMING SHOULD BE FULLY INSTALLED AND CONNECTED TO EXISTING SLAB BEFORE CREATING NEW OPENING IN SLAB FOR NEW ACCESS HATCH.

FLOW CONTROL VAULT TOP PLAN (EL 713.60-FT)

1/4" = 1'-0"



FLOW CONTROL VAULT FDN PLAN (EL 700.52-FT)

1/4" = 1'-0"

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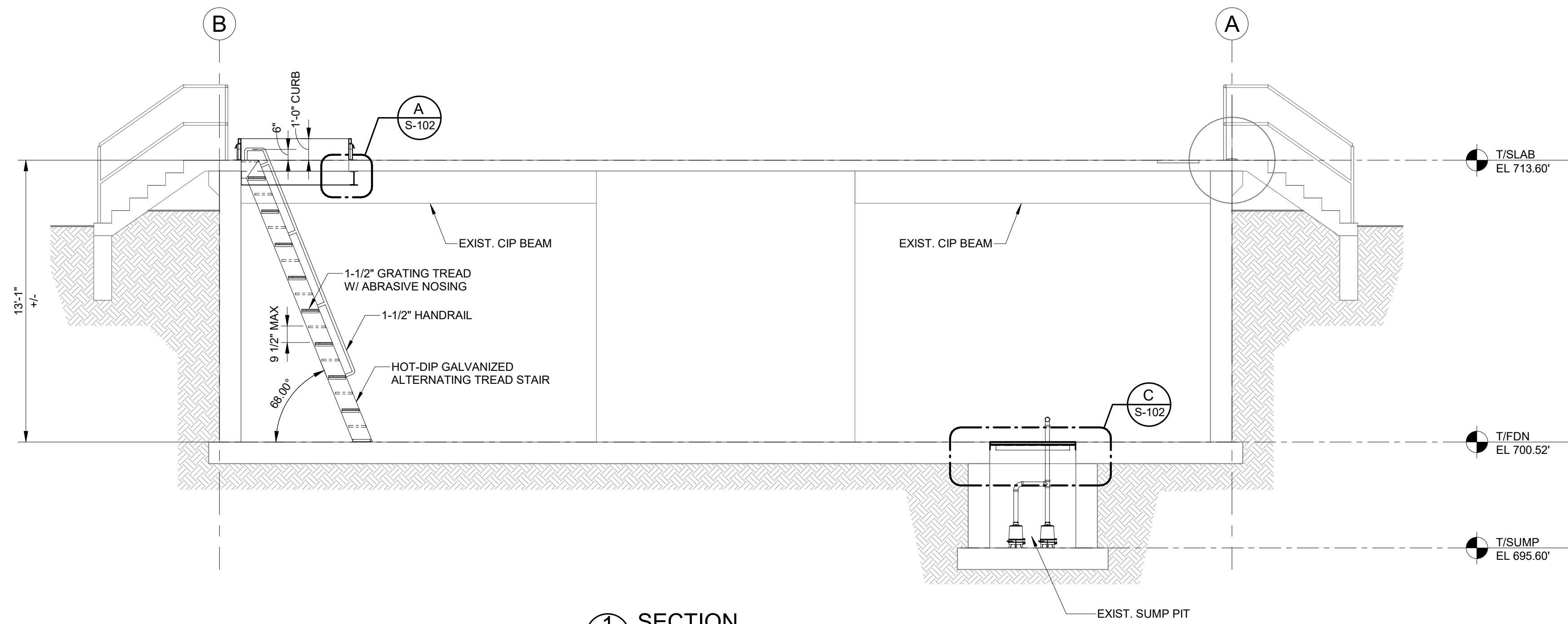
CITY OF FLINT
BATTERY B SECONDARY CLARIFIER FLOW CONTROL PROJECT
PLANS

ISSUED FOR: BIDS
DATE: 2023.06.24
BY: TSW

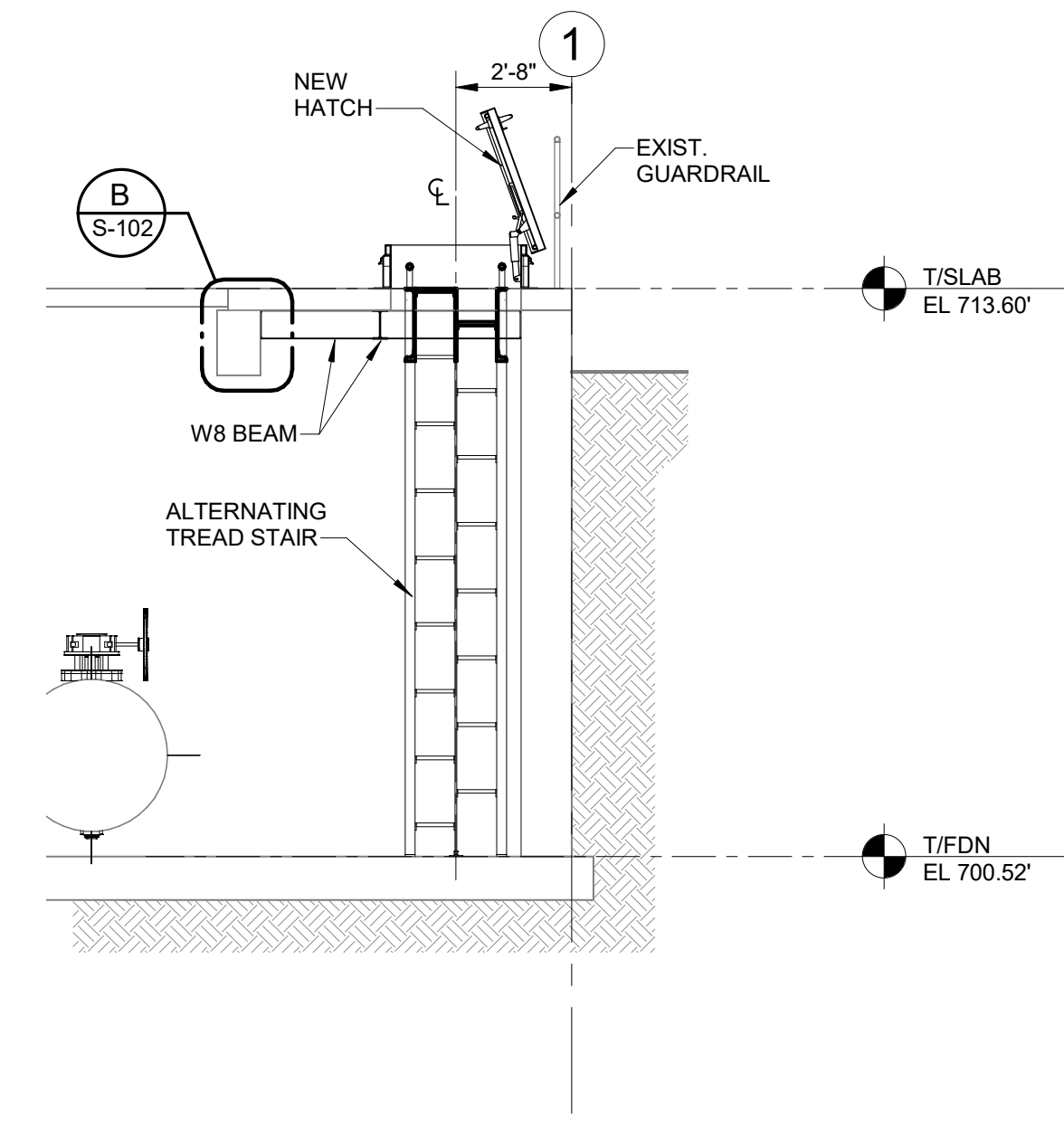
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SHEET
S-101

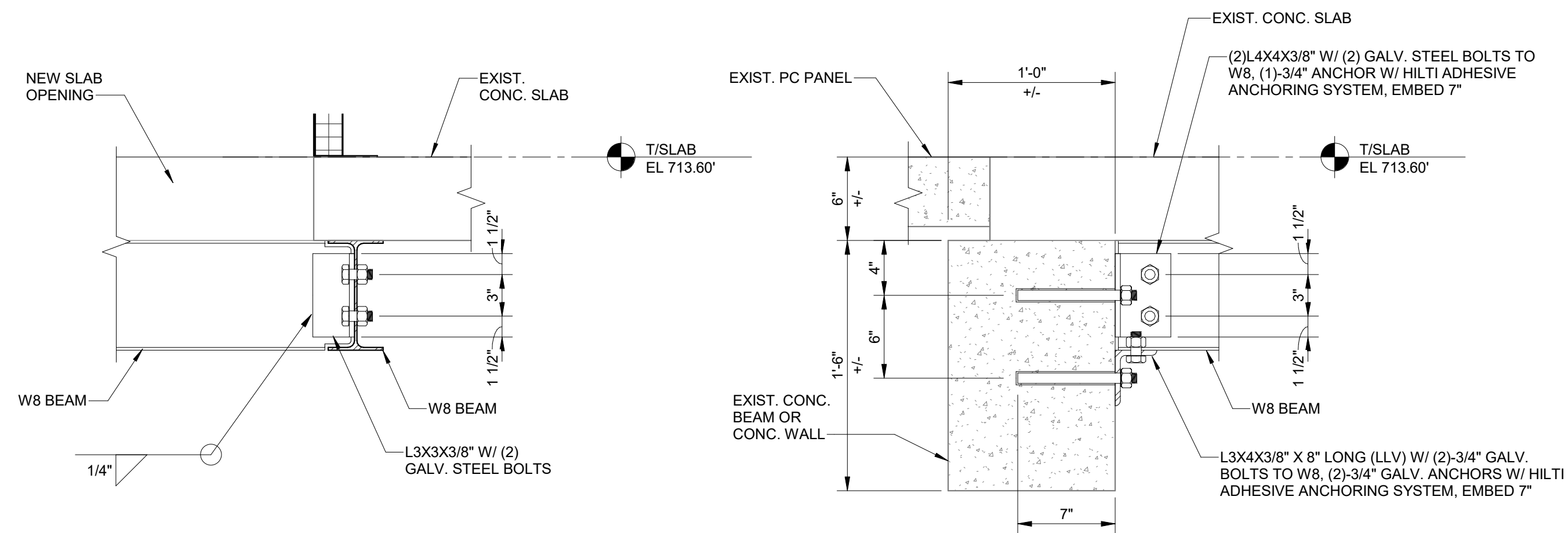
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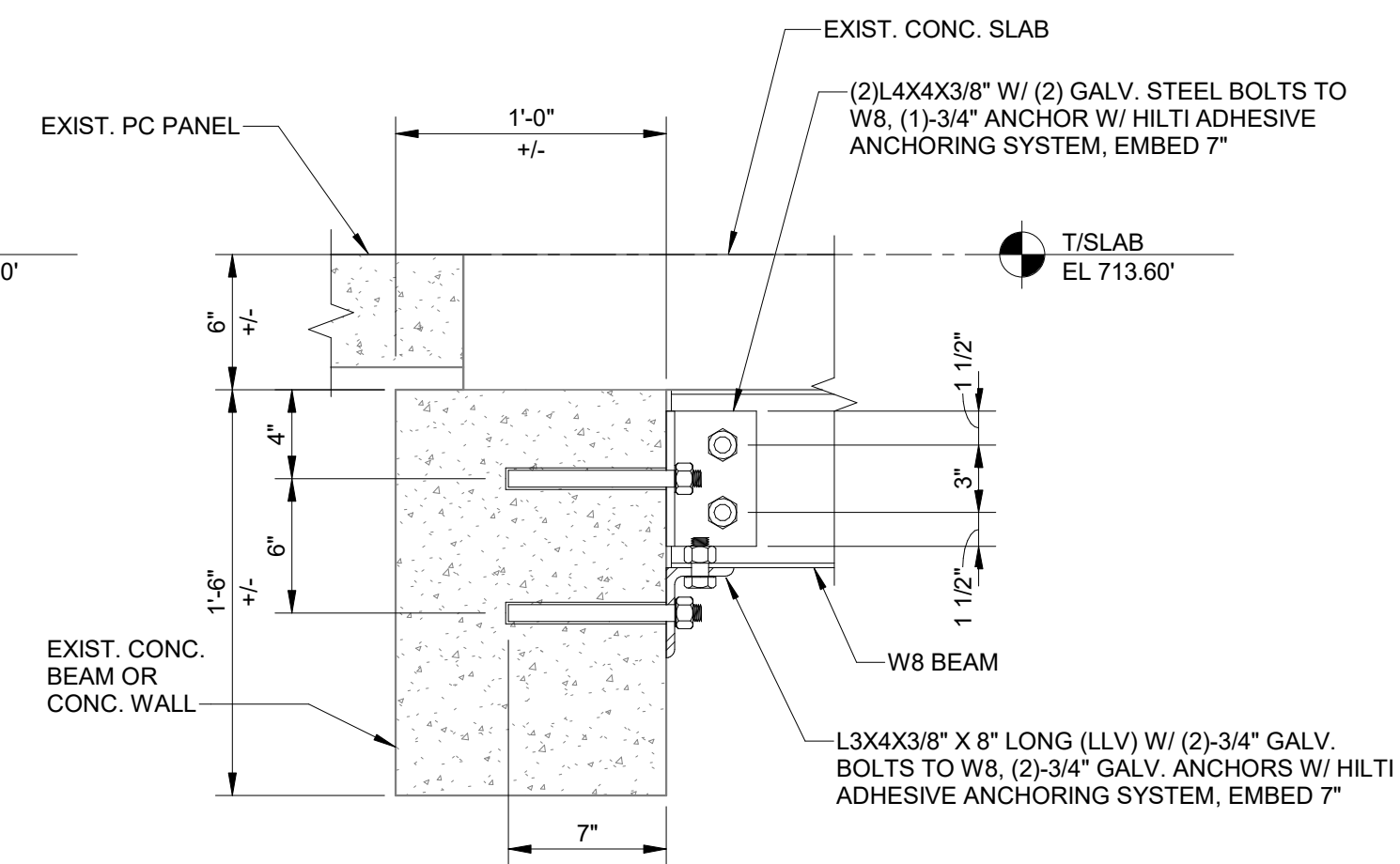
1 SECTION
S-101 SCALE: 1/4" = 1'-0"



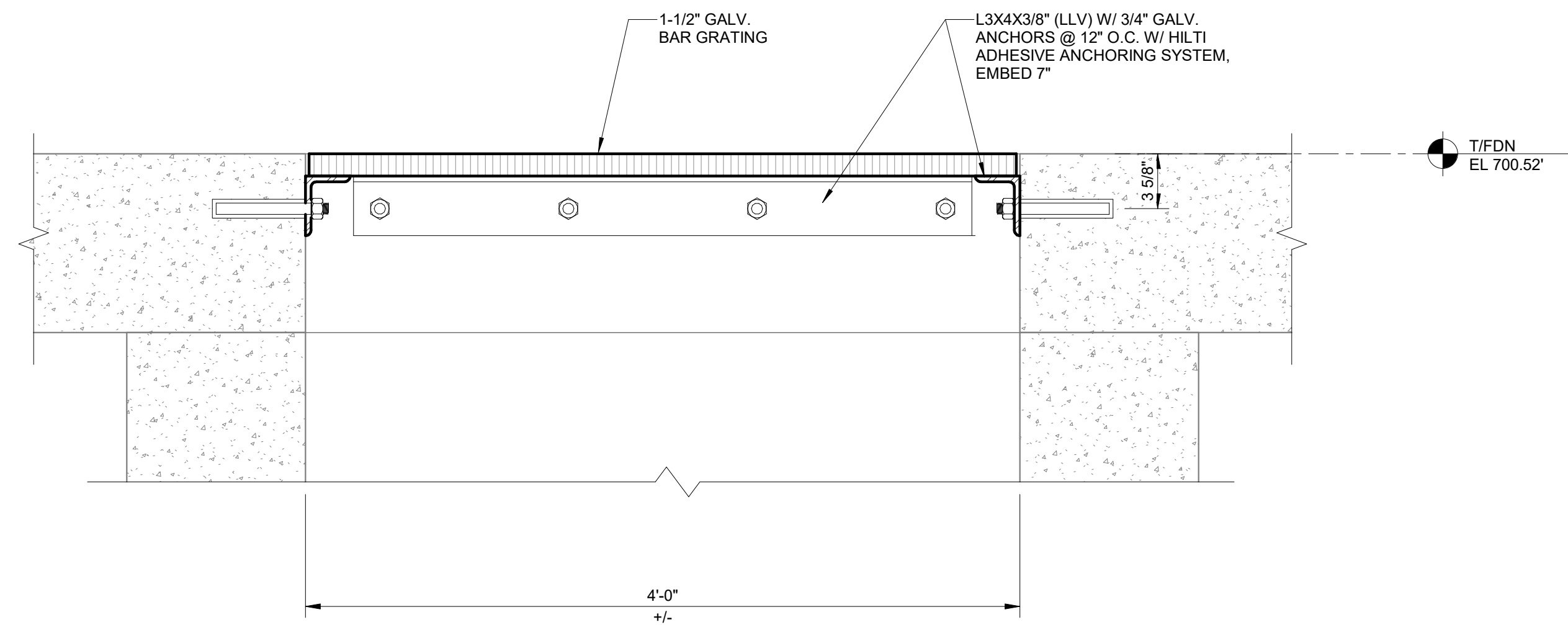
2 SECTION
S-101 SCALE: 1/4" = 1'-0"



A CONNECTION DETAIL
S-102 SCALE: 1 1/2" = 1'-0"



B TYP. CONC. CONNECTION DETAIL
S-102 SCALE: 1 1/2" = 1'-0"



C SUMP GRATING DETAIL
S-102 SCALE: 1 1/2" = 1'-0"

REV#	DATE	DESCRIPTION	BY



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CITY OF FLINT
BATTERY B SECONDARY CLARIFIER FLOW CONTROL PROJECT
SECTIONS & DETAILS

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BY: TSW

JOB NO.
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SHEET

S-102

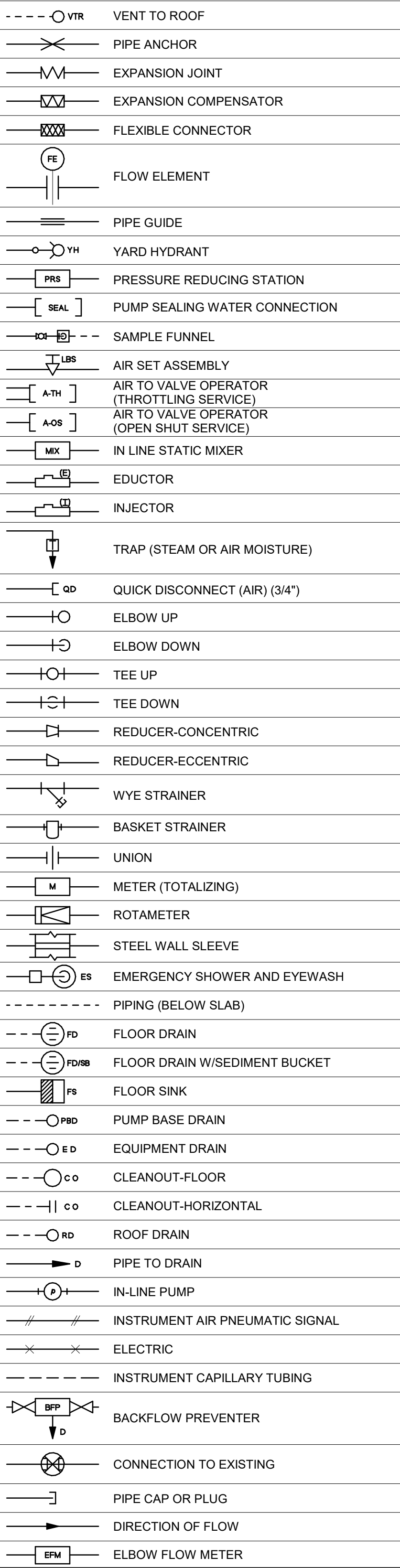
ABBREVIATIONS - PIPING

AF	ABOVE FINISHED FLOOR
AL	ALUMINUM
ARV	AIR RELIEF VALVE
BCE	BIOLOGICAL CONTACTOR EFFLUENT
BF	BLIND FLANGE
BP	BYPASS
C	CENTRATE
CA	COMPRESSED AIR
CDS	CHEMICAL DOSING
CE	CHLORINATED EFFLUENT
CI	CAST IRON
CIP	CAST IRON PIPE
CISP	CAST IRON SOIL PIPE
CL	CENTER LINE
CON	CONCENTRATE
CON RED	CONCENTRIC REDUCER
CONC	CONCRETE
CPVC	CHLORINATED POLYVINYL CHLORIDE
CUP	COPPER PIPE
CW	COLD WATER
D	DRAIN
DE	DECANT
DI	DUCTILE IRON
DIP	DUCTILE IRON PIPE
DMJ	DISMANTLING JOINT
DS	DIGESTED SLUDGE
ECC	ECCENTRIC
ECC RED	ECCENTRIC REDUCER
ED	EQUIPMENT DRAIN
EFF	EFFLUENT
EI	EQUALIZATION TANK INFLUENT
EL	ELEVATION
ELB	ELBOW
ER	EQUALIZATION TANK RETURN
ES	EQUALIZATION TANK SLUDGE
FA	FOUL AIR
FCA	FLANGED COUPLING ADAPTER
FD	FLOOR DRAIN
FE	FINAL EFFLUENT
FFWD	FEED FORWARD
FLG	FLANGE
FM	FORCE MAIN
FOB	FLAT ON BOTTOM
FOT	FLAT ON TOP
FRP	FIBERGLASS REINFORCED PIPE
FS	FINAL TANK SLUDGE
FTW	FILTER TO WASTE
GRS	GREASE
GRT	GRIT
GRV	GROOVED JOINT
GSP	GALVANIZED STEEL PIPE
GW	GLAND WATER
HDPE	HIGH DENSITY POLYETHYLENE PIPE
HS	HEATED SLUDGE
INF	INFLUENT
INV	INVERT
IR	INFRARED
LPA	LOW PRESSURE AIR
LR	LONG RADIUS
MBR	MEMBRANE BIOREACTOR

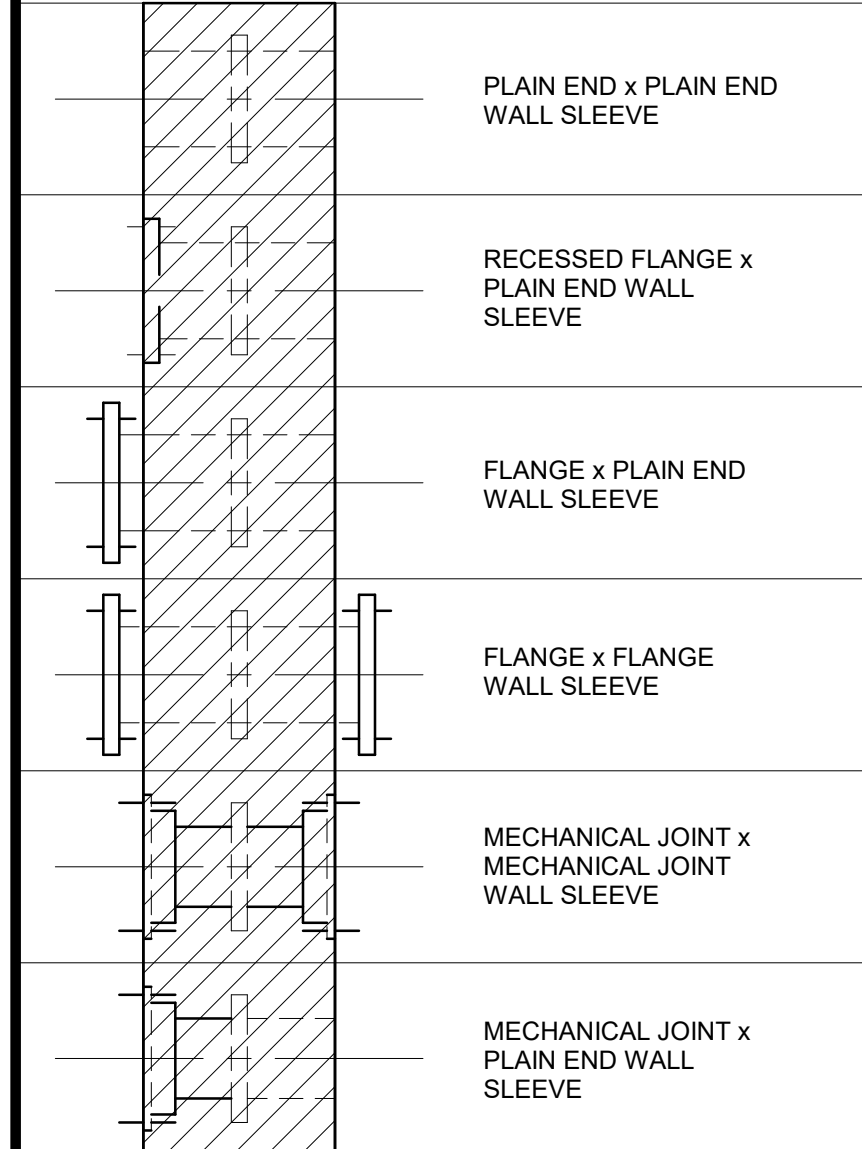
ABBREVIATIONS - PIPING

MFR	MANUFACTURER
MH	MANHOLE
MJ	MECHANICAL JOINT
ML	MIXED LIQUOR
MLP	MAIN LIFT PUMP
NaOCl	SODIUM HYPOCHLORITE
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NPW	NON-POTABLE WATER
OVRFL	OVERFLOW
PA	PROCESS AIR
PE	PRIMARY TANK EFFLUENT
PEP	POLYETHYLENE PIPE
PERM	PERMEATE
PEW	PLANT EFFLUENT WATER
PI	PRIMARY TANK INFLUENT
PLT	PLATE
POA	PULLOUT ASSEMBLY
PP	POLYPROPYLENE PIPE
PS	PRIMARY TANK SLUDGE
PVC	POLYVINYL CHLORIDE
PW	POTABLE WATER
RAS	RETURN ACTIVATED SLUDGE
RC	RECYCLED
RCP	REINFORCED CONCRETE PIPE
RDMJ	RESTRAINED DISMANTLING JOINT
RECYC	INTERNAL RECYCLE
RED	REDUCER
REW	REUSE WATER
RFCA	RESTRAINED FLANGED COUPLING ADAPTER
RO	REVERSE OSMOSIS
RS	RAW SEWAGE
RW	RAW WATER
S	SCUM
SAM	SAMPLE
SE	SECONDARY EFFLUENT
SFE	SECONDARY FINAL EFFLUENT
SN	SUPERNATANT
SPD	SLUMP PUMP DISCHARGE
SS or SST	STAINLESS STEEL
STL	STEEL PIPE
SW	SECONDARY WASTE
SWHP	SECONDARY WATER - HIGH PRESSURE
SWLP	SECONDARY WATER - LOW PRESSURE
SWMP	SECONDARY WATER - MEDIUM PRESSURE
SWP	SEAL WATER PANEL
TE	TERTIARY EFFLUENT
THD	THREADED
THS	THICKENED SLUDGE
TO	THICKENER OVERFLOW
TOR	THERMAL OIL RETURN
TOS	THERMAL OIL SUPPLY
TS	TRANSFER SLUDGE
UNO	UNLESS NOTED OTHERWISE
UWF	UNFILTERED WATER FLUSH
V	VENT
VIF	VERIFY IN FIELD
WAS	WASTE ACTIVATED SLUDGE
WM	WATER MAIN
WWD	WASHWATER DRAIN
WWS	WASHWATER SUPPLY

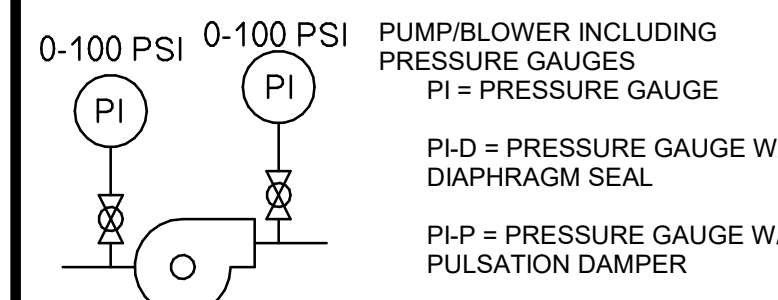
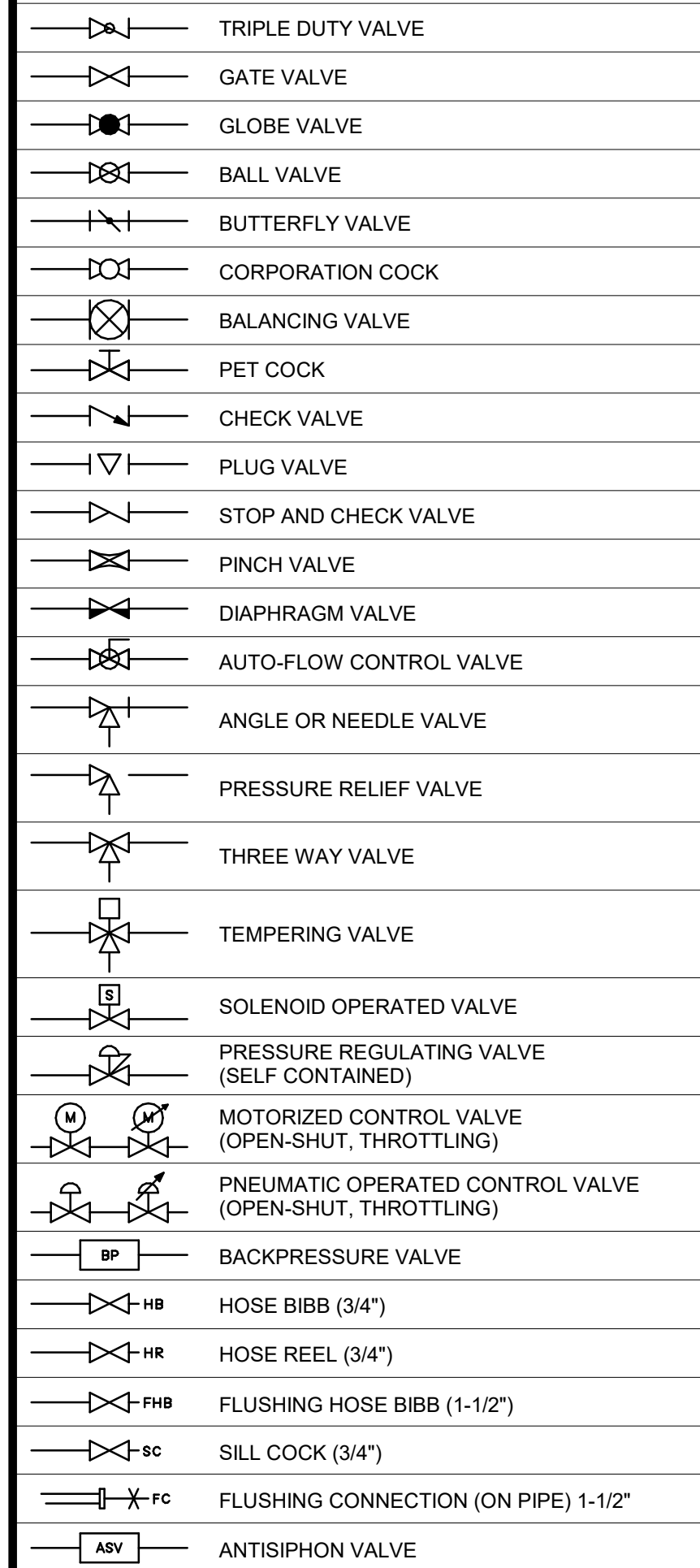
PIPING & EQUIPMENT SYMBOLS



SLEEVE DESIGNATIONS



VALVE SYMBOLS



GENERAL PIPING NOTES

- LAY PIPE TO UNIFORM GRADE BETWEEN INDICATED ELEVATION POINTS.
- UNLESS NOTED OTHERWISE, PIPE ELEVATIONS SHOWN ON PIPING DRAWINGS REFER TO CENTERLINE OF PIPE.
- SUBMIT THE ROUTING OF PIPING NOT SHOWN IN THE DRAWINGS FOR APPROVAL, INCLUDING PIPING SMALLER THAN 3 INCHES.
- SIZE OF FITTINGS SHOWN ON DRAWINGS SHALL CORRESPOND TO ADJACENT STRAIGHT RUN OF PIPE, UNLESS NOTED OTHERWISE. TYPE OF JOINT AND FITTING MATERIAL SHALL BE THE SAME AS SHOWN FOR ADJACENT STRAIGHT RUN OF PIPE.
- LOCATIONS AND NUMBER OF PIPE HANGERS AND PIPE SUPPORTS SHOWN ARE APPROXIMATE. CONTRACTOR SHALL DESIGN AND PROVIDE PIPE SUPPORTS AS SPECIFIED.
- ALL JOINTS SHALL BE WATERTIGHT. WALL PIPES SHALL BE USED WHEREVER PIPING PASSES FROM A STRUCTURE TO BACKFILL OR THROUGH WATERTIGHT STRUCTURE.
- ALL FLEXIBLE CONNECTORS AND COUPLING ADAPTERS SHALL BE PROVIDED WITH THRUST PROTECTION AS SPECIFIED, UNLESS NOTED OTHERWISE. THRUST PROTECTION SHALL BE ADEQUATE FOR TEST PRESSURES SPECIFIED.
- NOT ALL OF THE GRAPHICS, ABBREVIATIONS, ETC., SHOWN ON THIS SHEET ARE USED ON THE PROJECT.
- NUMBER AND LOCATION OF UNIONS SHOWN ON DRAWINGS ARE APPROXIMATE. PROVIDE ALL UNIONS NECESSARY TO FACILITATE CONVENIENT REMOVAL OF VALVES AND MECHANICAL EQUIPMENT.
- WHERE A GROOVED END COUPLING IS SHOWN, IT SHALL BE THE RIGID JOINT TYPE, UNLESS OTHERWISE SPECIFIED. WHERE A FLANGED COUPLING ADAPTER IS SHOWN, A STANDARD FLANGE SHALL BE JOINED TO THE COUPLING ADAPTER.
- LOCATE PRESSURE TAPS ON THE TOP OF PROCESS PIPES.
- LOCATE SAMPLE TAPS ON THE SIDE OF PROCESS PIPES.
- LOCATE DRAIN TAPS ON THE BOTTOM OF PROCESS PIPES.
- INSTALL ALL PLUG, BUTTERFLY, AND BALL VALVES WITH THE SHAFT IN THE HORIZONTAL POSITION, UNLESS NOTED OTHERWISE.
- ALL MECHANICAL AND PROCESS EQUIPMENT SHALL BE PLACED ON CONCRETE HOUSEKEEPING PADS, WHETHER INDICATED OR NOT. SEE STRUCTURAL SHEETS FOR TYPICAL DETAILS.
- VERTICAL ELEVATIONS ARE PROVIDED IN THE CITY OF DETROIT DATUM. ALL OTHER ELEVATIONS ARE PROVIDED IN NAVD88. THE CONVERSION FROM THE CITY OF DETROIT DATUM TO NAVD88 IS 479.20'.

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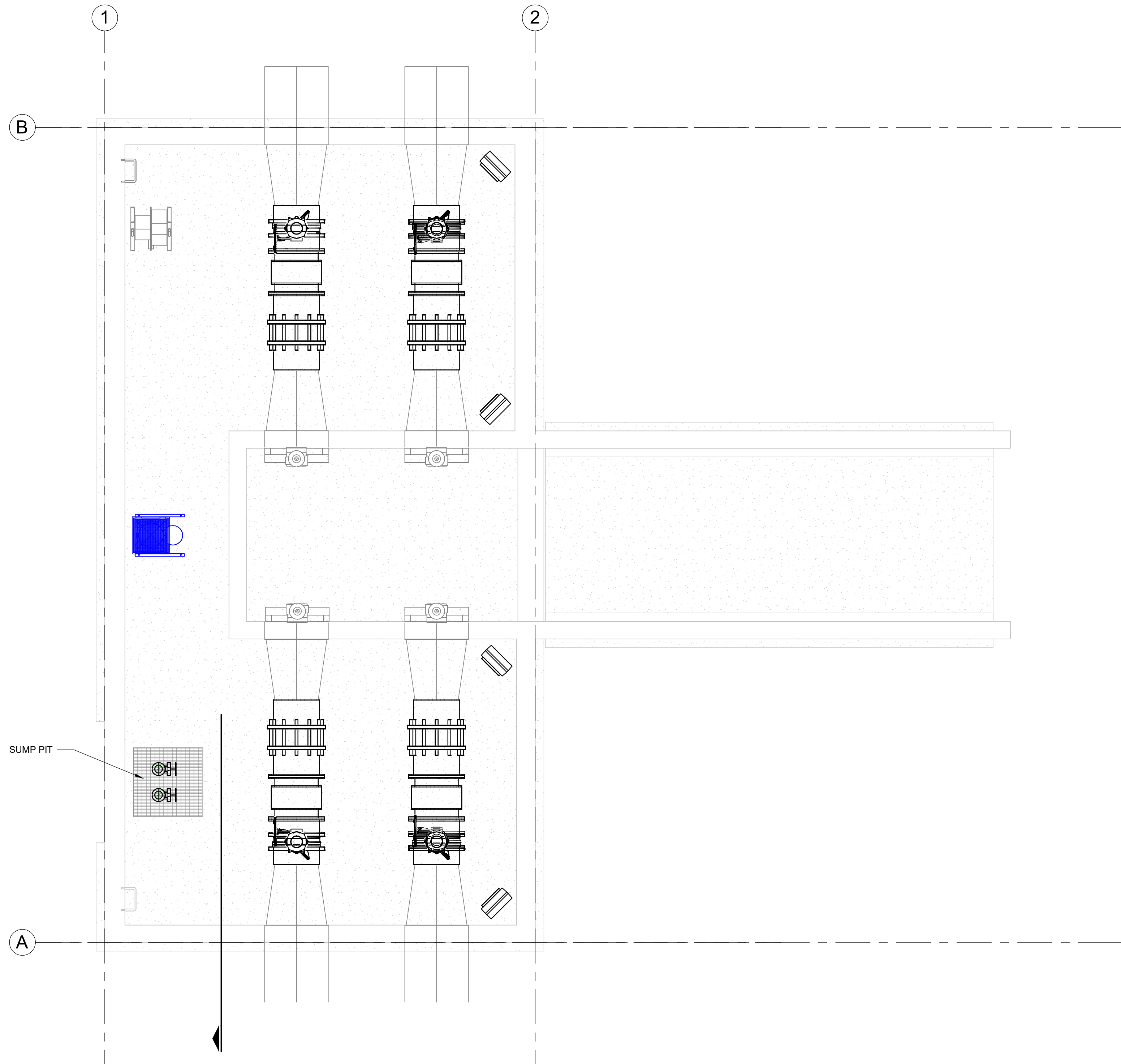
CITY OF FLINT WPCF
 BATTERY B SECONDARY CLARIFIER FLOW
 CONTROL PROJECT
 PLUMBING GENERAL NOTES, SYMBOLS, AND
 ABBREVIATIONS

ISSUED FOR: BIDS DATE: 2023.06.24 BY: TSW

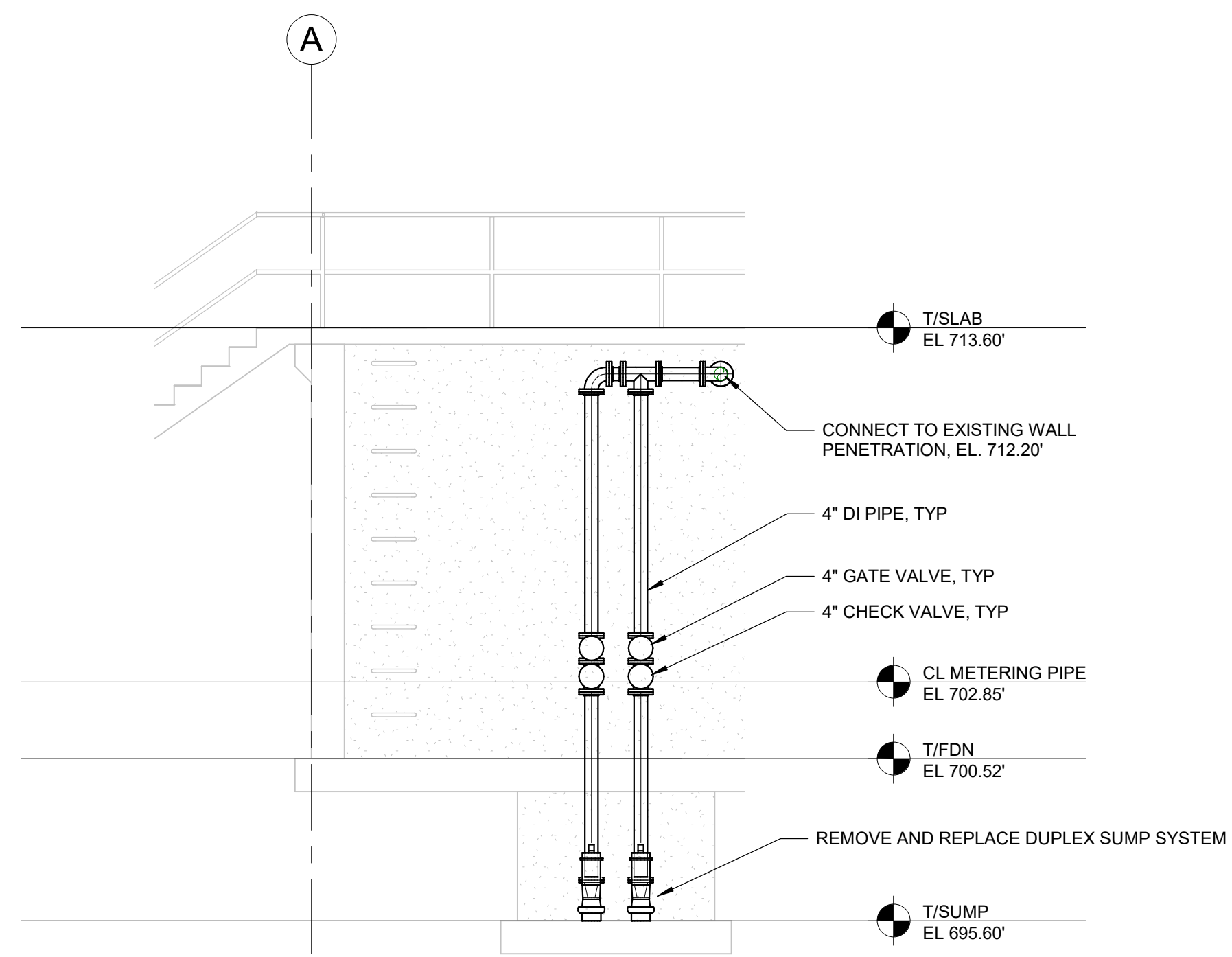
JOB NO. COF107701F

SHEET P-001

BIM 360://COF107701F-WPCFCF-VT_M_R21-14 PLOTTED 6/28/2023 7:38:09 AM



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



2 SUMP SECTION
P-101 SCALE: 1/4" = 1'-0"

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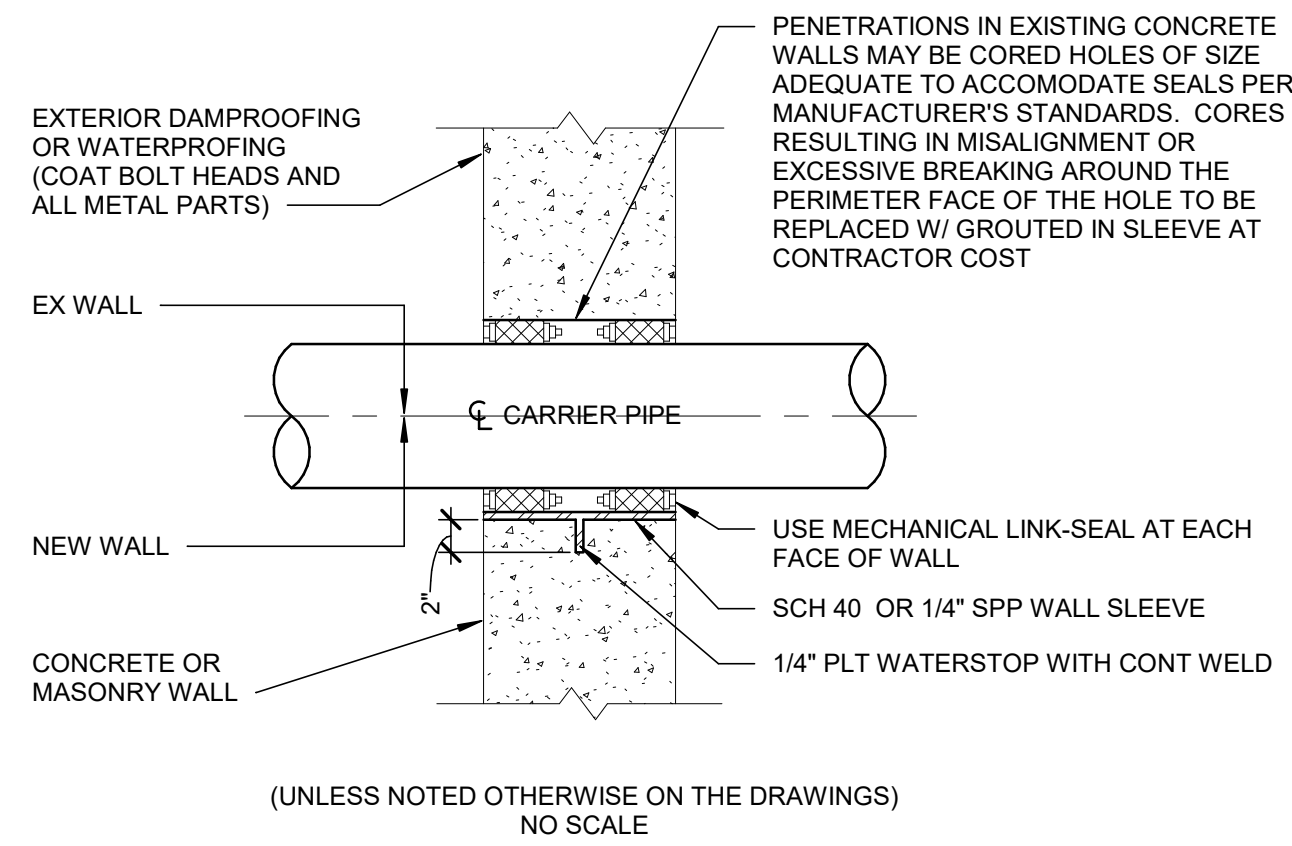
**CITY OF FLINT WPCF
BATTERY B SECONDARY CLARIFIER FLOW
CONTROL PROJECT
PLUMBING PLAN**

ISSUED FOR: BIDS DATE: 2023.06.24 BY: TSW

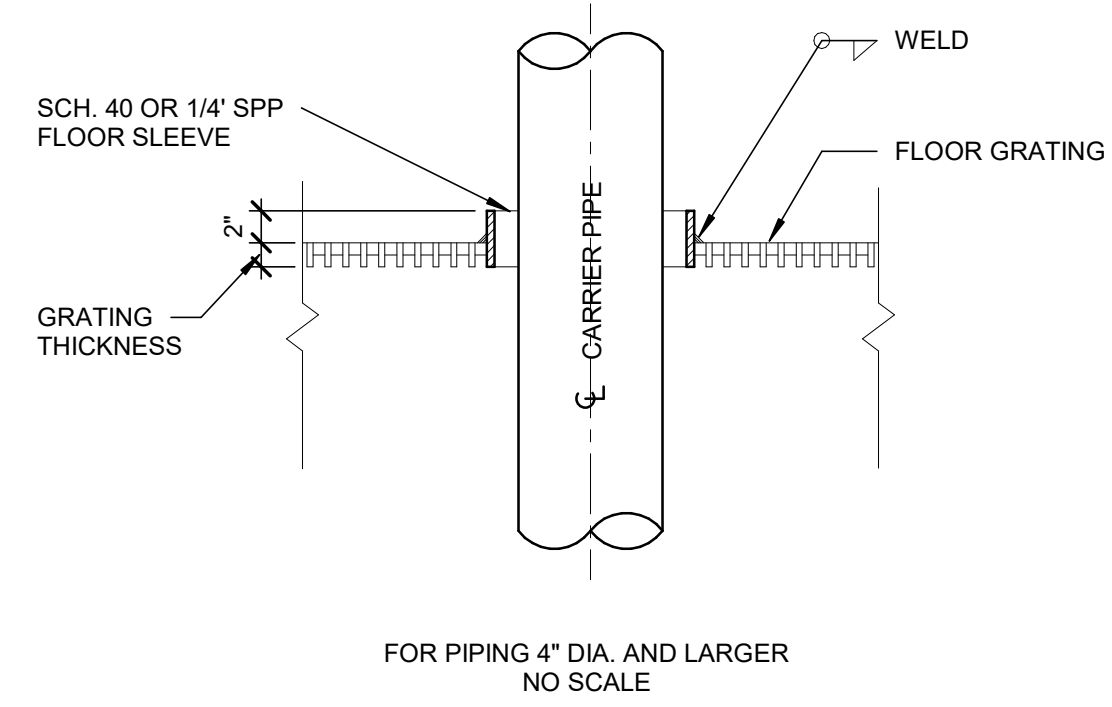
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SHEET
P-101

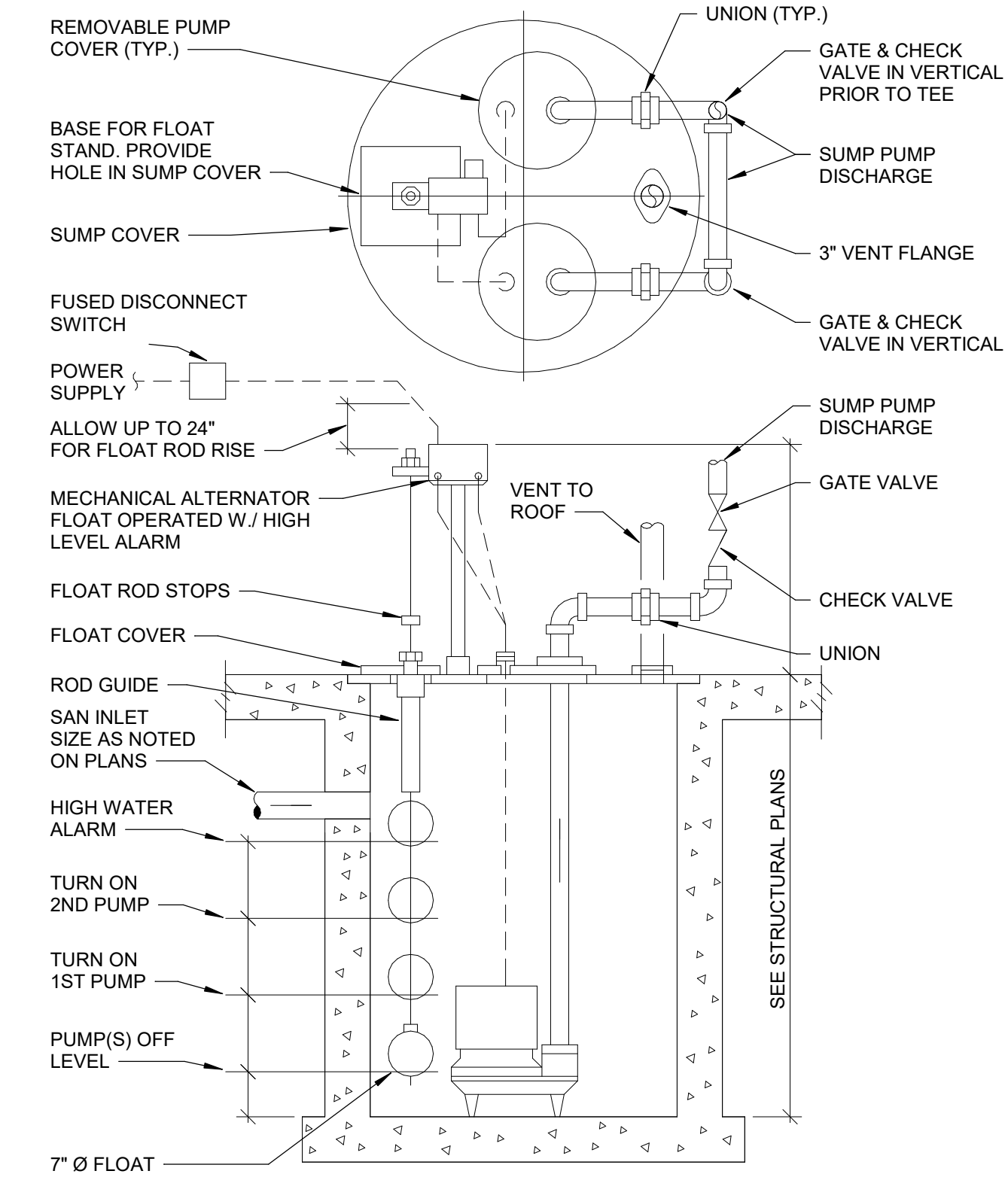
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1 TYPICAL PIPE SLEEVE
P-601 NOT TO SCALE



2 SLEEVE - GRTG - FLOOR
P-601 NOT TO SCALE



3 DUPLEX SYSTEM SUBMERSIBLE SUMP PUMP DETAIL
P-601 SCALE: 12\"/>

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CITY OF FLINT WPCF
BATTERY B SECONDARY CLARIFIER FLOW
CONTROL PROJECT
PLUMBING SCHEMATIC, SCHEDULES, AND
DETAILS

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JOB NO. COF107701F

SHEET P-601

ABBREVIATIONS - PIPING	
AFF	ABOVE FINISHED FLOOR
AL	ALUMINUM
ARV	AIR RELIEF VALVE
BCE	BIOLOGICAL CONTACTOR EFFLUENT
BF	BLIND FLANGE
BP	BYPASS
C	CENTRATE
CA	COMPRESSED AIR
CDS	CHEMICAL DOSING
CE	CHLORINATED EFFLUENT
CI	CAST IRON
CIP	CAST IRON PIPE
CISP	CAST IRON SOIL PIPE
CL	CENTER LINE
CON	CONCENTRATE
CON RED	CONCENTRIC REDUCER
GONC	CONCRETE
CPVC	CHLORINATED POLYVINYL CHLORIDE
CUP	COPPER PIPE
CW	COLD WATER
D	DRAIN
DE	DECANT
DI	DUCTILE IRON
DIP	DUCTILE IRON PIPE
DMJ	DISMANTLING JOINT
DRC	DRESSER COUPLING
DS	DIGESTED SLUDGE
ECC	ECCENTRIC
ECC RED	ECCENTRIC REDUCER
ED	EQUIPMENT DRAIN
EFF	EFFLUENT
EI	EQUALIZATION TANK INFLUENT
EL	ELEVATION
ELB	ELBOW
ER	EQUALIZATION TANK RETURN
ES	EQUALIZATION TANK SLUDGE
FA	FOUL AIR
FCA	FLANGED COUPLING ADAPTER
FD	FLOOR DRAIN
FE	FINAL EFFLUENT
FFWD	FEED FORWARD
FLG	FLANGE
FM	FORCE MAIN
FOB	FLAT ON BOTTOM
FOT	FLAT ON TOP
FRP	FIBERGLASS REINFORCED PIPE
FS	FINAL TANK SLUDGE
FTW	FILTER TO WASTE
GRS	GREASE
GRT	GRIT
GRV	GROOVED JOINT
GSP	GALVANIZED STEEL PIPE
GW	GLAND WATER
HDPE	HIGH DENSITY POLYETHYLENE PIPE
HS	HEATED SLUDGE
INF	INFLUENT
INV	INVERT
LPA	LOW PRESSURE AIR
LR	LONG RADIUS
MAG	MAG METER
MBR	MEMBRANE BIOREACTOR
MFR	MANUFACTURER

ABBREVIATIONS - PIPING	
MH	MANHOLE
MJ	MECHANICAL JOINT
ML	MIXED LIQUOR
MLP	MAIN LIFT PUMP
NaOCl	SODIUM HYPOCHLORITE
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NPW	NON-POTABLE WATER
OVRFL	OVERFLOW
PA	PROCESS AIR
PE	PRIMARY TANK EFFLUENT
PEP	POLYETHYLENE PIPE
PERM	PERMEATE
PEW	PLANT EFFLUENT WATER
PI	PRIMARY TANK INFLUENT
PLT	PLATE
POA	PULLOUT ASSEMBLY
PP	POLYPROPYLENE PIPE
PS	PRIMARY TANK SLUDGE
PVC	POLYVINYL CHLORIDE
PW	POTABLE WATER
RAS	RETURN ACTIVATED SLUDGE
RC	RECYCLED
RCP	REINFORCED CONCRETE PIPE
RDJ	RESTRAINED DISMANTLING JOINT
RECYC	INTERNAL RECYCLE
RED	REDUCER
REW	REUSE WATER
RFCA	RESTRAINED FLANGED COUPLING ADAPTER
RO	REVERSE OSMOSIS
RS	RAW SEWAGE
RW	RAW WATER
S	SCUM
SAM	SAMPLE
SE	SECONDARY EFFLUENT
SFE	SECONDARY FINAL EFFLUENT
SLG	SLUICE GATE
SN	SUPERNATANT
SPD	SUMP PUMP DISCHARGE
SS or SST	STAINLESS STEEL
STL	STEEL PIPE
SW	SECONDARY WASTE
SWHP	SECONDARY WATER - HIGH PRESSURE
SWLP	SECONDARY WATER - LOW PRESSURE
SWMP	SECONDARY WATER - MEDIUM PRESSURE
SWP	SEAL WATER PANEL
TE	TERTIARY EFFLUENT
THD	THREADED
THS	THICKENED SLUDGE
TO	THICKENER OVERFLOW
TOR	THERMAL OIL RETURN
TOS	THERMAL OIL SUPPLY
TS	TRANSFER SLUDGE
UNO	UNLESS NOTED OTHERWISE
UWF	UNFILTERED WATER FLUSH
V	VENT
VIF	VERIFY IN FIELD
WAS	WASTE ACTIVATED SLUDGE
WM	WATER MAIN
WWD	WASHWATER DRAIN
WWS	WASHWATER SUPPLY

VALVE SYMBOLS	
	TRIPLE DUTY VALVE
	GATE VALVE
	GLOBE VALVE
	BALL VALVE
	BUTTERFLY VALVE
	CORPORATION COCK
	BALANCING VALVE
	PET COCK
	CHECK VALVE
	PLUG VALVE
	STOP AND CHECK VALVE
	PINCH VALVE
	DIAPHRAGM VALVE
	AUTO-FLOW CONTROL VALVE
	ANGLE OR NEEDLE VALVE
	PRESSURE RELIEF VALVE
	THREE WAY VALVE
	TEMPERING VALVE
	SOLENOID OPERATED VALVE
	PRESSURE REGULATING VALVE (SELF CONTAINED)
	MOTORIZED CONTROL VALVE (OPEN-SHUT, THROTTLING)
	PNEUMATIC OPERATED CONTROL VALVE (OPEN-SHUT, THROTTLING)
	BACKPRESSURE VALVE
	HOSE BIBB (3/4")
	FLUSHING HOSE BIBB (1-1/2")
	SILL COCK (3/4")
	FLUSHING CONNECTION (ON PIPE) 1-1/2"
	ANTISIPHON VALVE
	PUMP/BLOWER INCLUDING PRESSURE GAUGES PI = PRESSURE GUIDE PI-D = PRESSURE GAUGE W/ DIAPHRAGM SEAL PI-P = PRESSURE GAUGE W/ PULSATION DAMPER

GENERAL NOTES PROCESS PIPING	
A	LAY PIPE TO UNIFORM GRADE BETWEEN INDICATED ELEVATION POINTS.
B	UNLESS NOTED OTHERWISE, PIPE ELEVATIONS SHOWN ON PIPING DRAWINGS REFER TO CENTERLINE OF PIPE.
C	SUBMIT THE ROUTING OF PIPING NOT SHOWN IN THE DRAWINGS FOR APPROVAL, INCLUDING PIPING SMALLER THAN 3 INCHES.
D	SIZE OF FITTINGS SHOWN ON DRAWINGS SHALL CORRESPOND TO ADJACENT STRAIGHT RUN OF PIPE, UNLESS NOTED OTHERWISE. TYPE OF JOINT AND FITTING MATERIAL SHALL BE THE SAME AS SHOWN FOR ADJACENT STRAIGHT RUN OF PIPE.
E	LOCATIONS AND NUMBER OF PIPE HANGERS AND PIPE SUPPORTS SHOWN ARE APPROXIMATE. DESIGN AND PROVIDE PIPE SUPPORTS AS REQUIRED.
F	ALL JOINTS SHALL BE WATERTIGHT. WALL PIPES SHALL BE USED WHEREVER PIPING PASSES FROM A STRUCTURE TO BACKFILL OR THROUGH WATERTIGHT STRUCTURE.
G	ALL FLEXIBLE CONNECTORS AND COUPLING ADAPTERS SHALL BE PROVIDED WITH THRUST PROTECTION AS SPECIFIED, UNLESS NOTED OTHERWISE. THRUST PROTECTION SHALL BE ADEQUATE FOR TEST PRESSURES SPECIFIED.
H	NOT ALL OF THE GRAPHICS, ABBREVIATIONS, ETC., SHOWN ON THIS SHEET ARE USED ON THE PROJECT.
I	NUMBER AND LOCATION OF UNIONS SHOWN ON DRAWINGS ARE APPROXIMATE. PROVIDE ALL UNIONS, FLANGES, AND COUPLINGS NECESSARY TO FACILITATE CONVENIENT REMOVAL OF VALVES, INSTRUMENTS, AND MECHANICAL EQUIPMENT.
J	WHERE A GROOVED END COUPLING IS SHOWN, IT SHALL BE THE RIGID JOINT TYPE, UNLESS OTHERWISE SPECIFIED. WHERE A FLANGED COUPLING ADAPTER IS SHOWN, A STANDARD FLANGE SHALL BE JOINED TO THE COUPLING ADAPTER.
K	LOCATE PRESSURE TAPS ON THE TOP OF PROCESS PIPES.
L	LOCATE SAMPLE TAPS ON THE SIDE OF PROCESS PIPES.
M	LOCATE DRAIN TAPS ON THE BOTTOM OF PROCESS PIPES.
N	INSTALL ALL PLUG, BUTTERFLY, AND BALL VALVES WITH THE SHAFT IN THE HORIZONTAL POSITION, UNLESS NOTED OTHERWISE.
O	ALL MECHANICAL AND PROCESS EQUIPMENT SHALL BE PLACED ON CONCRETE HOUSEKEEPING PADS, WHETHER INDICATED OR NOT. SEE STRUCTURAL SHEETS FOR TYPICAL DETAILS.
P	HYDRAULIC GRADE LINE ELEVATIONS ARE PROVIDED IN THE CITY OF DETROIT DATUM. ALL OTHER ELEVATIONS ARE PROVIDED IN NAVD88. THE CONVERSION FROM THE CITY OF DETROIT DATUM TO NAVD88 IS 479.20'.

PIPING & EQUIPMENT SYMBOLS	
	VENT TO ROOF
	PIPE ANCHOR
	EXPANSION JOINT
	EXPANSION COMPENSATOR
	FLEXIBLE CONNECTOR
	FLOW ELEMENT
	PIPE GUIDE
	YARD HYDRANT (SEE DETAIL)
	PRESSURE REDUCING STATION (SEE DETAIL)
	PUMP SEALING WATER CONNECTION (SEE DETAIL)
	SAMPLE FUNNEL (SEE DETAIL)
	AIR SET ASSEMBLY (SEE DETAIL)
	AIR TO VALVE OPERATOR (SEE DETAIL) (THROTTLING SERVICE)
	AIR TO VALVE OPERATOR (SEE DETAIL) (OPEN SHUT SERVICE)
	IN LINE STATIC MIXER
	EDUCTOR
	INJECTOR
	TRAP (STEAM OR AIR MOISTURE)
	QUICK DISCONNECT (AIR) (3/4")
	ELBOW UP
	ELBOW DOWN
	TEE UP
	TEE DOWN
	REDUCER-CONCENTRIC
	REDUCER-ECCENTRIC
	WYE STRAINER
	BASKET STRAINER
	UNION
	METER (TOTALIZING)
	ROTAMETER
	STEEL WALL SLEEVE
	EMERGENCY SHOWER AND EYEWASH
	PIPING (BELOW SLAB)
	FLOOR DRAIN
	FLOOR DRAIN W/SEDIMENT BUCKET
	FLOOR SINK
	PUMP BASE DRAIN
	EQUIPMENT DRAIN
	CLEANOUT-FLOOR
	CLEANOUT-HORIZONTAL
	ROOF DRAIN
	PIPE TO DRAIN
	IN-LINE PUMP
	INSTRUMENT AIR PNEUMATIC SIGNAL
	ELECTRIC
	INSTRUMENT CAPILLARY TUBING
	BACKFLOW PREVENTER
	CONNECTION TO EXISTING
	PIPE CAP OR PLUG
	DIRECTION OF FLOW

INSTRUMENTATION SYMBOLS	
	PANEL MOUNTED INSTRUMENT (INSIDE)
	PANEL MOUNTED INSTRUMENT (FACE)
	LOCALLY MOUNTED INSTRUMENT
	FLOW ELEMENT
	FLOW INDICATOR
	LEVEL ELEMENT
	LOW WATER CUT-OFF
	PRESSURE SWITCH
	TEMPERATURE INDICATOR
	TEMPERATURE INDICATOR CONTROLLER
	TEMPERATURE TRANSMITTER

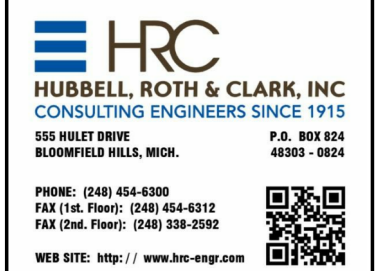
SLEEVE DESIGNATIONS	
	PLAIN END x PLAIN END WALL SLEEVE
	RECESSED FLANGE x PLAIN END WALL SLEEVE
	FLANGE x PLAIN END WALL SLEEVE
	FLANGE x FLANGE WALL SLEEVE
	MECHANICAL JOINT x MECHANICAL JOINT WALL SLEEVE
	MECHANICAL JOINT x PLAIN END WALL SLEEVE

TEMPERATURE CONTROL SYMBOLS	
	TEMPERATURE INDICATOR
	DAMPER OPERATOR
	TEMPERATURE TRANSMITTER
	FIRESTAT
	FREEZE STAT
	EP RELAY
	TEMPERATURE CONTROLLER
	RELAY
	CONTROLLER
	SMOKE DETECTOR
	PANEL MOUNTED DEVICES
	NIGHT THERMOSTAT

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CITY OF FLINT
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FLOW CONTROL
PROCESS SYMBOLS AND ABBREVIATIONS

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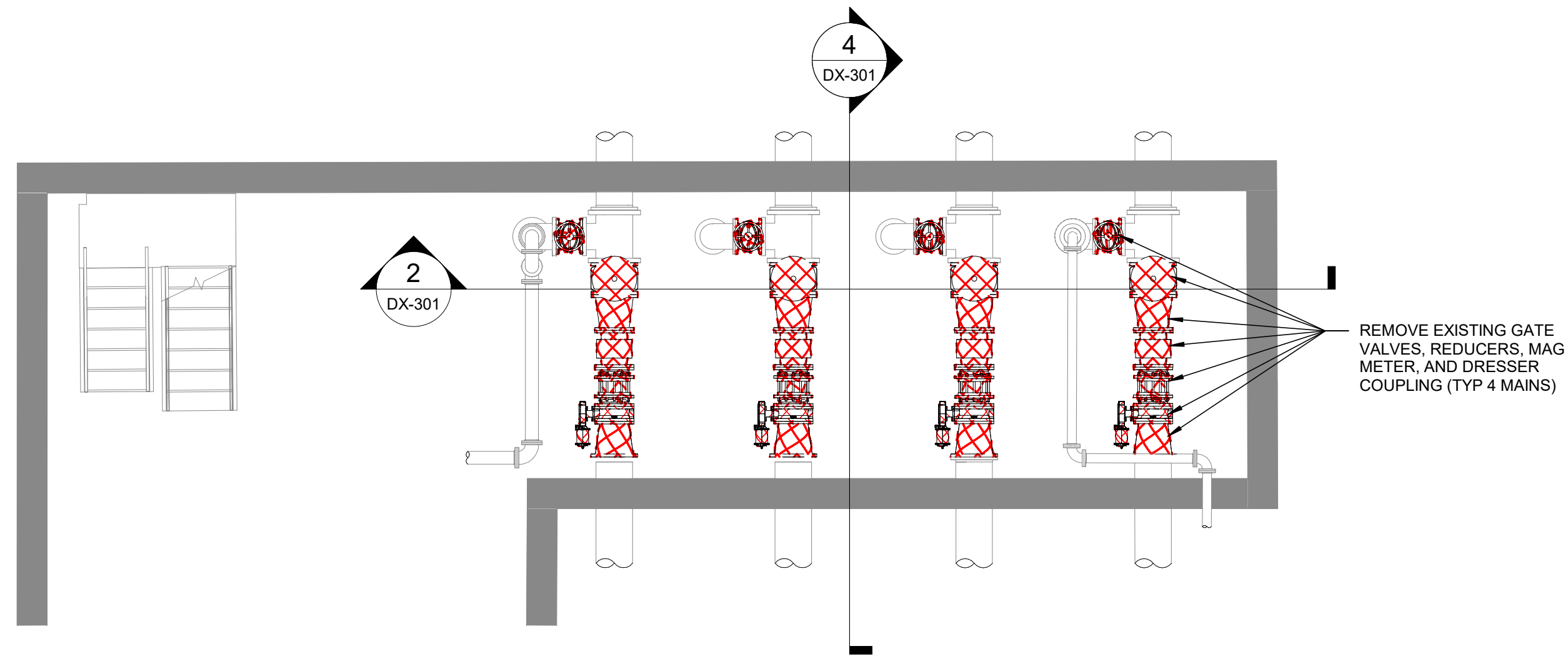
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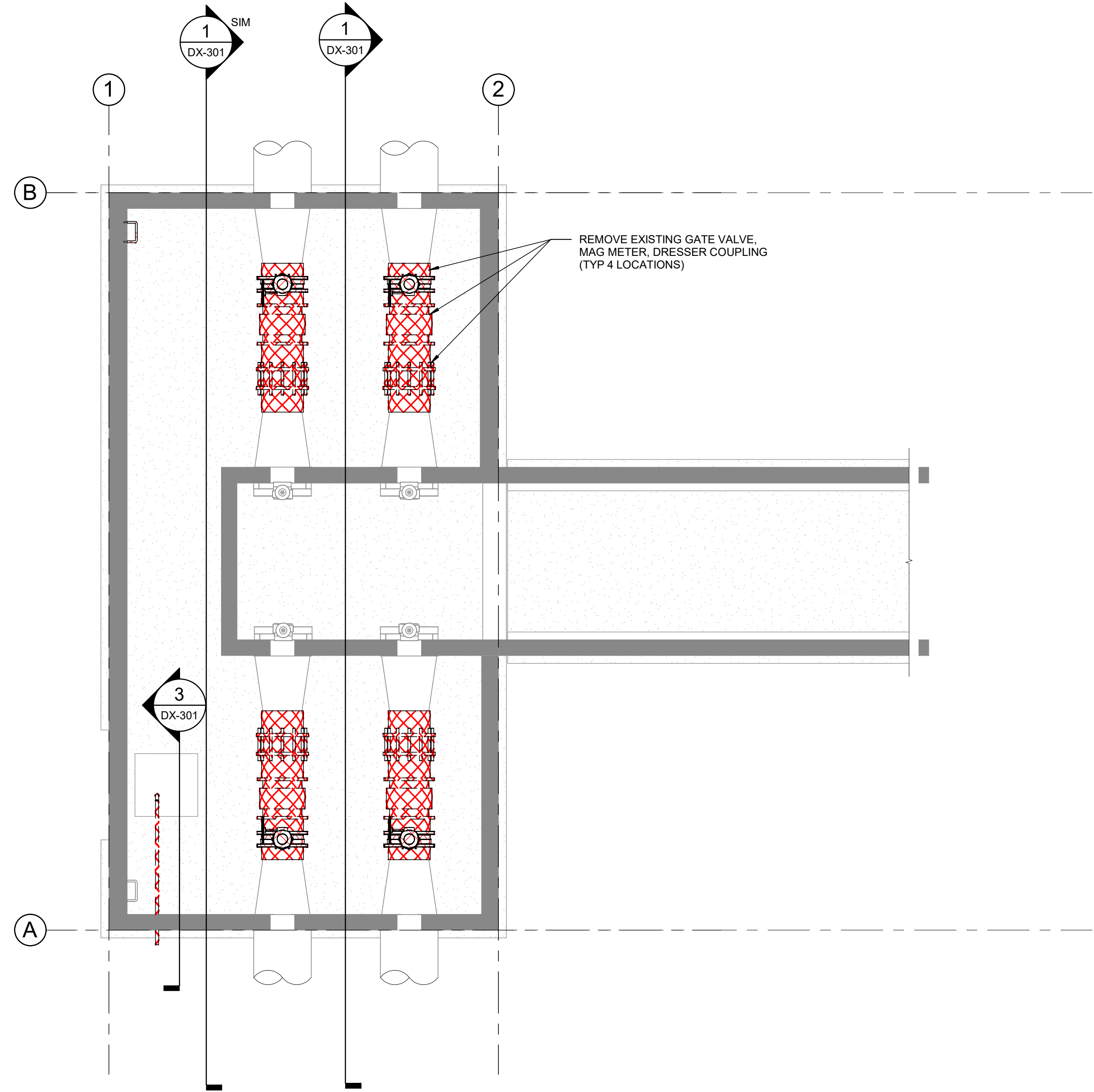
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VALVE ROOM DEMO PLAN
SCALE: 3/16" = 1'-0"



T/FDN DEMO
SCALE: 3/16" = 1'-0"

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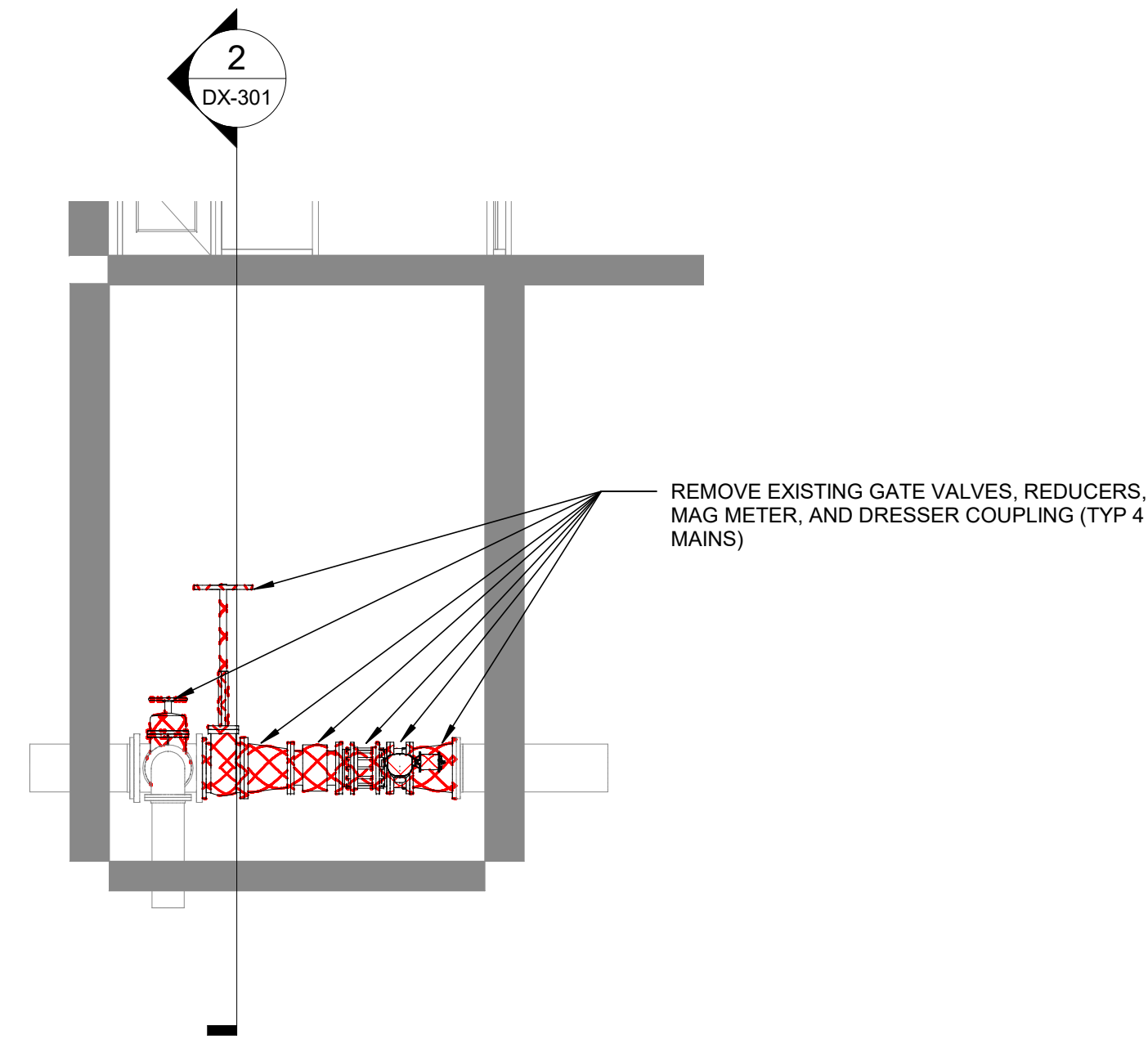
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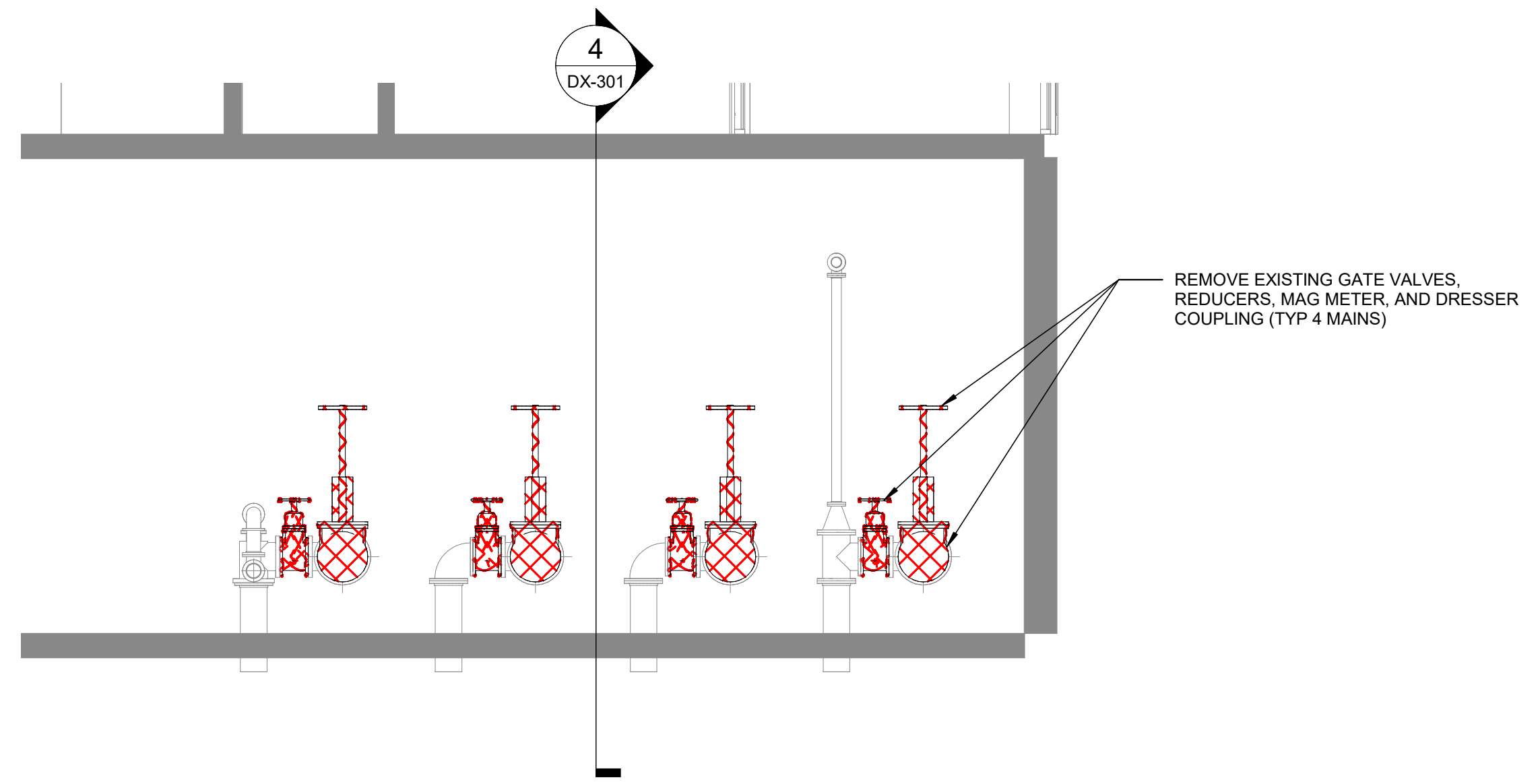
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DX-101

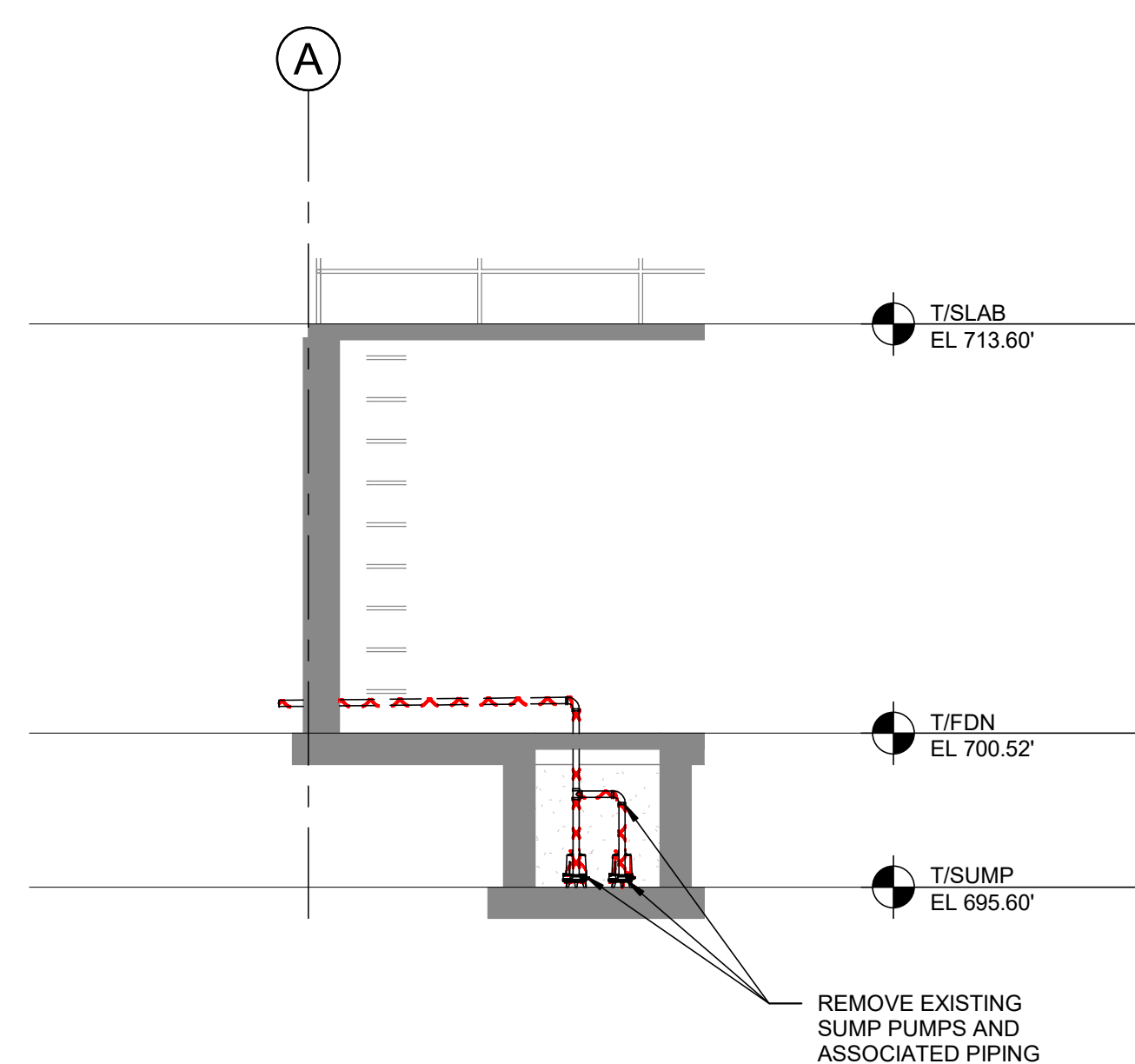
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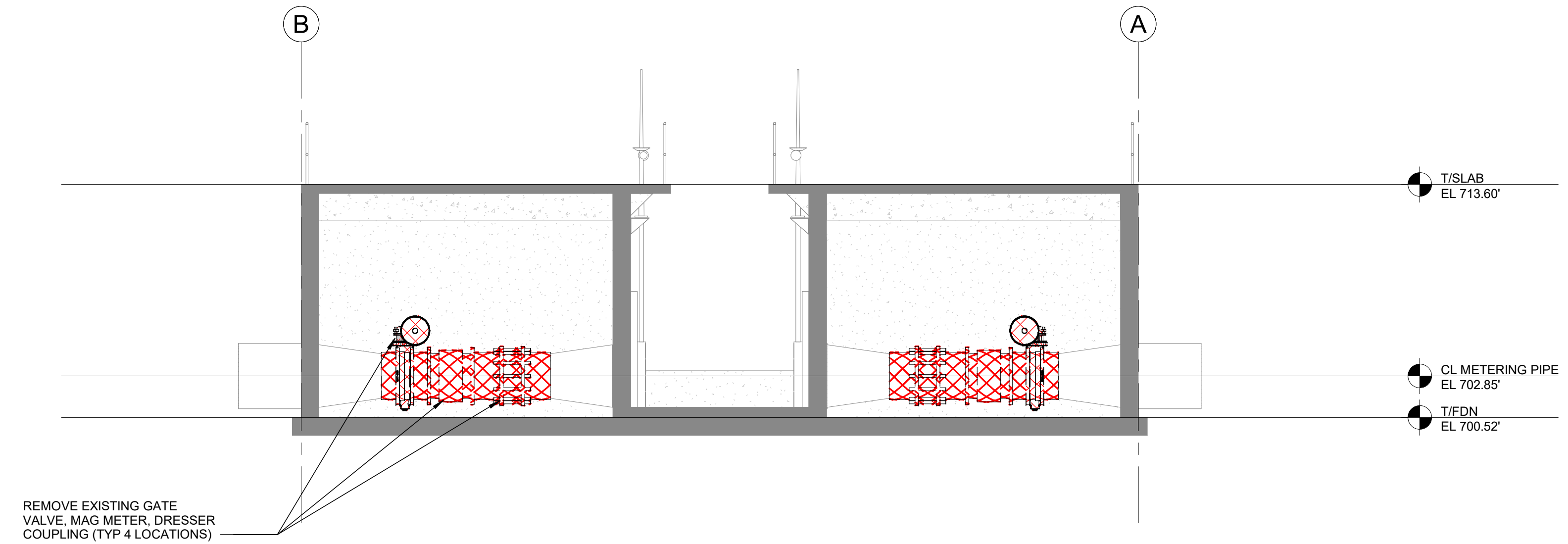
4 MAIN SECTION DEMO
D-301 SCALE: 3/16" = 1'-0"



2 BRANCH SECTIONS DEMO
DX-101 SCALE: 3/16" = 1'-0"



3 VAULT PUMP DEMO SECTION
D-101 SCALE: 3/16" = 1'-0"



1 VAULT DEMO SECTION
D-101 SCALE: 3/16" = 1'-0"

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**CITY OF FLINT
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FLOW CONTROL
DEMOLITION SECTIONS**

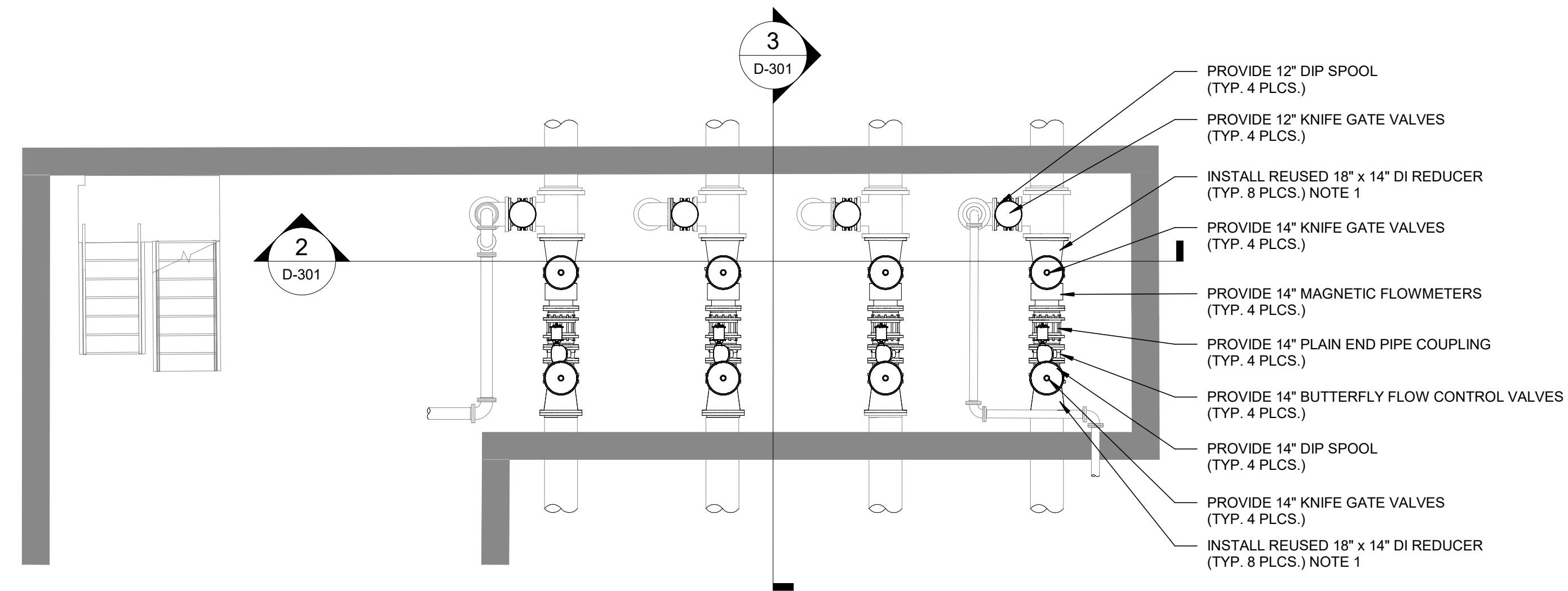
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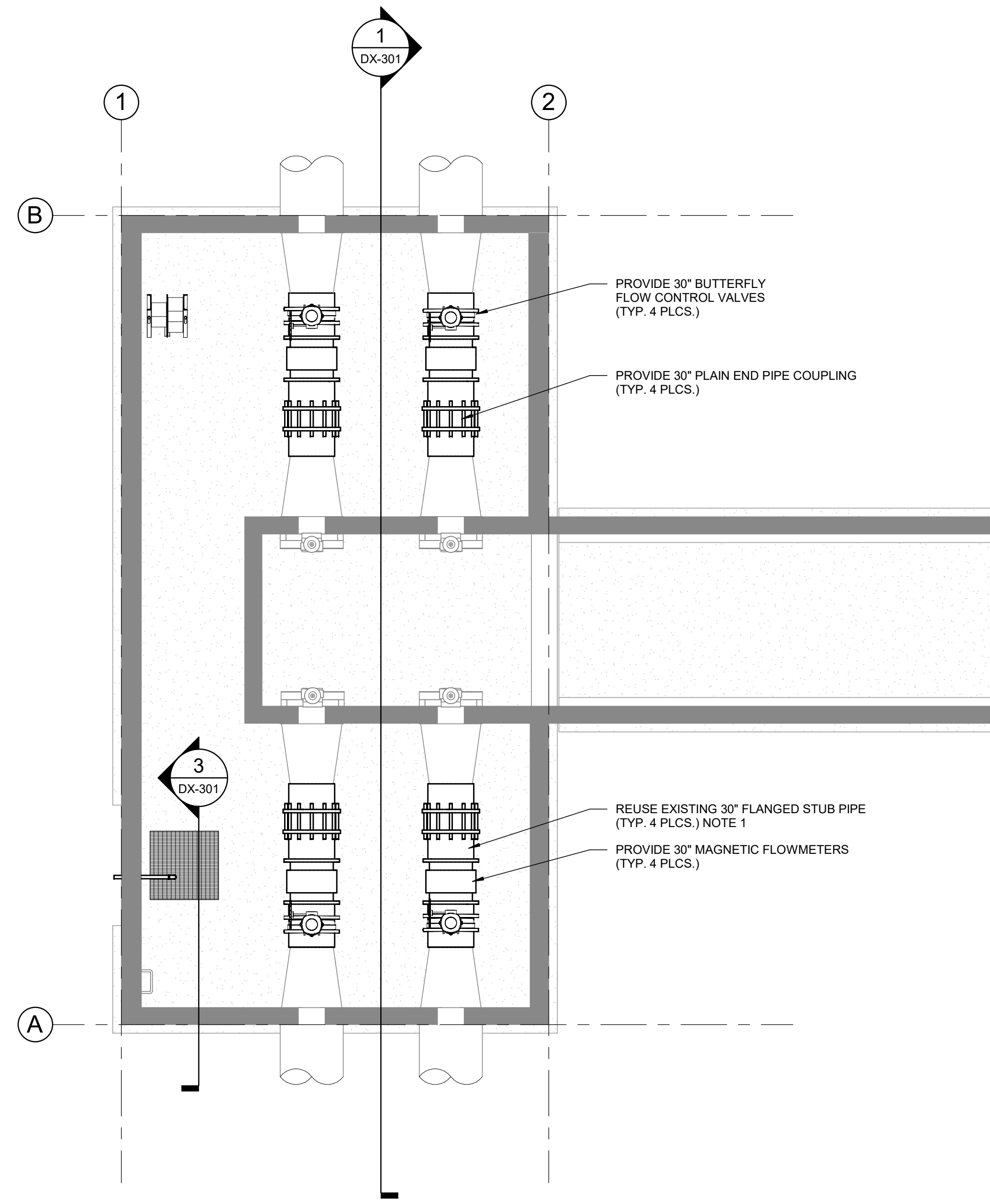
SHEET DX-301

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NOTES:
 1. PREPARE AND COAT EXISTING PIPING PER SPECIFICATION SECTION 09 96 00.



VALVE ROOM PLAN
 SCALE: 3/16" = 1'-0"



VAULT T/FDN PLAN
 SCALE: 3/16" = 1'-0"

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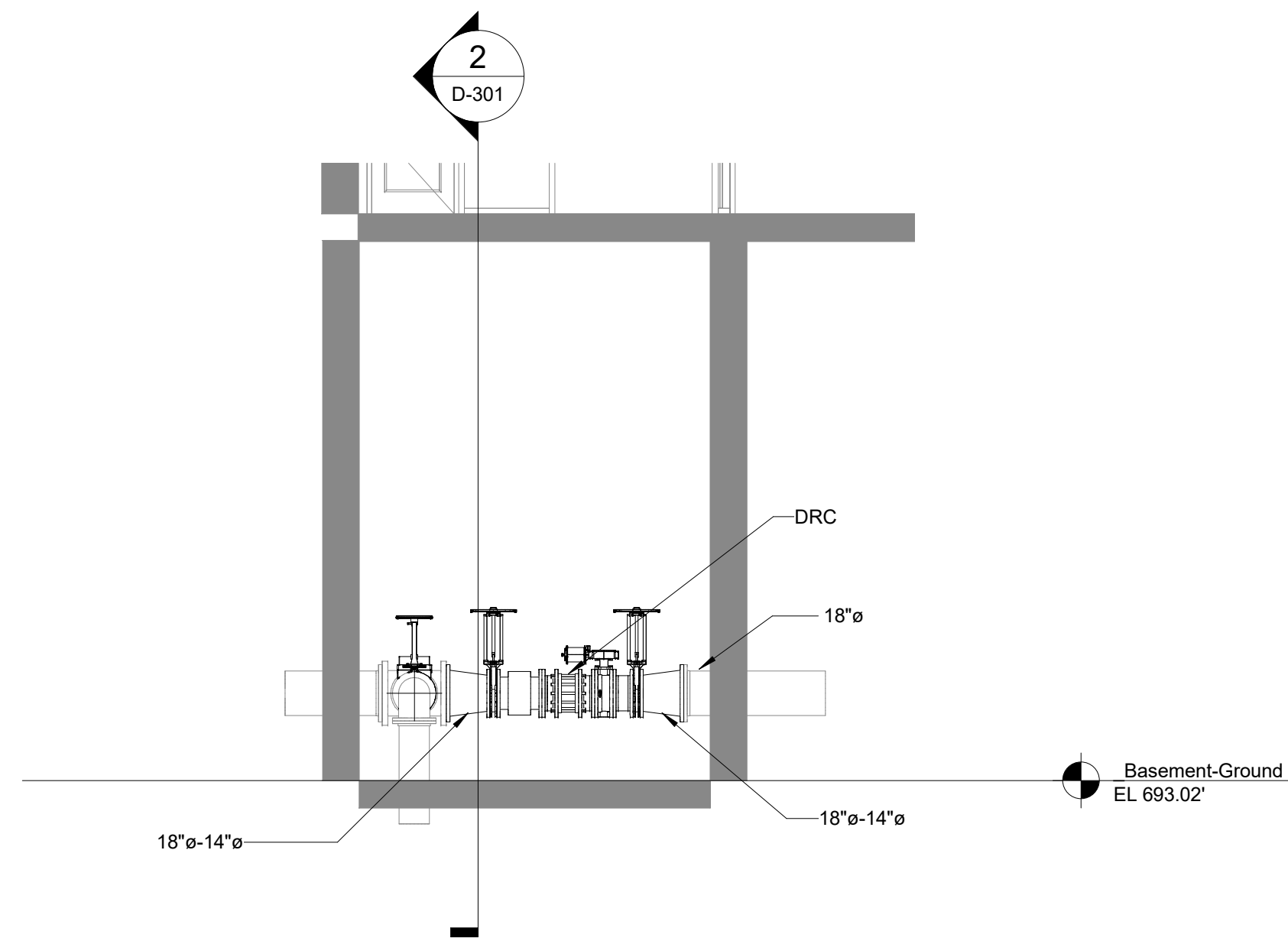
**CITY OF FLINT
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 FLOW CONTROL
 FLOOR PLANS**

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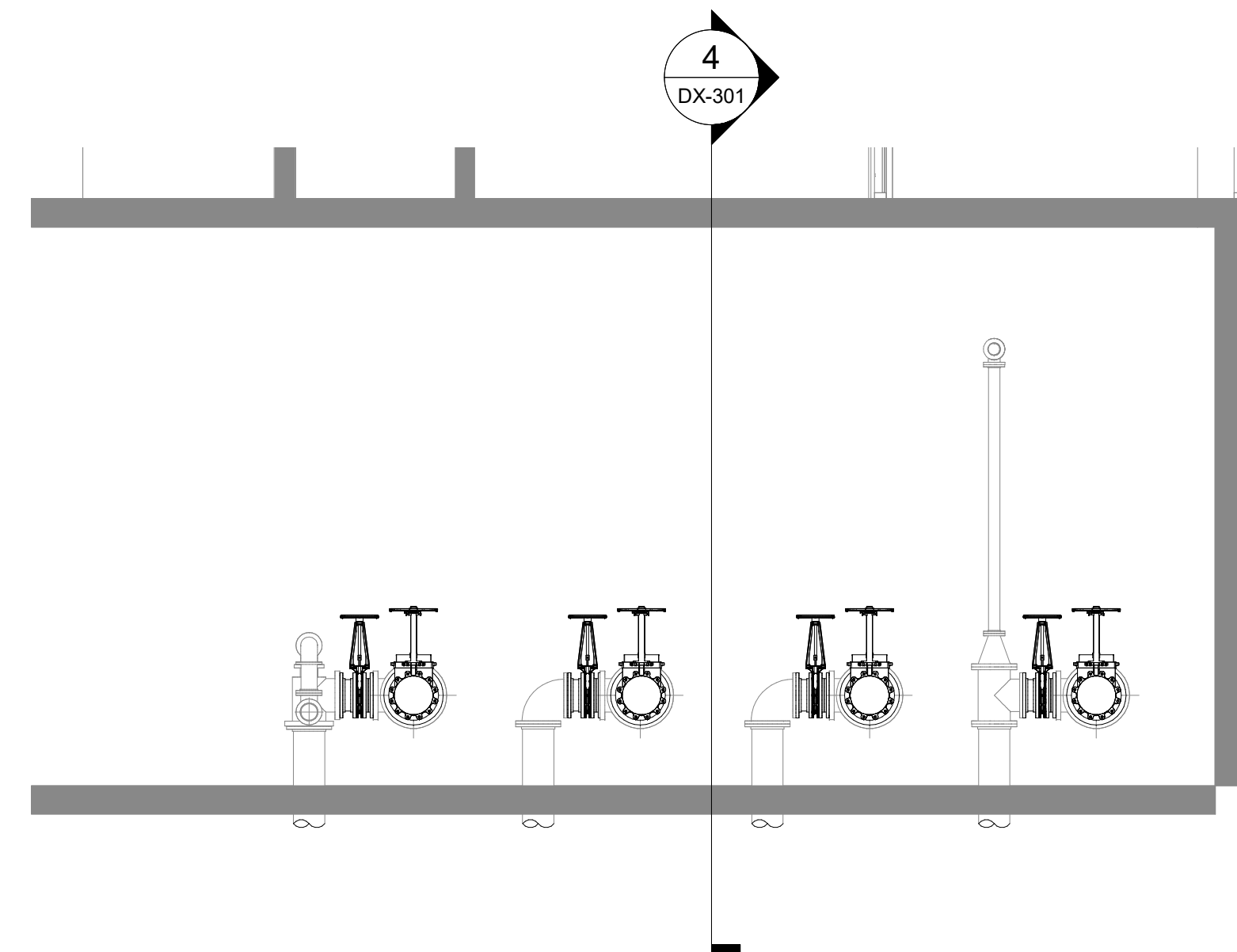
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SHEET D-101

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3 MAIN SECTION
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2 BRANCH SECTIONS
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CITY OF FLINT
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 FLOW CONTROL
 SECTIONS - VALVE ROOM

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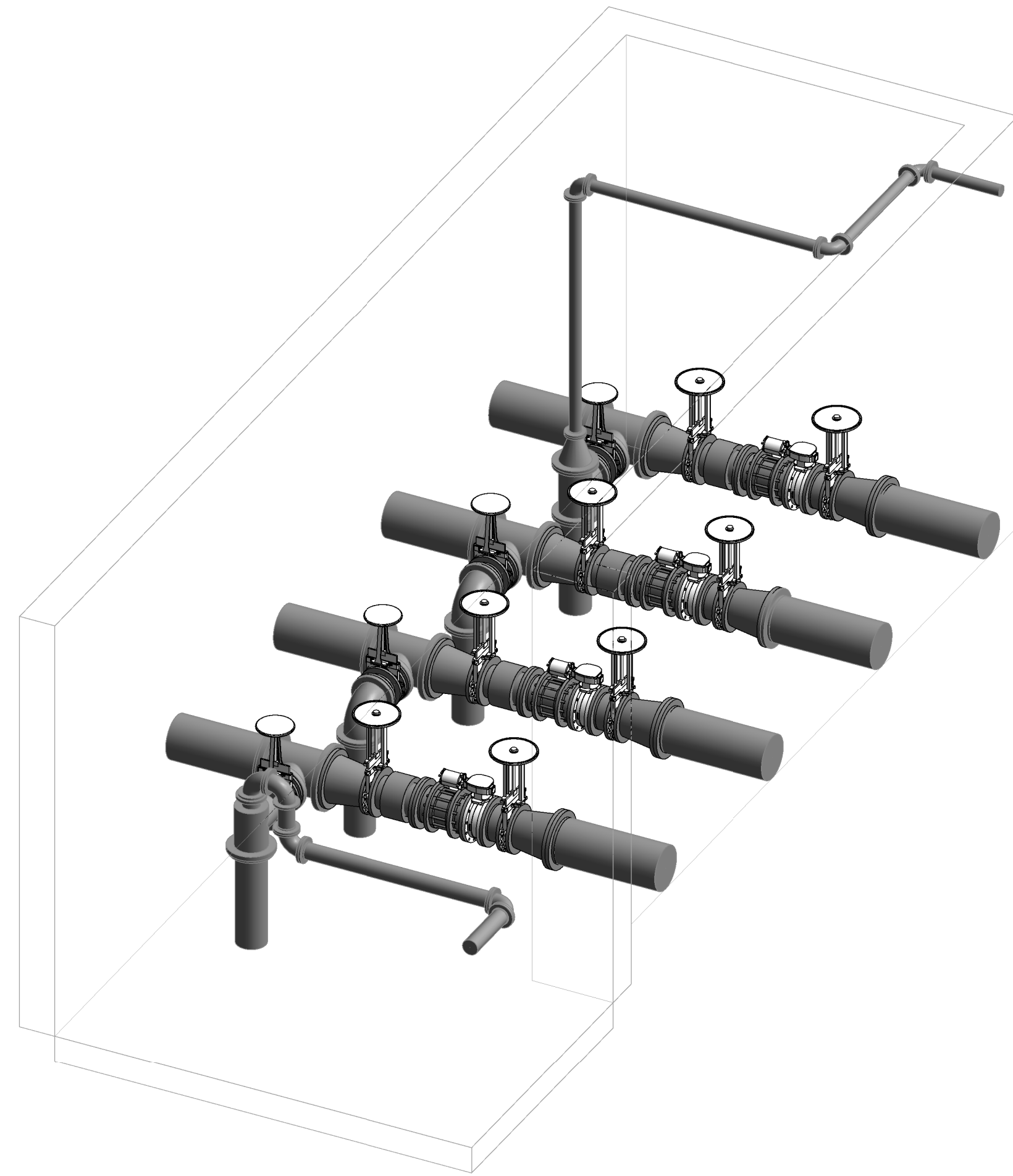
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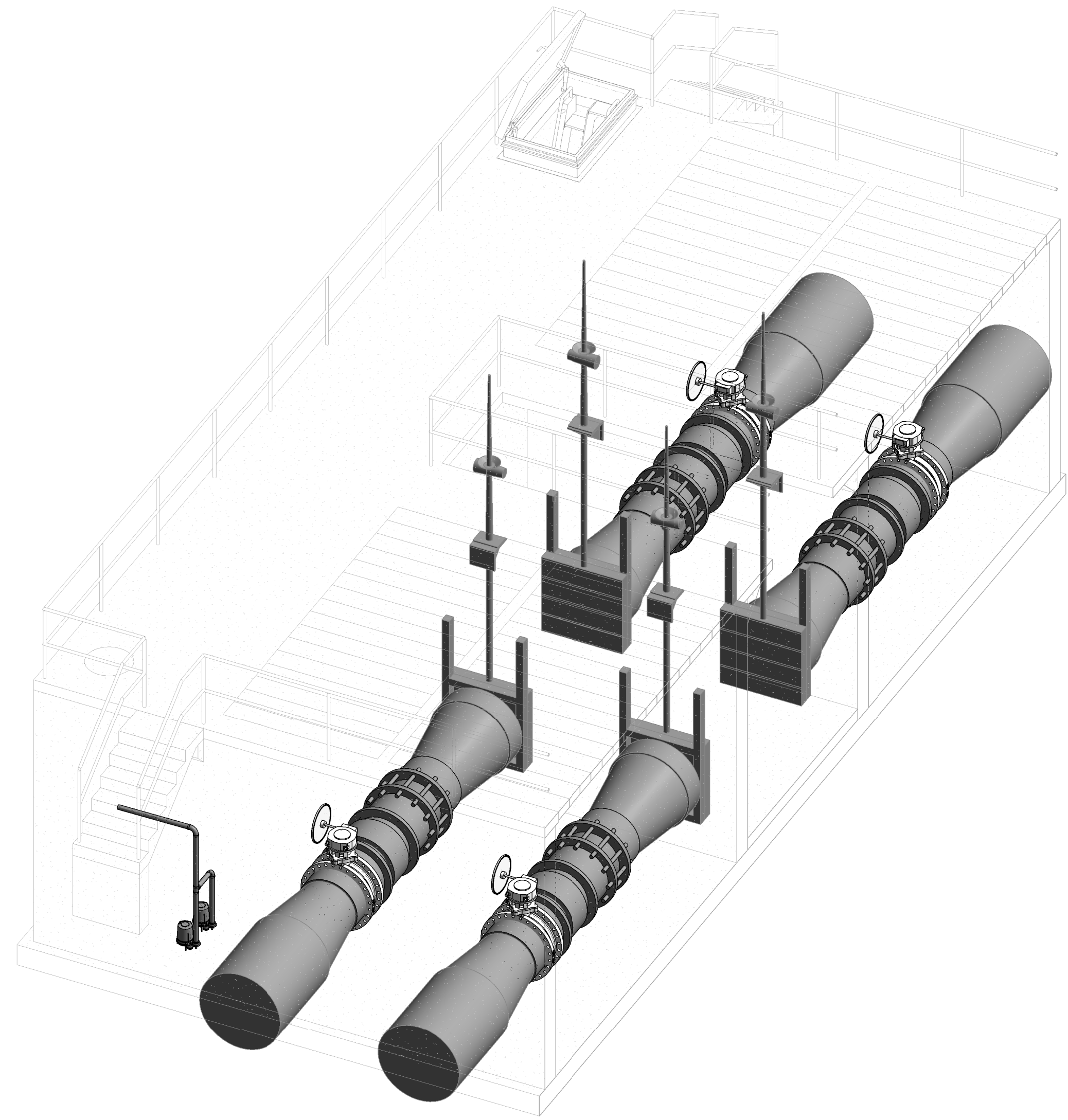
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 **3D VALVE ROOM**
NOT TO SCALE



 **3D VAULT**
NOT TO SCALE

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**CITY OF FLINT
 WPCF BATTERY B SECONDARY CLARIFIER
 FLOW CONTROL
 3D REPRESENTATIONS**

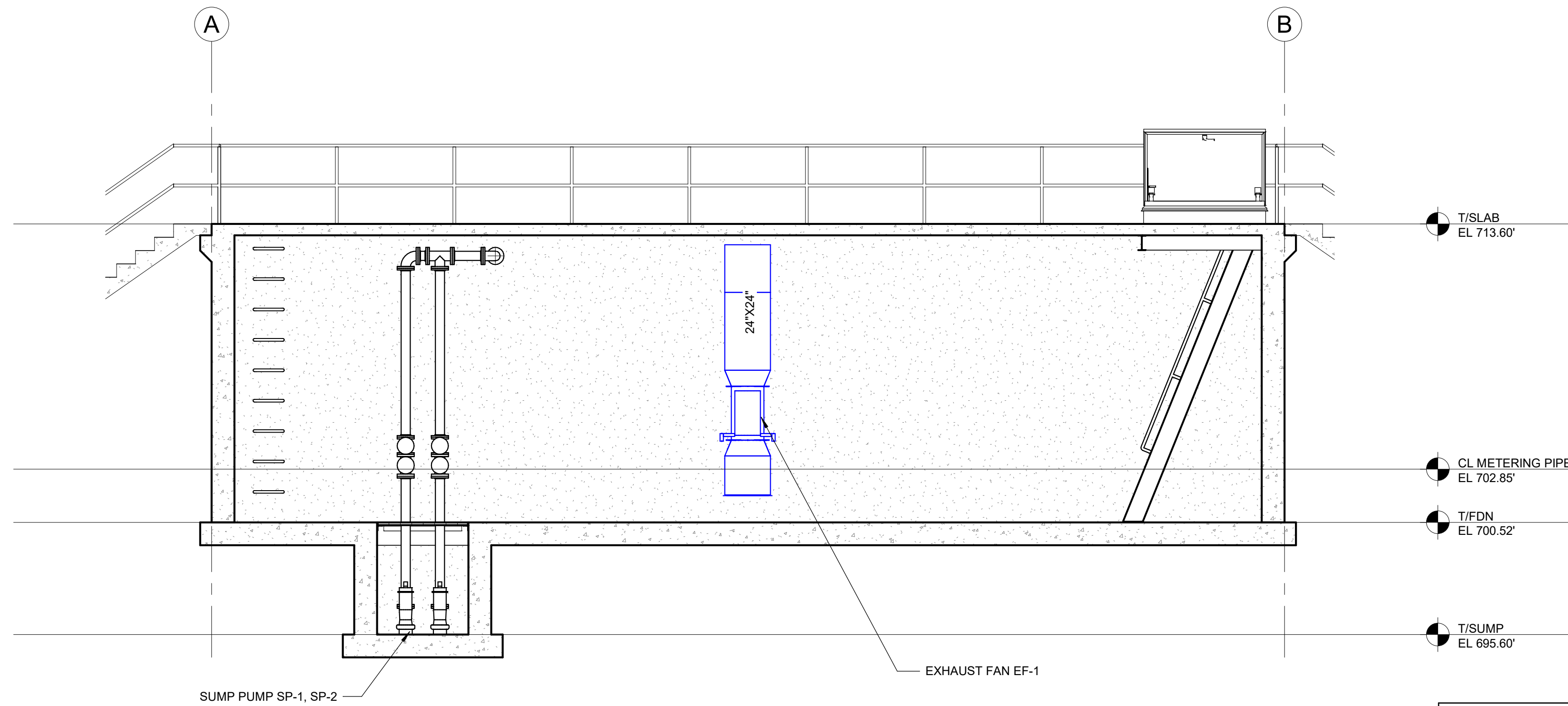
ISSUED FOR: BIDS
 DATE: 2023.06.24
 BY: TSW

JOB NO. 1077-01F

SHEET

D-901

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1 SECTION 1
M-301 SCALE: 1/4" = 1'-0"

- T/SLAB
EL 713.60'
- CL METERING PIPE
EL 702.85'
- T/FDN
EL 700.52'
- T/SUMP
EL 695.60'

FAN SCHEDULE

TAG	QUANTITY	LOCATION	SERVICE	CFM	ESP (IN W.G.)	DRIVE	MOTOR	MANUFACTURER	MODEL	REMARKS
EF-1	1	FLOW CONTROL	EXHAUST	1000	0.7	BELT	0.5 HP 460V, 3 PHASE	GREENHECK	QEI-9	ALL

- REMARKS:
- PROVIDE NEMA 7 AND 9 DISCONNECT SWITCH.
 - PROVIDE INDUSTRIAL EPOXY COATING, GRAY
 - ALUMINUM MOTOR COVER
 - STAINLESS STEEL SHAFT
 - ALUMINUM HOUSING
 - TEFC PREMIUM EFFICIENCY MOTOR
 - GRIP NOTCH BELTS
 - ONE SPARE SET OF BELTS
 - BEARING AND GREASE FITTING
 - WIRING PIGTAIL
 - SPRING ISOLATORS
 - EXTENDED LUBE LINES
 - 2 YEAR WARRANTY
 - ALL STAINLESS STEEL FASTENERS
 - AUTO BELT TENSIONER
 - J-BOX MOUNTED AND WIRED
 - DUCT MOUNTED SMOKE DETECTOR, 120V
 - AIR FLOW SWITCH FCI FLT93F 4" 316L STAINLESS STEEL ELEMENT, 120V

AIR DISTRIBUTION SCHEDULE

TAG	DESCRIPTION	SIZE	MATERIAL	SS DAMPER	BORDER FRAME TYPE	MAX. PRESSURE DROP	MAX N.C.	MANUFACTURER	MODEL
EG-1	1/2" X 1/2" X 1/2" EGGCRATE TYPE EXHAUST AIR GRILLE	20" X 20"	316 SS	YES	DUCT MOUNT	0.10	30	TITUS	50R-SS

ELECTRICAL UNIT HEATER SCHEDULE

TAG	LOCATION	VOLTS/PHASE	HEATING	MANUFACTURER	REMARKS
EUH-1,2,3,4	WASTE UNLOADING	480/3	10 kW (EACH)	MODINE	EXPLOSION PROOF

REV#	DATE	DESCRIPTION	BY



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CITY OF FLINT WPCF
 BATTERY B SECONDARY CLARIFIER FLOW
 CONTROL PROJECT
 HVAC SECTIONS

ISSUED FOR: BIDS DATE: 2023.06.24 BY: TSW

JOB NO. COF107701F

SHEET M-301

V:\2023\20230620\20230620BIBER\HRC_HRC_E_R21.rvt PLOTTED: 6/22/2023 6:57:08 PM

<p>CIRCUIT BREAKER (CB) - RATINGS AND NO. OF POLES AS SHOWN.</p> <p>100AF 80AT 3P OR 20A 3P</p>	<p>LOW VOLTAGE SURGE PROTECTIVE DEVICE</p> <p>ELECTRICAL CONNECTION</p> <p>NO ELECTRICAL CONNECTION</p> <p>NORMALLY-OPEN CONTACT</p> <p>NORMALLY-CLOSED CONTACT</p> <p>NORMALLY-OPEN CONTACT FOR ON-DELAY TIMING RELAY</p> <p>NORMALLY OPEN CONTACT FOR OFF-DELAY TIMING RELAY</p> <p>NORMALLY-OPEN LIMIT SWITCH</p> <p>NORMALLY-CLOSED LIMIT SWITCH</p> <p>NORMALLY OPEN TEMPERATURE SWITCH; CLOSE ON RISING TEMPERATURE</p> <p>NORMALLY CLOSED TEMPERATURE SWITCH; OPEN ON RISING TEMPERATURE</p> <p>NORMALLY OPEN FLOW SWITCH; CLOSE ON INCREASING FLOW</p> <p>NORMALLY CLOSED FLOW SWITCH; OPEN ON INCREASING FLOW</p> <p>NORMALLY OPEN LEVEL SWITCH</p> <p>NORMALLY CLOSED LEVEL SWITCH</p> <p>NORMALLY OPEN PRESSURE SWITCH</p> <p>NORMALLY CLOSED PRESSURE SWITCH</p> <p>NORMALLY-OPEN PUSHBUTTON</p> <p>NORMALLY-CLOSED PUSHBUTTON</p> <p>TYPICAL SELECTOR SWITCH</p> <p>SEAL MOISTURE SENSOR</p> <p>TEMPERATURE SENSOR</p> <p>LOCAL CONTROL PANEL</p>	<p>FIELD WIRING EXTERNAL TO CONTROL PANEL</p> <p>INTERLOCK</p> <p><u>X - INDICATES TYPE:</u> E - ELECTRICAL; M - MECHANICAL; K - KEY</p> <p>TRANSFORMER</p> <p>JUNCTION BOX</p> <p>CIRCUIT CONTINUATION</p> <p>CONDUIT STUBBED OUT AND CAPPED</p> <p>CONDUIT TURNING UP</p> <p>CONDUIT TURNING DOWN</p> <p>HOME RUN TO PANEL, 2#12 + 1#12 GND IN 3/4" C UNLESS OTHERWISE NOTED</p> <p>ABOVE GROUND CONDUIT RUN</p> <p>UNDERGROUND CONDUIT RUN</p> <p>GROUND CABLE</p> <p>GROUND ROD</p> <p>FIELD DEVICES</p> <p>SELECTOR SWITCH</p> <p>PUSHBUTTON</p> <p>PRESSURE ELEMENT/PRESSURE INDICATING TRANSMITTER</p> <p>LEVEL ELEMENT</p> <p>LEVEL INDICATING TRANSMITTER</p> <p>FLOW ELEMENT</p> <p>FLOW INDICATING TRANSMITTER</p> <p>FLOW SWITCH</p> <p>FLOAT SWITCH</p> <p>LIMIT SWITCH</p> <p>SOLENOID VALVE</p> <p>GAS DETECTOR</p> <p>CONTROL STATION</p> <p>THERMOSTAT</p> <p>MOTORIZED DAMPER</p> <p>PRESSURE SWITCH</p> <p>SINGLE DATA</p> <p>SINGLE TELEPHONE</p> <p>DOUBLE DATA / VOIP</p> <p>FLOOR MOUNTED DATA</p> <p>WELDER RECEPTACLE</p> <p>DUPLEX RECEPTACLE</p>	<p>DUPLEX RECEPTACLE GFCI</p> <p>QUAD-DUPLEX RECEPTACLE</p> <p>SIMPLEX RECEPTACLE</p> <p>FLOOR MOUNTED RECEPTACLE</p> <p><u>X - INDICATES TYPE:</u> GFCI - GROUND FAULT CIRCUIT INTERRUPTER</p> <p>INDICATING LIGHT</p> <p>PUSH-TO-TEST PILOT LIGHT</p> <p><u>X INDICATES LENS COLOR:</u> R - RED Y - YELLOW G - GREEN W - WHITE B - BLUE A - AMBER</p> <p>LIGHTING</p> <p>PHOTOCELL</p> <p>CEILING/PENDANT-MOUNTED LUMINAIRE</p> <p>WALL-MOUNTED LUMINAIRE</p> <p>CEILING/PENDANT-MOUNTED LIGHT FIXTURE</p> <p>EMERGENCY LIGHT FIXTURE</p> <p>EMERGENCY LIGHT FIXTURE</p> <p>WALL MOUNTED EXIT/EMERGENCY LIGHT</p> <p>DOUBLE-FACED CEILING OR WALL-MOUNTED EXIT LIGHT; DIRECTIONAL ARROWS (IF REQUIRED) AS INDICATED ON PLANS</p> <p>SINGLE-FACED CEILING OR WALL-MOUNTED EXIT LIGHT; DIRECTIONAL ARROWS (IF REQUIRED) AS INDICATED ON PLANS</p> <p>AREA OR ROADWAY LIGHT - POLE-MOUNTED</p> <p><u>X - INDICATES FIXTURE TYPE PER LIGHTING FIXTURE SCHEDULE OR DETAILS</u> Y - SWITCH CONTROL</p> <p>TOGGLE SWITCH</p> <p><u>X - INDICATES TYPE:</u> NONE - SINGLE POLE 3 - THREE-WAY 4 - FOUR-WAY HP - HORSEPOWER RATED K - KEY SWITCH P - PILOT LIGHT L - LIGHTED HANDLE TE - MANUAL MOTOR STARTER WITH THERMAL ELEMENT OS - OCCUPANCY SENSOR DM - DIMMABLE</p>	<p>PANELBOARD (LESS THAN 250V)</p> <p>PANELBOARD (250V TO 600V)</p> <p>ELECTRICAL EQUIPMENT ENCLOSURE AS INDICATED ON PLANS</p> <p>OCCUPANCY SENSOR CEILING MOUNTED</p> <p>COMMUNICATION</p> <p>CELL PHONE REPEATER</p> <p>OUTDOORS ANTENNA</p> <p>END OF LINE RESISTANCE PANEL</p> <p>FIRE ALARM</p> <p>FIRE ALARM ANNUNCIATOR</p> <p>FIRE ALARM CONTROL PANEL</p> <p>FIRE ALARM ANNUNCIATOR PANEL</p> <p>FIRE ALARM MANUAL STATION, MH=4'-0" AFF UNO</p> <p>FIRE ALARM CONTACT, TAMPER SWITCH</p> <p>FIRE ALARM CONTACT, TAMPER SWITCH INSIDE KNOX KEYBOX</p> <p>FIRE ALARM SMOKE DETECTOR, CEILING MOUNTED</p> <p><u>X - INDICATES TYPE:</u> I - IONIZATION TYPE P - PHOTOELECTRIC TYPE</p> <p>FIRE ALARM ADDRESSABLE DUCT TYPE SMOKE DETECTOR, MOUNTED ON DUCT</p> <p>FIRE ALARM HEAT DETECTOR, CEILING MOUNTED</p> <p>FIRE ALARM BELL WITH PROTECTIVE CAGE, MH=7'-6" AFG UNO</p> <p>FIRE ALARM SPEAKER, MH=10'-0" AFF UNO</p> <p>FIRE ALARM STROBE, MH=6'-8" AFF UNO</p> <p>FIRE ALARM BELL AND FLASHING LIGHT COMBINATION UNIT, MH=7'-6" AFG UNO</p> <p>FIRE ALARM SPEAKER WITH STROBE, MH=6'-8" AFF UNO</p> <p><u>X - INDICATES TYPE:</u> NONE - GENERAL ALARM DEVICE F - FIRE ALARM DEVICE</p> <p>INTERFACE UNIT, MH=4'-0" AFF UNO</p> <p>INTERFACE UNIT, CEILING MOUNTED UNO</p> <p>NOTES: 1. STANDARD ELECTRICAL LEGEND SHEET. NOT ALL SYMBOLS MAY BE USED ON THIS PROJECT.</p>
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REV#	DATE	ISSUED FOR	DESCRIPTION	TSW	BY
1	2023.06.24				



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BATTERY B SECONDARY CLARIFIER FLOW CONTROL

ELECTRICAL SYMBOLS AND ABBREVIATIONS

ISSUED FOR: BIDS DATE: 2023.06.24 BY: TSW

JOB NO: COF107601F

SHEET

E-001

GENERAL ELECTRICAL NOTES:

(APPLY TO ALL DRAWINGS)

- THE CONTRACTOR SHALL VISIT THE JOB SITE AND THOROUGHLY CHECK THE FIELD CONDITIONS AND THE EXISTING ELECTRICAL INSTALLATION AND UTILITIES PRIOR TO SUBMITTING HIS BID.
- OTHER PROJECTS ARE, OR MAY BE, UNDER CONSTRUCTION AT THIS SITE, AND THIS CONTRACTOR SHALL COORDINATE WITH THEM SO AS NOT TO DELAY THEIR SCHEDULES OR IMPEDE THEIR WORK.
- COORDINATE ALL NEW ELECTRICAL UNDERGROUND WORK WITH NEW AND EXISTING UNDERGROUND UTILITIES BEFORE INSTALLATION.
- ALL EMPTY CONDUITS SHALL BE PROVIDED WITH A FISH LINE.
- ALL UNDERGROUND CONDUITS SHALL BE P.V.C., EXCEPT WHERE ENTERING MANHOLES, HANDHOLES, BUILDINGS, LIGHT POLE BASES, AND TRANSFORMER PAD. UNDERGROUND CONDUITS AND/OR DUCTS SHALL BE RIGID GALVANIZED ALUMINUM WITHIN 5'-0" OF THE STRUCTURE. ALL CONDUITS AND/OR DUCTS UNDER BUILDINGS SHALL BE RIGID GALVANIZED STEEL.
- PROVIDE WATER TIGHT HUBS AT CONDUIT ENTRANCES TO ALL ENCLOSURES MOUNTED OUTDOORS AND AT ALL WATERTIGHT (NEMA TYPE 4 & 4X) ENCLOSURES MOUNTED INDOORS. ALL NEMA TYPE 4 & 4X ENCLOSURES, EXCEPT THOSE IN CORROSIVE AREAS, SHALL BE EQUIPPED WITH A DRAIN/BREATHER FITTING.
- EXPANSION OR EXPANSION/DEFLECTION FITTINGS SHALL BE PROVIDED FOR ALL CONDUITS CROSSING BUILDING EXPANSION JOINTS.
- ALL POWER FEEDERS SHALL BE RUN IN INDIVIDUAL CONDUITS, FROM SOURCE TO LOAD, AS INDICATED IN SCHEDULES, WIRING DIAGRAMS, OR BY HOME RUNS ON THE PLANS.
- ALL CONDUITS SHALL BE ROUTED TO AVOID OPENINGS IN FLOORS, ROOFS, AND WALLS. LADDERS UP WALLS SHALL NOT BE CROSSED BY EXPOSED CONDUIT RUNS. PROVIDE THE MINIMUM CLEAR SPACE REQUIRED BY ALL GOVERNING CODES BETWEEN HANDRAILS AND ALL ELECTRICAL ENCLOSURES AND RACEWAYS, WHICH IN NO CASE SHALL BE LESS THAN 1 1/2" CLEAR.
- ALL CONDUITS FOR 480VAC POWER FEEDERS, BRANCH CIRCUITS, AND INSTRUMENTATION SHALL BE RUN EXPOSED OVERHEAD, UNLESS SHOWN OTHERWISE ON THE PLANS.
- ALL ELECTRICAL FLOOR MOUNTED EQUIPMENT SUCH AS MOTORS, CONTROL PANELS, AND METALLIC SUPPORT RACKS SHALL HAVE A #2 (UNLESS OTHERWISE NOTED) BARE GROUND CONDUCTOR TIE BETWEEN THE MOTOR FRAME, ENCLOSURE, OR SUPPORT LEG AND THE BUILDING GROUND SYSTEM.
- GROUND CONDUCTOR SPLICING AND BONDING SHALL BE ACCOMPLISHED BY THE USE OF EXOTHERMIC WELDING.
- PROVIDE A GREEN GROUND CONDUCTOR IN ALL SYSTEMS CONDUITS, EXCEPT INSTRUMENT SIGNAL AND ALARM CONDUITS, INCLUDING BRANCH CIRCUIT CONDUITS FOR LIGHTING AND RECEPTACLES. GROUND CONDUCTOR SIZING SHALL BE PER N.E.C. TABLE 250.122 (MINIMUM) WHERE NOT SIZED ON THE DRAWINGS.
- COORDINATE EXACT LOCATION AND MOUNTING HEIGHTS OF ALL LIGHTING FIXTURES AND ELECTRICAL DEVICES WITH MECHANICAL PIPING AND DUCTWORK BEFORE INSTALLATION.
- ALL THREADED MECHANICAL CONNECTIONS ON ELECTRICAL EQUIPMENT (CONDUIT, COUPLINGS, JUNCTION BOXES, ETC.) INSTALLED WITHIN WET AREAS, HAZARDOUS AREAS, OR OUTDOORS SHALL BE COATED WITH ANTI-SEIZE COMPOUND PRIOR TO INSTALLATION.
- ALL WALL AND RACK MOUNTED DISCONNECT SWITCHES, CONTROL PANELS, AND LIGHTING PANELS SHALL BE 5'-6" TO TOP, ABOVE FINISHED FLOOR.
- ALL WEATHERPROOF (W.P.) DUPLEX RECEPTACLES SHALL BE INSTALLED SUCH THAT COVER DOORS OPEN UPWARD.
- ALL EXPOSED METALLIC ELECTRICAL EQUIPMENT, PULL BOXES, JUNCTION BOXES, CONDUITS, SUPPORTS, BRACKETS, HANGERS, NUTS, BOLTS, ETC. LOCATED WITHIN HAZARDOUS OR CORROSIVE AREAS, SHALL BE P.V.C. COATED WITH 40 MILS (MIN.) COVERING. WHERE FACTORY P.V.C. COATING IS NOT AVAILABLE OR WHERE P.V.C. COATING WOULD VOID U.L. LISTING OR LABELING, FACTORY OR FIELD COATING WITH A CORROSION RESISTANT, EPOXY PAINT SHALL BE PROVIDED.
- ALL PENETRATIONS OF FIRE WALLS OR FLOORS SHALL BE SEALED AFTER INSTALLATION OF CONDUIT WITH A FIRE RETARDANT SEALANT THAT IS RATED THE SAME AS THE FIRE WALL OR FLOOR.
- ALL CONDUITS AND/OR SLEEVES THAT PASS THROUGH WALLS OR FLOORS SEPARATING HAZARDOUS AREAS FROM NON-HAZARDOUS AREAS SHALL BE SEALED GAS-TIGHT WITH NON-METALLIC, NON SHRINK GROUT AFTER CONDUIT IS INSTALLED.
- ALL WALL MOUNTED ELECTRICAL EQUIPMENT SHALL HAVE A 1/2" (MINIMUM) AIR SPACE BETWEEN WALL AND EQUIPMENT (PROVIDE NON-CORROSIVE SPACERS OR BRACKETS AS REQUIRED).
- FOR ALL WALL MOUNTED EQUIPMENT WITHIN HAZARDOUS OR CORROSIVE AREAS USE STAINLESS STEEL ANCHORS AND 1/2" STAINLESS STEEL SPACERS ON STAINLESS STEEL ANCHOR BOLTS TO PROVIDE A 1/2" AIR SPACE BETWEEN THE EQUIPMENT AND THE WALL.
- ALL FLOOR OR PAD MOUNTED ELECTRICAL ENCLOSURES SHALL BE SPACED 1" OUT FROM EXTERIOR WALLS (MINIMUM).
- FOR ALL 120 VAC LIGHTING AND RECEPTACLE CIRCUITS, RUN 2-#12 (MINIMUM) + #12 GRD., 3/4" C. TO THE LIGHTING PANELBOARD INDICATED, UNLESS NOTED OTHERWISE. SEE THE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS FOR BRANCH CIRCUIT WIRING.

DEMOLITION NOTES:

(APPLIES TO ALL DRAWINGS WHERE APPLICABLE)

- THE CONTRACTOR SHALL VISIT THE JOB SITE AND THOROUGHLY CHECK THE FIELD CONDITIONS AND THE EXISTING ELECTRICAL INSTALLATION PRIOR TO SUBMITTING A BID.
- ALL DEMOLITION WORK SHALL BE COORDINATED WITH THE OWNER.
- ALL ELECTRICAL DEMOLITION WORK SHALL INCLUDE REMOVING OF EXISTING LIGHTING FIXTURES, DISCONNECT SWITCHES, WIRE, CONDUIT, BOXES, ETC., AS INDICATED ON THE DRAWINGS AND SHALL BE BY THIS CONTRACTOR.
- REMOVE ALL CONDUIT, WIRE, HANGERS, CLAMPS, ETC. THAT ARE NOT BEING RE-USED UNLESS CONCEALED ABOVE CEILINGS OR IN WALLS, WHICH MAY BE ABANDONED AND LEFT IN PLACE. CONDUIT IN FLOOR SLAB SHALL BE CUT FLUSH WITH SLAB AND PLUGGED WITH NON-SHRINK GROUT.
- REMOVE ALL WIRE IN EXISTING CONCEALED ABANDONED CIRCUITS, EXISTING CONCEALED CONDUITS (IF APPLICABLE) MAY BE REUSED FOR NEW WIRING.
- EXISTING CONDUITS AND BRANCH CIRCUIT WIRING MAY BE RE-USED WHERE APPLICABLE. IF CONDUIT AND WIRING IS NOT RE-USED IT SHALL BE REMOVED.
- ALL OPENING CREATED BY REMOVAL OF CONDUITS THROUGH EXISTING WALLS OR FLOORS SHALL BE SEALED WATER TIGHT TO MATCH EXISTING.
- REVISE ALL EXISTING LIGHTING PANEL DIRECTORIES AND MCC NAMEPLATES TO REFLECT ALL REVISIONS TO BRANCH CIRCUIT BREAKERS IN THE EXISTING PANELS AND MCC'S.
- VERIFY REMOVAL OF ALL EXISTING POWER AND CONTROL WIRING WITH THE OWNER PRIOR TO START OF DEMOLITION WORK.
- ALL SALVAGE ELECTRICAL EQUIPMENT SHALL BECOME THE PROPERTY OF THE OWNER AND SHALL BE STORED AT AN ON SITE LOCATION AS DIRECTED BY THE OWNER.
- ALL EXISTING PANELBOARDS, LIGHTING FIXTURES, WIRING DEVICES, TELEPHONE OUTLETS, ETC., SHALL REMAIN IN THEIR EXISTING LOCATIONS, UNLESS OTHERWISE NOTED ON THE DRAWINGS.
- REMOVE EQUIPMENT AS SHOWN, INCLUDING ALL ASSOCIATED CONDUIT AND WIRE.
- ALL ELECTRICAL EQUIPMENT WITHIN THE EXISTING CLARIFIER VAULT SHALL BE REMOVED (CONDUIT, WIRE, FLOAT SWITCHES, LIGHTS CONTROL PANELS, FLOW METERS AND ETC.).
- ALL INTERRUPTIONS OF POWER (IF REQUIRED) FOR DISCONNECTING OR CONNECTIONS OF POWER FOR THE NEW EQUIPMENT INSTALLATION SHALL BE AUTHORIZED BY THE OWNER.

ELECTRICAL ABBREVIATIONS LIST

A	AMPERE, AUTO, OR AMBER	HTR	HEATER	PTZ	PAN-TILT-ZOOM POWER
AC	ALTERNATING CURRENT	HV	HIGH VOLTAGE	QTY	QUANTITY
A/C	AIR CONDITIONING	HZ	HERTZ	R	REMOTE OR RED
AF	CIRCUIT BKR FRAME SIZE	INCAND	INCANDESCENT	RAC	RIGID ALUMINUM CONDUIT
AG	ABOVE GROUND	INST	INSTANTANEOUS	RECP	RECEPTACLE
AIC	AMPS INTERRUPTING CAPACITY	INSTR	INSTRUMENT	REF	REFERENCE
AL	ALUMINUM	IO	INPUT/OUTPUT	REG	REGULATOR
AM	AMMETER	ISO	ISOLATION	RGS	RIGID GALVANIZED STEEL
AMP	AMPERES	JB	JUNCTION BOX	RMS	ROOT MEAN SQUARE
ANN	ANNUNCIATOR	JCT	JUNCTION	RTU	REMOTE TELEMETRY UNIT
AN	AMMETER SWITCH	KA	THOUSAND AMPERES	RVA	REduced VOLTAGE
AS	AMMETER SWITCH CIRCUIT BREAKER TRIP SETTING	KAIC	THOUSAND AMPERES INTERRUPTING CAPACITY	RVSS	REDUCED VOLTAGE AUTO TRANSFORMER
AT	SETTING	KCMIL	THOUSAND CIRCULAR MILS	S	SPARE
ATS	AUTOMATIC TRANSFER SWITCH	KVA	KILOVOLT AMPERE	S.S.	STAINLESS STEEL
AWG	AMERICAN WIRE GAUGE	KW	KILOWATT	SA	LOCAL SURGE ARRESTOR
BATT	BATTERY	L	LOCAL CONTROL PANEL	SEQ	SEQUENCE
BKR	BREAKER	LCP	LOCAL CONTROL PANEL	SF	SUPPLY FAN
BL	BLUE	LCS	LOCAL CONTROL STATION	SH	SODIUM HYPOCHLORITE
BLK	BLACK OR BLACK BLOWER	LOC	LOCAL	SHLD	SHIELD
BLWR	BLK BLWR	LOR	LOCAL-OFF-REMOTE	SIG	SIGNAL
BRN	BROWN	LOS	LOCKOUT STOP	SP	SPARE
C	CONDUIT OR CLOSED CONDUCTOR	LP	LIGHTING PANEL	SP HTR	SPACE HEATER
CAP	CAPACITOR	LRA	LOCKED ROTOR AMPS	SPD	SPEED, SURGE
CB	CIRCUIT BREAKER	LS	LEVEL SWITCH	SPDT	PROTECTIVE DEVICE
CKT	CIRCUIT	LT	LEVEL TRANSMITTER	SPST	SINGLE POLE, DOUBLE THROW
CLF	CURRENT LIMITING FUSE	LTG	LIGHTING	SS	SOLID STATE
CMPT	COMPARTMENT	LVS	LOW VOLTAGE	SSL	SPEED SWITCH LOW
COM	COMMON	LV	LOW VOLTAGE	SSW	SELECTOR SWITCH
COMM	COMMUNICATION	M	MOTOR CONTACTOR	STR	STARTER
COMP	COMPRESSOR	MA	MILLIAMPERE	SW	SWITCH
COND	CONDUCTOR	MCC	MOTOR CONTROL CENTER	SWBD	SWITCHBOARD
CONT	CONTINUED	MCM	THOUSAND CIRCULAR MILS	SWG	SWITCHGEAR
CP	CONTROL PANEL OR CHEMICAL PUMP	MCP	MOTOR CIRCUIT PROTECTOR	SY	SYSTEM
CPT	CONTROL POWER XFMR	MFG	MANUFACTURER	TACH	TACHOMETER
CR	CONTROL RELAY	MH	METAL HALIDE, MOUNTING HEIGHT OR MANHOLE	TB	TERMINAL BLOCK
CR CT	CURRENT TRANSFORMER	MLO	MAIN LUGS ONLY	TD	TIME DELAY
CL	CONTROL LOOP	MOV	MOTOR OPERATED VALVE	TEL	TELEPHONE
CH	CHANNEL	MS	MINI-POWER ZONE	TERM	TERMINAL OR TERMINATION
DCS	DISTRIBUTED CONTROL SYSTEM	MTR	MOTOR STARTER	TL	TRIP LOCK
DISC	DISCONNECT	MTS	MOTOR SWITCH	TR	TIMING RELAY
DEMO	DEMOLITION	N	NEUTRAL	TS	TEMPERATURE SWITCH
DISTR	DISTRIBUTION	N/A	NOT APPLICABLE	TSP	TWISTED, SHIELDED PAIR
DISCHG	DISCHARGE	NC	NORMALLY CLOSED	TSTAT	THERMOSTAT
DM	DEMAND METER	NEMA	NATIONAL ELECTRICAL ASSOCIATION	TTC	TELEPHONE TERMINAL CABINET
DP	DISTRIBUTION PANEL	NF	NON-FUSIBLE	TVSS	TRANSIENT VOLTAGE SUPPRESSOR
DPDT	DOUBLE POLE, DOUBLE THROW	NIC	NOT IN CONTRACT	TYP	TYPICAL
DPST	DOUBLE POLE, SINGLE THROW	NL	NIGHT LIGHT	UC	UNDER COUNTER
DSD	DUCT SMOKE DETECTOR	NO	NORMALLY OPEN	UG	UNDERGROUND
E	EMERGENCY	NP	NAMEPLATE	UH	UNIT HEATER
EMERG	EMERGENCY	NTS	NOT TO SCALE	UNO	UNLESS NOTED OTHERWISE
EMT	ELECTRICAL METALLIC TUBING	O	OPEN OR OFF	UPS	UNINTERRUPTIBLE POWER SUPPLY
ENCL	ENCLOSURE	OL	OVERLOAD	UTIL	UTILITY
ETM	ELAPSED TIME METER	ORN	ORANGE	V	VOLTAGE OR VOLTS
EP	EXPLOSION	PA	PUBLIC ADDRESS	V	VOLT AMPERES
EF	EXHAUST FAN	PB	PUSHBUTTON OR PULLBOX	VAR	VOLT-AMPERE REACTIVE
EWS	EYE WASH STATION	PC	PHOTOCELL	VFD	VARIABLE FREQUENCY DRIVE
F	FREQUENCY OR FUSE	PF	POWER FACTOR	VM	VOLTMETER
FDR	FEEDER	PH	PHASE	VS	VOLTMETER SWITCH
FLA	FULL LOAD AMPERES	PL	PILOT LIGHT	VP	VAPOR PROOF
FLUOR	FLUORESCENT	PLC	PROGRAMMABLE LOGIC CONTROLLER	W	WATT OR WIRE
FO	FIBER OPTIC	PNL	PANEL	W/	WITH
FT	FLOW TRANSMITTER	PMP	PUMP	WH	WHITE
FVR	FULL VOLT. REVERSING	PP	POWER PANEL OR PROCESSOR PANEL	WHM	WATT HOUR METER
FVNR	FULL VOLTAGE NON-REVERSING	POS	POSITION	WP	WEATHER-PROOF
G	GROUND	POT	POTENTIAL	WT	WEIGHT
GEN	GENERATOR	PR	PAIR	WTR	WATER
GFCI	GROUND FAULT CIRCUIT INTERRUPTER	PRI	PRIMARY	XFMR	TRANSFORMER
GND	GROUND	PS	PRESSURE SWITCH OR POWER SUPPLY	XMTR	TRANSMITTER
GRN	GREEN	PT	POTENTIAL TRANSFORMER OR PRESSURE	XP	EXPLOSION PROOF
H	HAND			Y	YELLOW
HC	HAND CONTROL			Z	POSITION (LIMIT) SWITCH
HD	HEAT DETECTOR			@	ANGLE
HH	HANDHOLE			Δ	AT
HI	HIGH INTENSITY			Δ°	DELTA DEGREES
HOA	HAND-OFF-AUTOMATIC			°	FEET
HOR	HAND-OFF-REMOTE			+	INCHES
HP	HORSEPOWER			#	NUMBER
HPS	HIGH PRESSURE SODIUM			Ø	PHASE
HS	HAND SWITCH			CL	CENTER LINE
				P	PLATE

							TSW	BY



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**BATTERY B SECONDARY
CLARIFIER FLOW CONTROL**

GENERAL NOTES AND ABBREVIATIONS

ISSUED FOR: BIDS DATE: 2023.06.24 BY: TSW

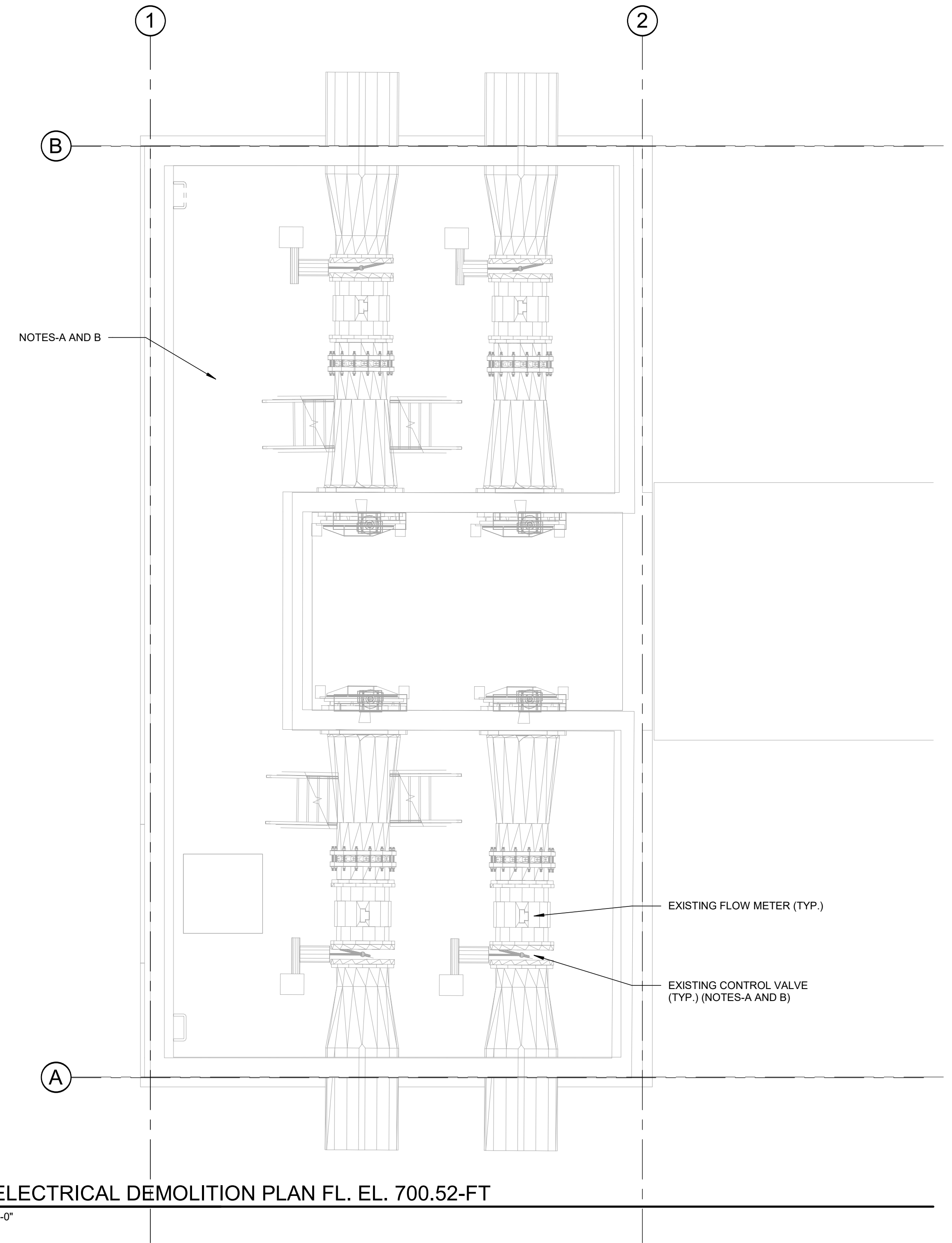
JOB NO.
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E-002

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VAULT ELECTRICAL DEMOLITION PLAN FL. EL. 700.52-FT
 SCALE: 1/4" = 1'-0"

- DEMOLITION NOTES:
- A. DISCONNECT AND REMOVE ALL ELECTRICAL EQUIPMENT, DEVICES, CONDUIT, AND WIRE WITHIN VAULT.
 - B. REMOVE WIRE BACK TO SOURCE, REMOVE CONDUIT IN VAULT, PLUG AND CAP ALL CONDUITS ROUTED THROUGH WALLS, AND SEAL WATERTIGHT.
 - C. TURN OFF ALL EXISTING BREAKERS AND LABEL AS SPARE.
 - D. EXISTING POWER FROM TRICKLING FILTER BUILDING.

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**BATTERY B SECONDARY
 CLARIFIER FLOW CONTROL
 ELECTRICAL DEMOLITION PLAN - CLARIFIER
 STRUCTURE**

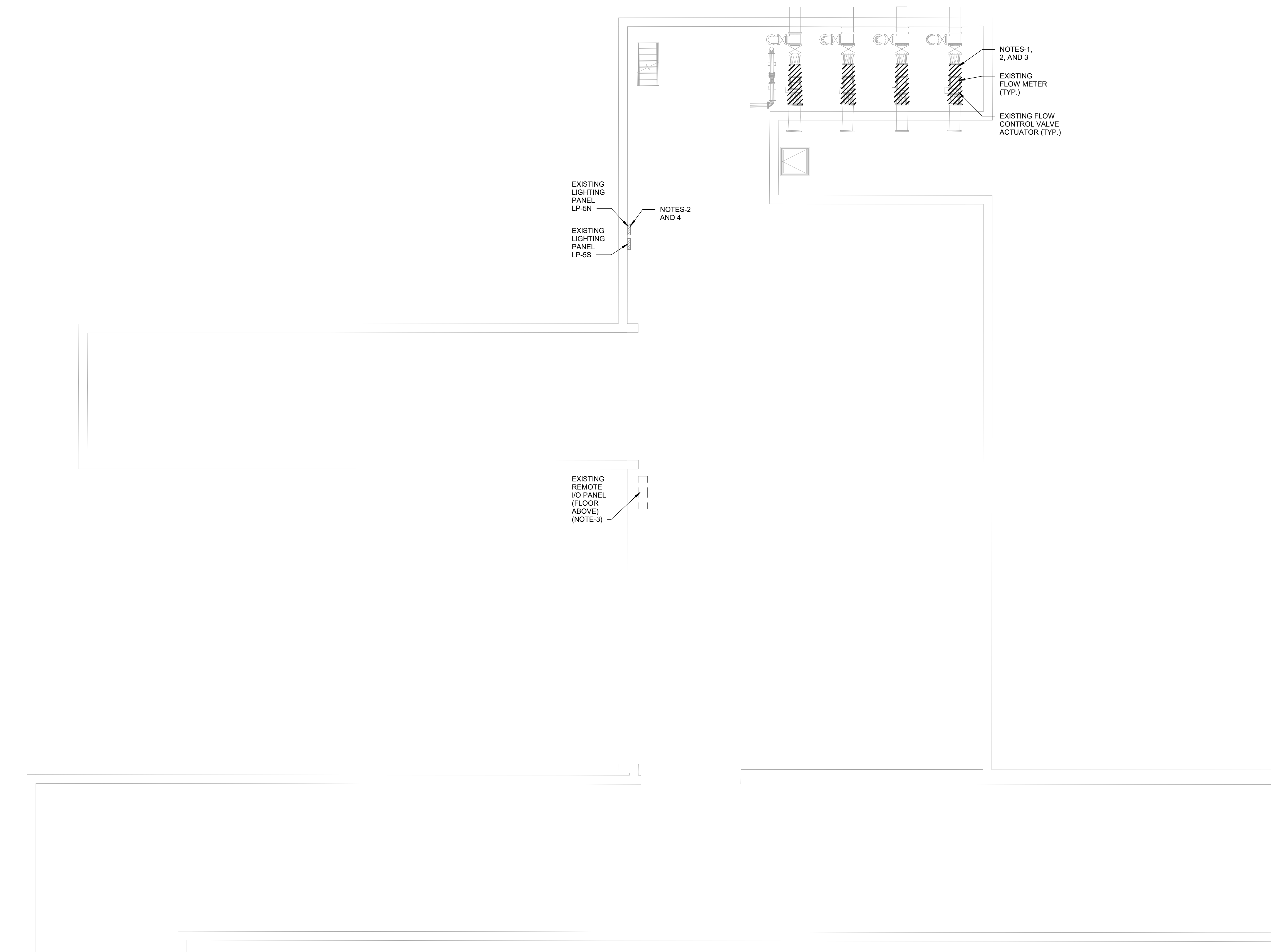
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EX-101

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ELECTRICAL DEMOLITION PLAN - BATTERY B/EQUIPMENT BUILDING

SCALE: 1/8" = 1'-0"

DEMOLITION NOTES:

1. DISCONNECT AND REMOVE EXISTING FLOW METERS AND FLOW CONTROL VALVE ACTUATORS.
2. REMOVE WIRE BACK TO SOURCE, LP-5N. REMOVE UNUSED CONDUIT, FURNISH AND INSTALL CAP FOR CONDUIT THAT REMAINS AND IS BEING USED.
3. REMOVE CONTROL WIRE AND CONDUIT BACK TO SOURCE AND BACK TO CONTROL PANEL AT GRADE ABOVE.
4. REMOVE AND REPLACE EXISTING CIRCUIT BREAKER IN LP-5N FOR FLOW METERS AND VALVE ACTUATORS.

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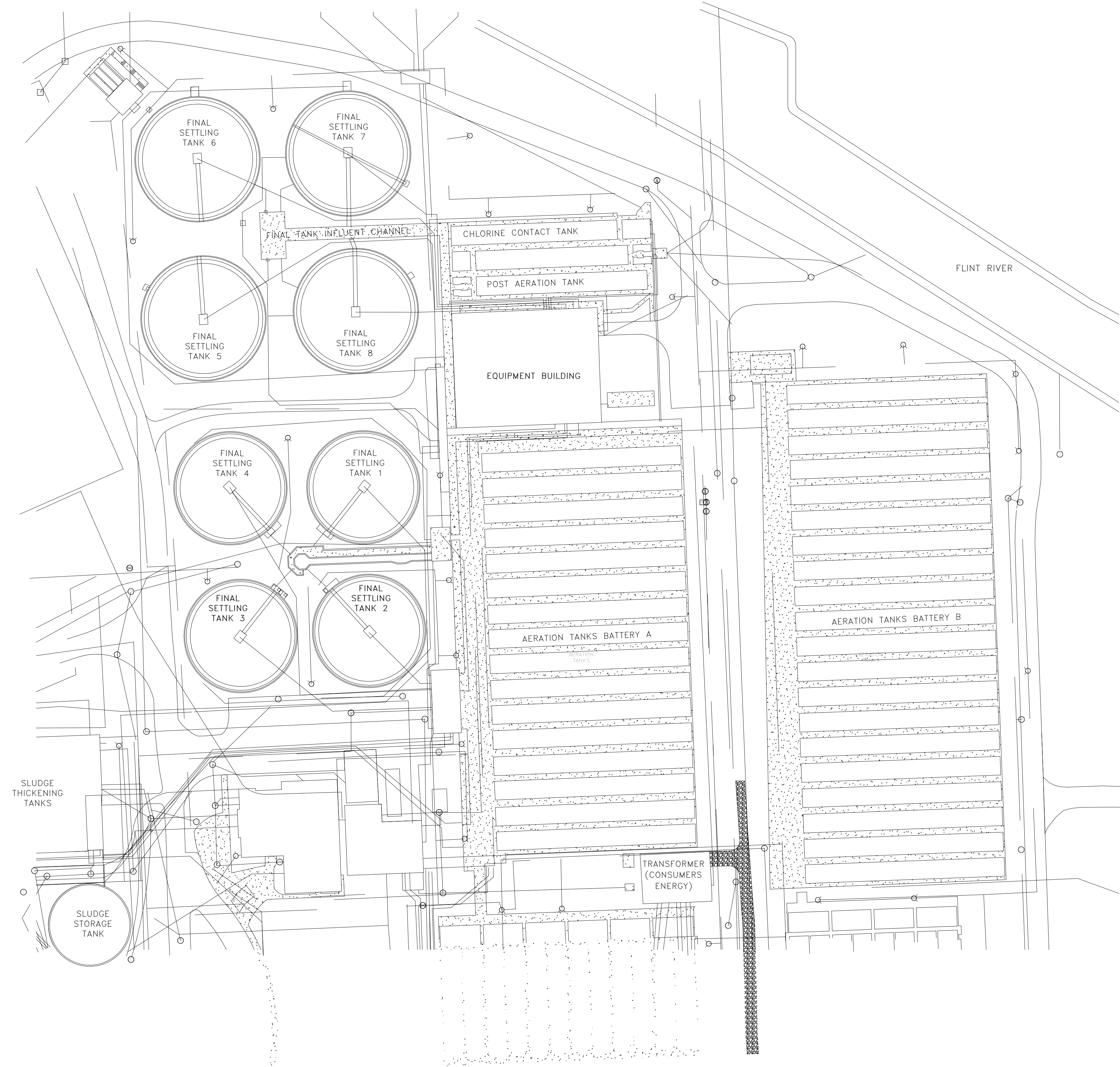
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BATTERY B SECONDARY CLARIFIER FLOW CONTROL
ELECTRICAL DEMOLITION PLAN - BATTERY B/EQUIPMENT BUILDING

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SHEET EX-102



ELECTRICAL SITE PLAN
SCALE: 1" = 60'-0"

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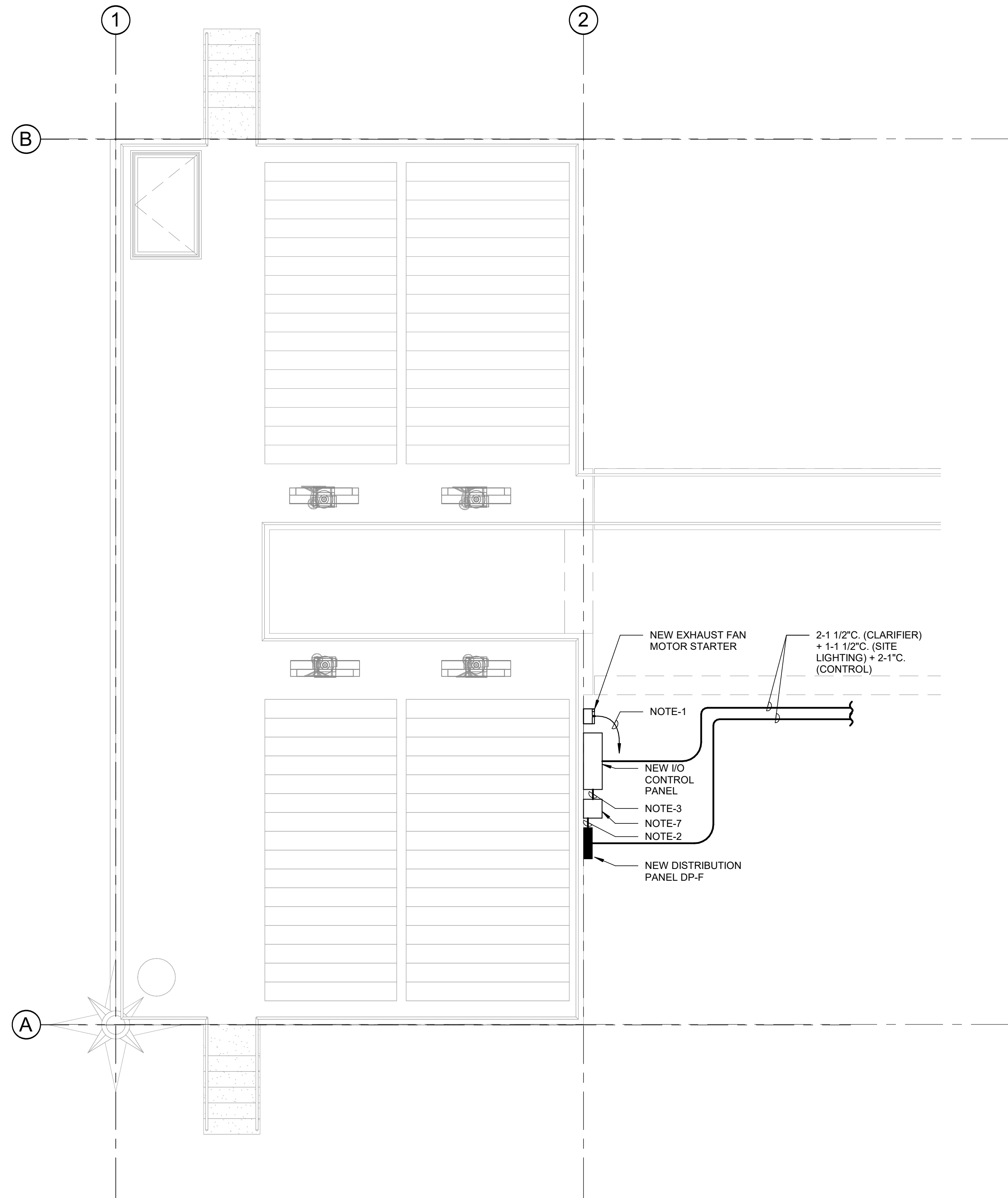
BATTERY B SECONDARY CLARIFIER FLOW CONTROL
ELECTRICAL SITE PLAN

ISSUED FOR: BIDS DATE: 2023.06.24 BY: TSW

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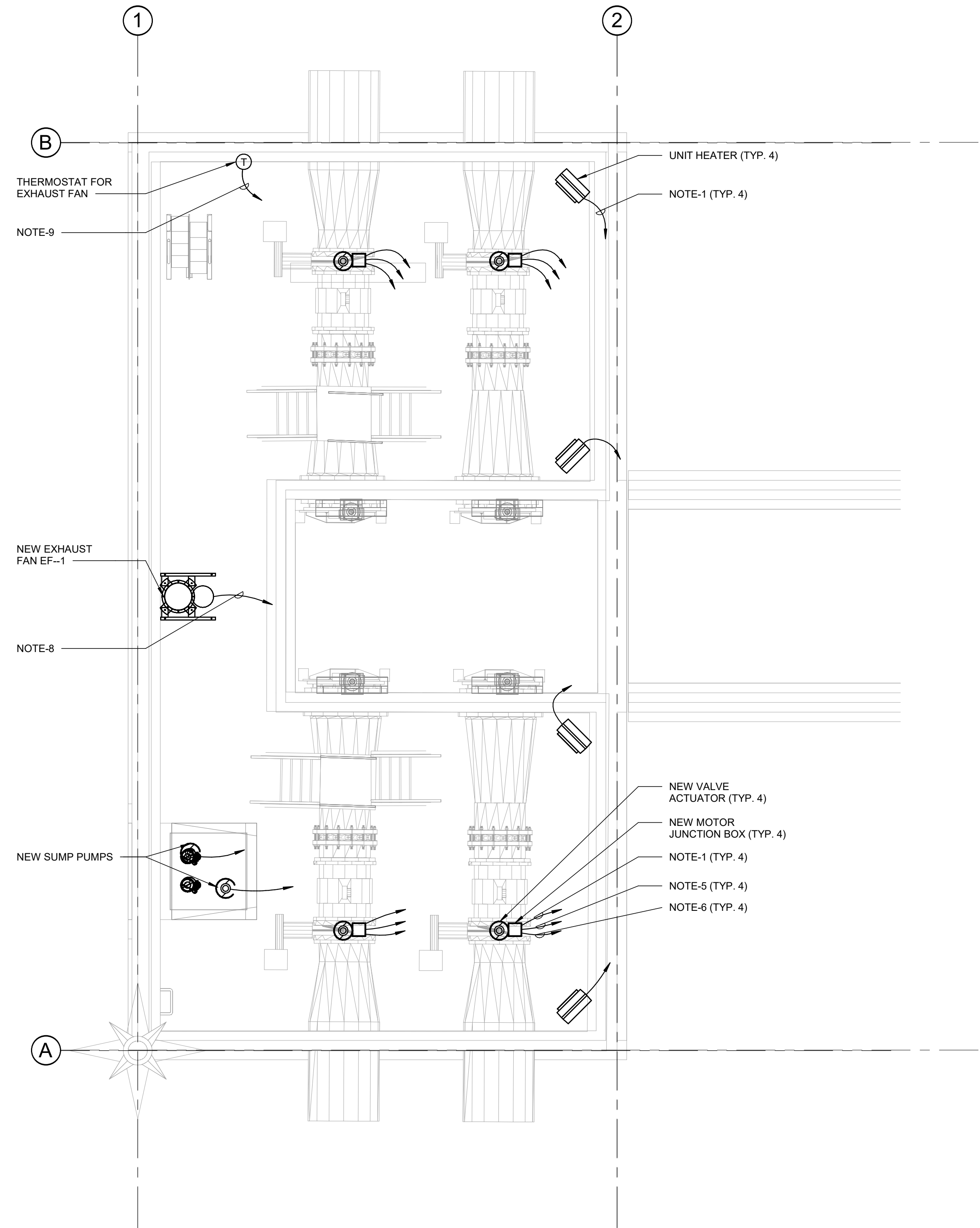
SHEET
E-101

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VAULT ELECTRICAL PLAN FL. EL. 715.50-FT

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



VAULT ELECTRICAL PLAN FL. EL. 700.52-FT

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

PLAN NOTES:

1. 3-#12 + GRD., 3/4" C. TO DP-A.
2. 2-#10 + 1-#12 GRD., 3/4" C.
3. 2-#12 + 1-#12 GRD., 3/4" C.
4. INSTALL I/O CONTROL PANEL. PANEL FURNISHED BY OTHERS, SEE APPENDIX FOR PANEL DESCRIPTION.
5. 2PR-#18 SHLD., 3/4" C. TO I/O CONTROL PANEL.
6. 6-#14, 3/4" C. TO I/O CONTROL PANEL.
7. MINI-LOAD CENTER, 480-240/120V, 10 KVA, 1-PHASE.
8. 3-#12 + 1-#12 GRD., 3/4" C. TO EXHAUST FAN MOTOR STARTER.
9. 2-#14, 3/4" C. TO EXHAUST FAN MOTOR STARTER.

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**BATTERY B SECONDARY
 CLARIFIER FLOW CONTROL
 VAULT ELECTRICAL PLAN**

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E-102

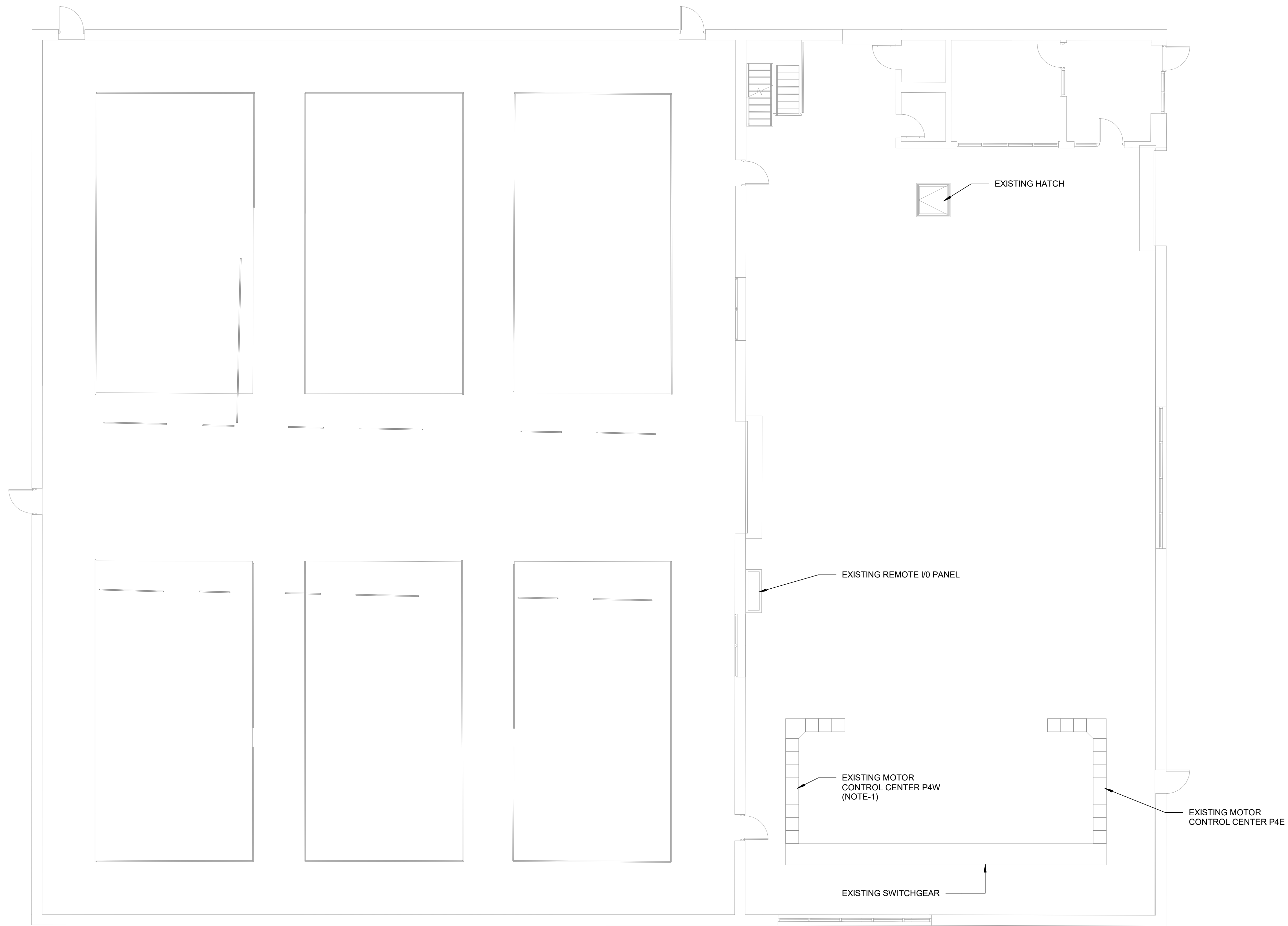
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EQUIPMENT BUILDING GRADE FLOOR ELECTRICAL PLAN

SCALE: 1/8" = 1'-0"

PLAN NOTES:

1. FURNISH AND INSTALL NEW MCC BUCKET AND 60A, 3-POLE CIRCUIT BREAKER.

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**BATTERY B SECONDARY
 CLARIFIER FLOW CONTROL
 EQUIPMENT BUILDING GRADE FLOOR
 ELECTRICAL PLAN**

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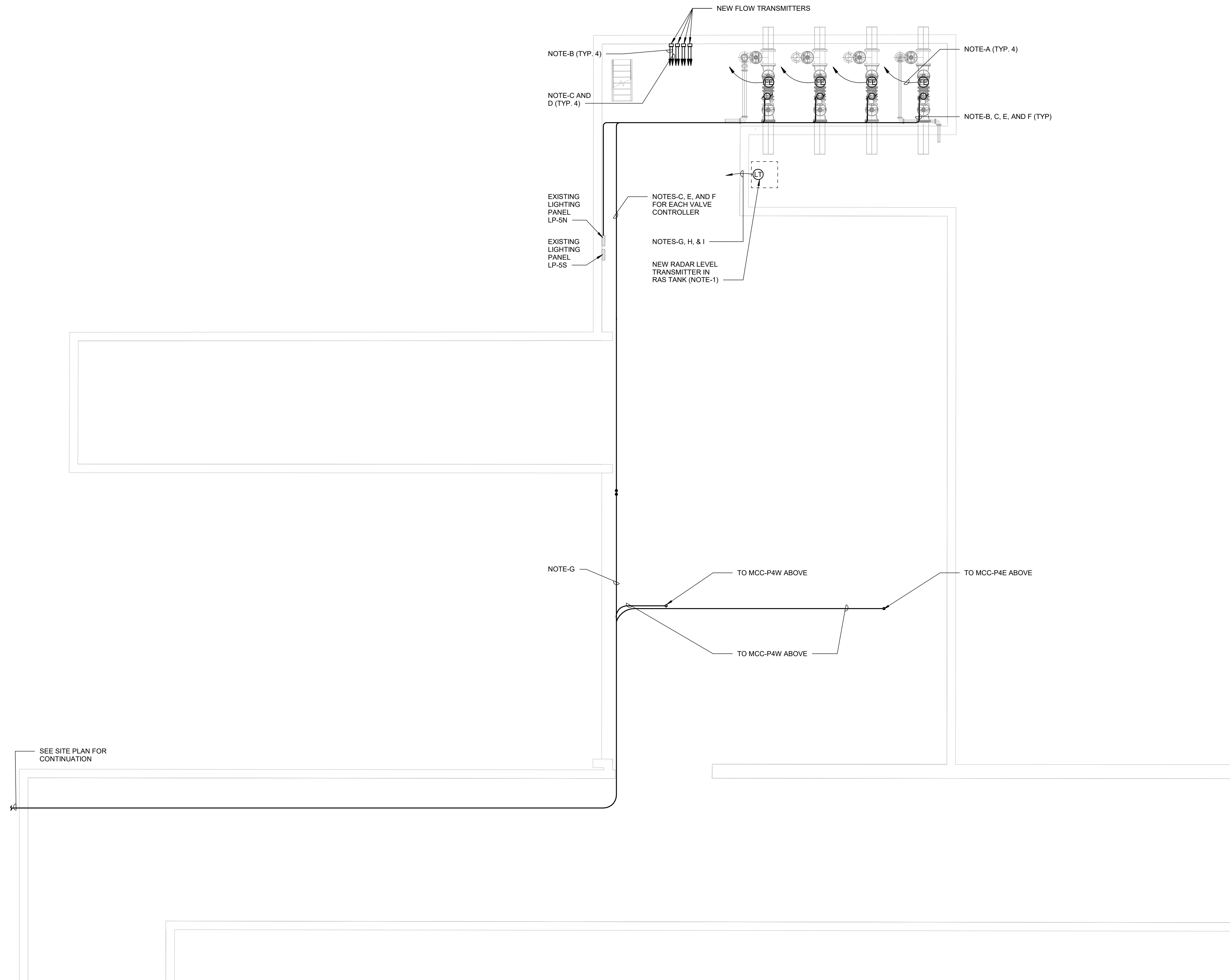
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EQUIPMENT BUILDING LOWER LEVEL ELECTRICAL PLAN

SCALE: 1/8" = 1'-0"

- PLAN NOTES:
- A. MANUFACTURER'S SPECIAL CABLE, 3/4"C. TO FLOW TRANSMITTER.
 - B. 2-#12 + 1-#12 GRD., 3/4"C. TO EXISTING CIRCUIT BREAKER IN LP-5N.
 - C. 2PR-#18 SHLD., 3/4"C. TO EXISTING REMOTE I/O PANEL ON GRADE LEVEL.
 - D. RECONNECT FLOW SIGNAL TO EXISTING I/O POINT IN CONTROL PANEL.
 - E. 6-#14, 3/4"C. TO REMOVE I/O PANEL AT GRADE LEVEL.
 - F. CONNECT TO NEW I/O POINTS IN I/O PANEL.
 - G. 4-STRAND FIBER OPTIC CABLE (MULTIMODE), 1 1/4"C. FROM EXISTING I/O CONTROL PANEL ABOVE TO NEW REMOTE I/O PANEL AT CLARIFIER VAULT.
 - H. SEAL AROUND CONDUIT AT TANK WALL PENETRATION. WATER TIGHT.
 - I. NEW RADAR LEVEL TRANSMITTER TO BE MOUNTED NEAR TANK HATCH OPENING, AND TANK WALL PENETRATION NEAR TOP OF TANK.
 - J. 1-1/2"C. SPARE FROM EACH MCC TO CLARIFIER VAULT. CAP BELOW DISTRIBUTION PANEL DP-W.

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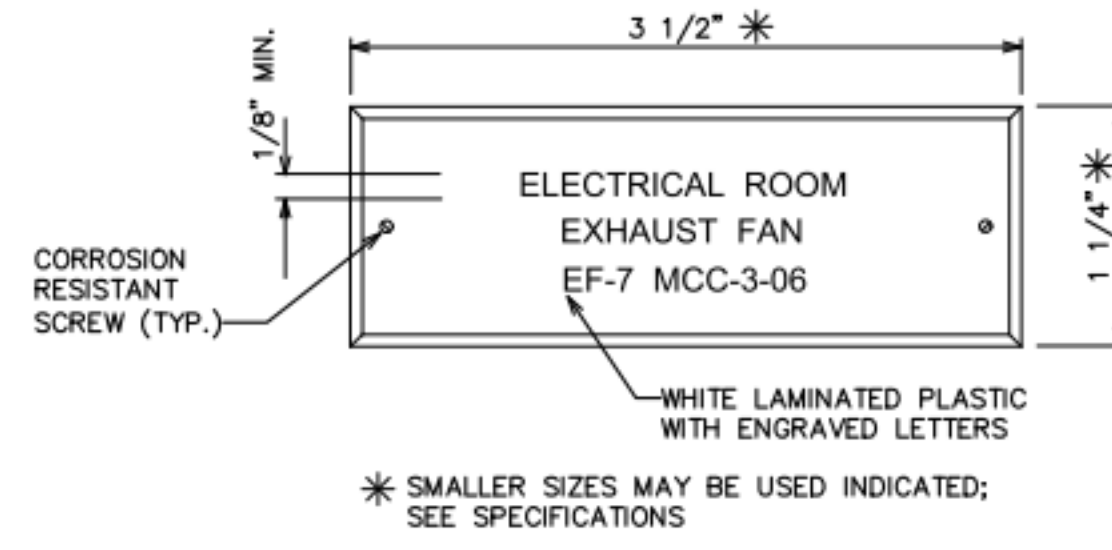
**BATTERY B SECONDARY
 CLARIFIER FLOW CONTROL
 EQUIPMENT BUILDING LOWER LEVEL
 ELECTRICAL PLAN**

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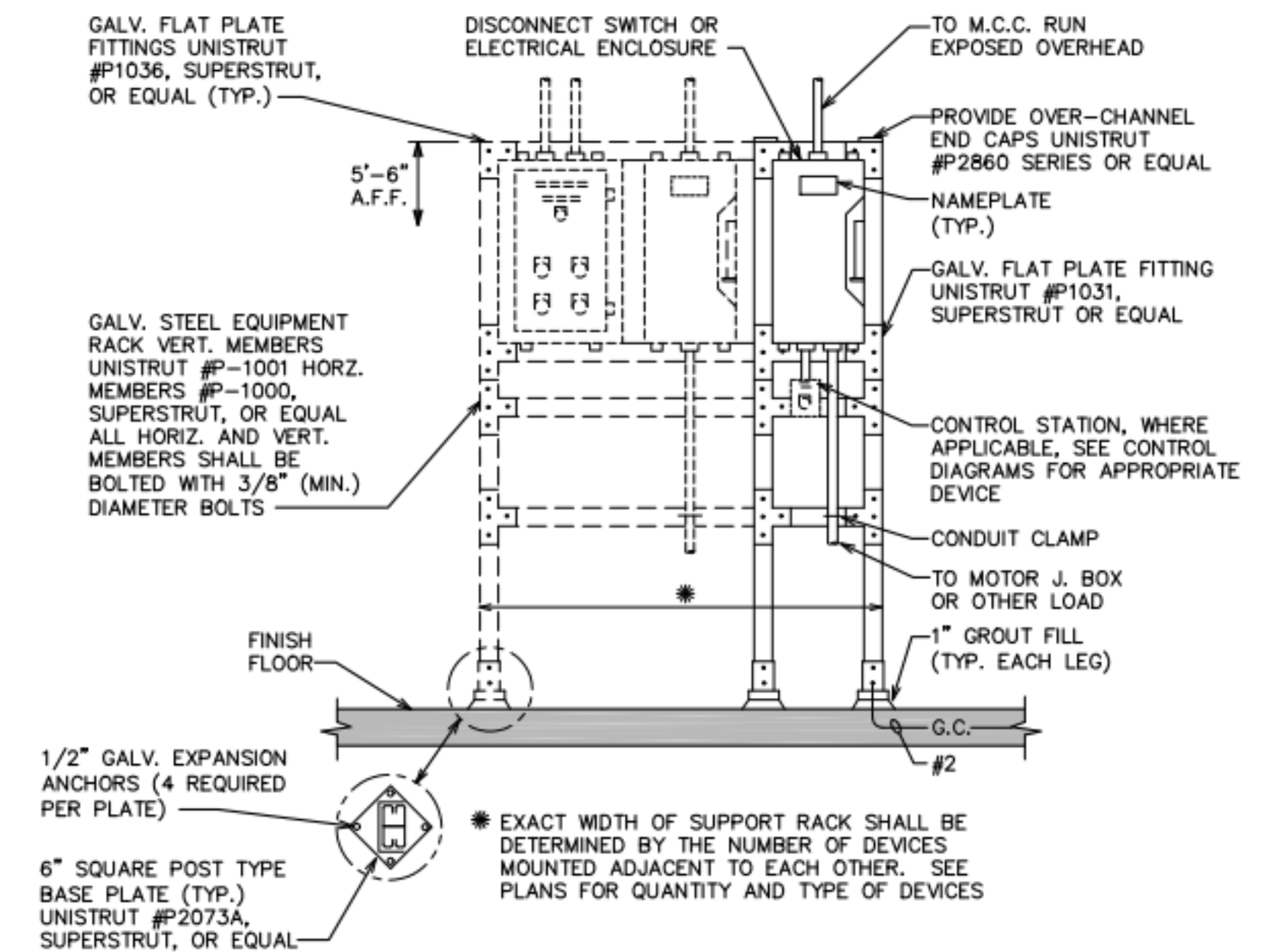
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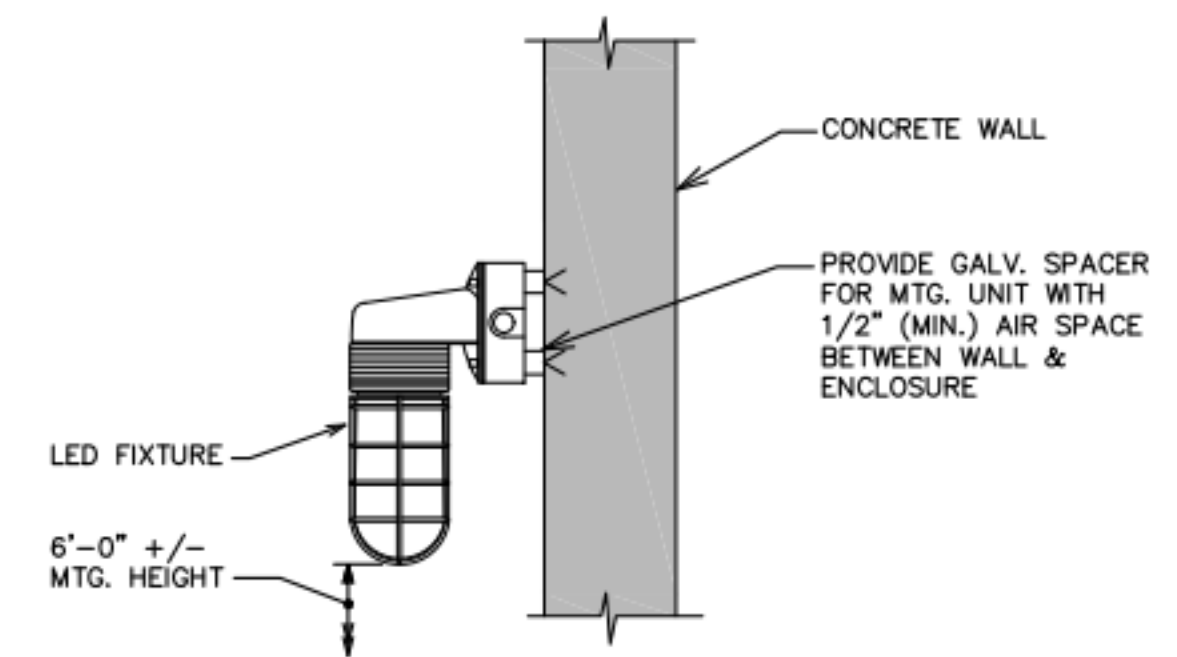
NAMEPLATE DETAIL
FULL SCALE



EQUIPMENT SUPPORT RACK DETAIL
N.T.S.

LIGHTING FIXTURE SCHEDULE				
TYPE	LAMP	OPERATING VOLTAGE	DESCRIPTION	MFR. CAT. NO.
"A"	15 WATT LED 4000K	120V.	WALL MOUNTED, (VAPOR-TIGHT) FIXTURE WITH FROSTED GLASS GLOBE, CAT ALUMINUM HOUSING, INTEGRAL SURGE PROTECTION, MINIMUM 50,000 HOURS, L80, MINIMUM 5 YEAR WARRANTY ON ALL PARTS	LITHONIA LIGHTING; OLVT SERIES OR EQUAL

FIXTURE SCHEDULE NOTES:
 * ALL LED FIXTURES MUST HAVE SURGE SUPPRESSION
 ** IF CATALOG NUMBER DOES NOT MEET THE FOLLOWING CRITERIA, THE CONTRACTOR OR MFR. SHALL REVISE CATALOG NUMBER AS REQUIRED.



TYPE "A" MOUNTING DETAIL
N.T.S.

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BATTERY B SECONDARY CLARIFIER FLOW CONTROL
 ELECTRICAL DETAILS

ISSUED FOR: BIDS DATE: 2023.06.24 BY: TSW

JOB NO. COF107601F

SHEET E-501

DP-F

Location:
 Supply From:
 Mounting: Surface
 Enclosure: Type 3R
 Notes:

Volts: 480V
 Phases: 3
 Wires: 3
 Bus:

A.I.C. Rating:
 Mains Type: CB
 Mains Rating: 150 A
 MCB Rating: 150 A

CKT	Circuit Description	Trip	P	Wire Size	A	B	C	Wire Size	P	Trip	Circuit Description	CKT
1	FINAL CLARIFIER #5 INFLUENT FCV (MV-10A)	20 A	3	3-#12 + 1-#12 GRD., 3/4"	0.30	0.30		3-#12 + 1-#12 GRD., 3/4"	3	20 A	FINAL CLARIFIER #7 INFLUENT FCV (MV-10C)	2
3						0.30	0.30					4
5								0.30	0.30			6
7	FINAL CLARIFIER #6 INFLUENT FCV (MV-10B)	20 A	3	3-#12 + 1-#12 GRD., 3/4"	0.30	0.30		3-#12 + 1-#12 GRD., 3/4"	3	20 A	FINAL CLARIFIER #8 INFLUENT FCV (MV-10D)	8
9						0.30	0.30					10
11								0.30	0.30			12
13					3.35	3.35						14
15	ELECTRIC UNIT HEATER EUH-1	20 A	3	3-#12 + 1-#12 GRD., 3/4"			3.35	3.35		20 A	ELECTRIC UNIT HEATER EUH-4	16
17								3.35	3.35			18
19					3.35	0.77						20
21	ELECTRIC UNIT HEATER EUH-2	20 A	3	3-#12 + 1-#12 GRD., 3/4"			3.35	0.77		20 A	EXHAUST FAN EF-1	22
23								3.35	0.77			24
25					3.35	1.33						26
27	ELECTRIC UNIT HEATER EUH-3	20 A	3	3-#12 + 1-#12 GRD., 3/4"			3.35	1.33		15 A	SUMP PUMP NO. 2	28
29								3.35	1.33			30
31					1.33	0.00						32
33	SUMP PUMP NO. 1	15 A	3	3-#12 + 1-#12 GRD., 3/4"			1.33	0.00		40 A	MINI LOAD CENTER (10KVA) LP-F	34
35								1.33	0.00	1	Spare	36
37					0.00	0.00				20 A		38
39	Spare	20 A	3	--			0.00	0.00		20 A	Spare	40
41								0.00	0.00			42
Total Load:					17.05 kVA		17.05 kVA		17.05 kVA			
Total Amps:					62 A		62 A		62 A			

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
HVAC	2304 VA	100.00%	2304 VA	Total Conn. Load: 51153 VA Total Est. Demand: 52009 VA Total Conn.: 62 A Total Est. Demand: 63 A
Heating	40200 VA	100.00%	40200 VA	
Motor	11639 VA	108.57%	12637 VA	

MINI LOAD CENTER LP-F

Location:
 Supply From: DP-F
 Mounting: Surface
 Enclosure: Type 3R
 Notes:

Volts: 208V/120V Single
 Phases: 1
 Wires: 3

A.I.C. Rating:
 Mains Type: MCB
 Mains Rating: 40 A
 MCB Rating: 60 A

CKT	Circuit Description	Trip	P	Wire Size	A	B	Wire Size	P	Trip	Circuit Description	CKT	
1					0.00		1-#12, 1-#12, 1-#12	1	20 A	FINAL CLARIFIER I/O...	2	
3											4	
5											6	
7											8	
9											10	
11											12	
13											14	
15											16	
17											18	
19											20	
21											22	
23											24	
25											26	
27											28	
29											30	
31											32	
33											34	
35											36	
37											38	
39											40	
41											42	
Total Load:					0.00 kVA		0.00 kVA					
Total Amps:					0 A		0 A					

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
				Total Conn. Load: 0 VA Total Est. Demand: 0 VA Total Conn.: 0 A Total Est. Demand: 0 A

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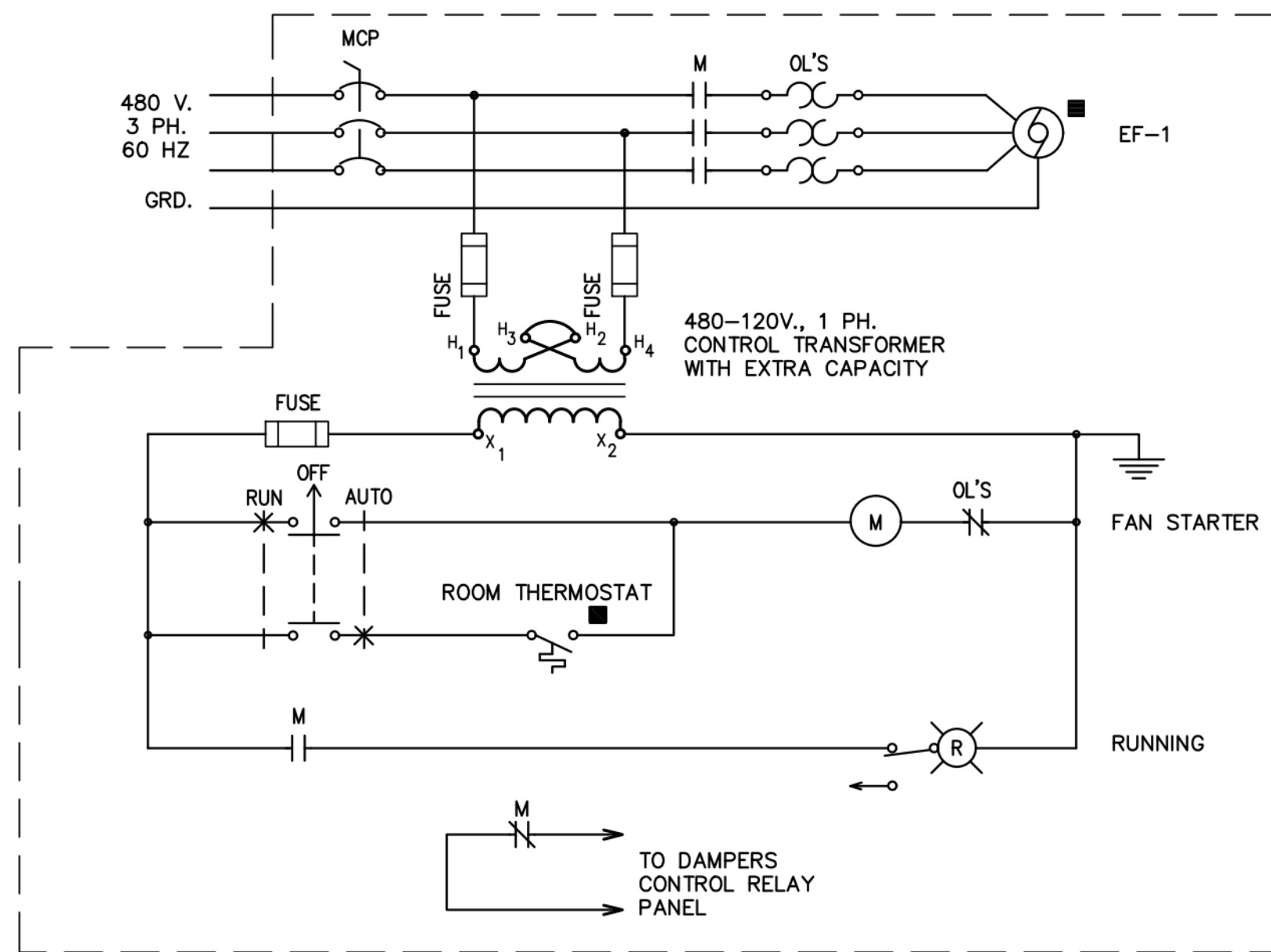
BATTERY B SECONDARY CLARIFIER FLOW CONTROL ELECTRICAL SCHEDULES

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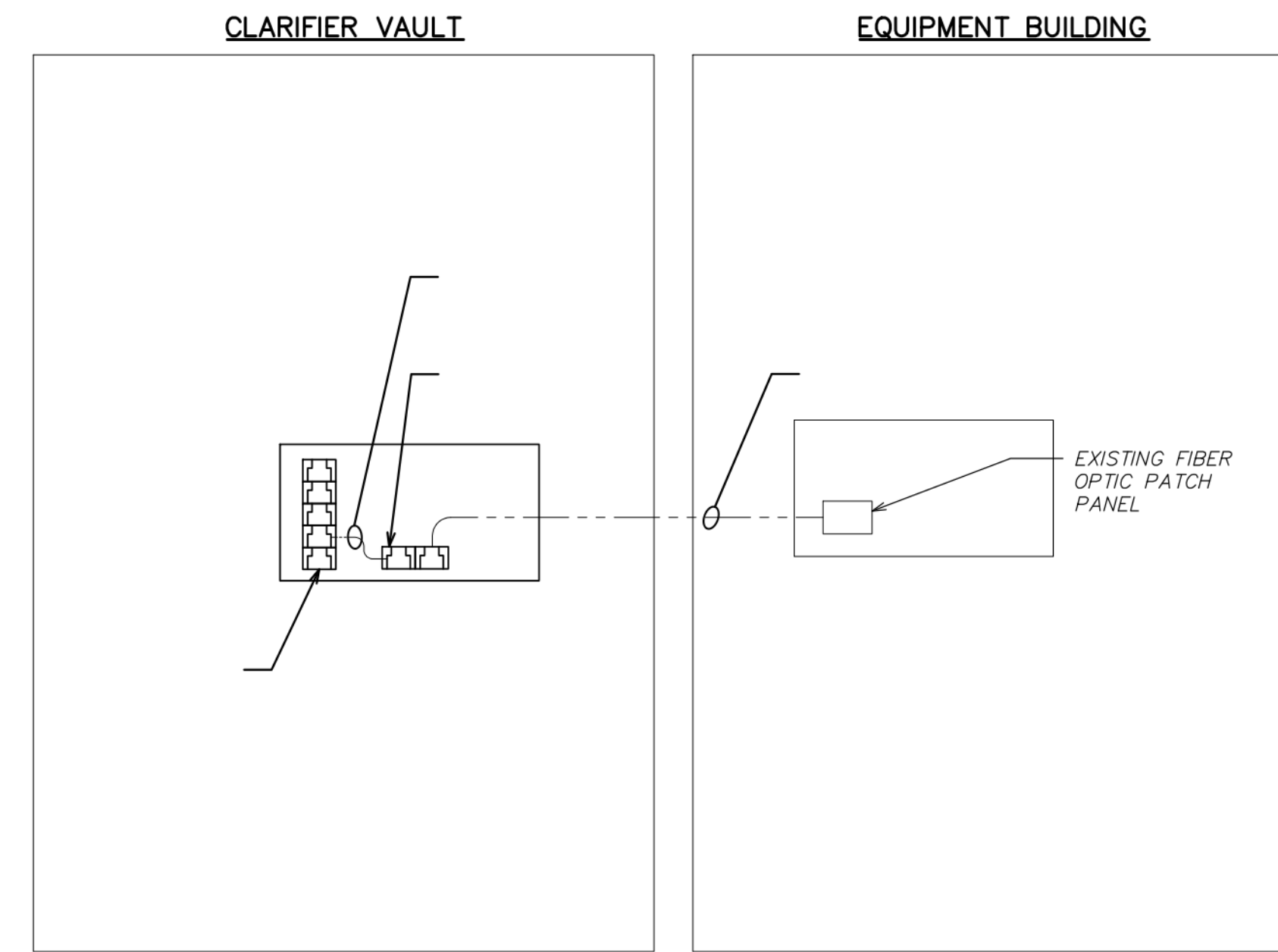
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SHEET E-601

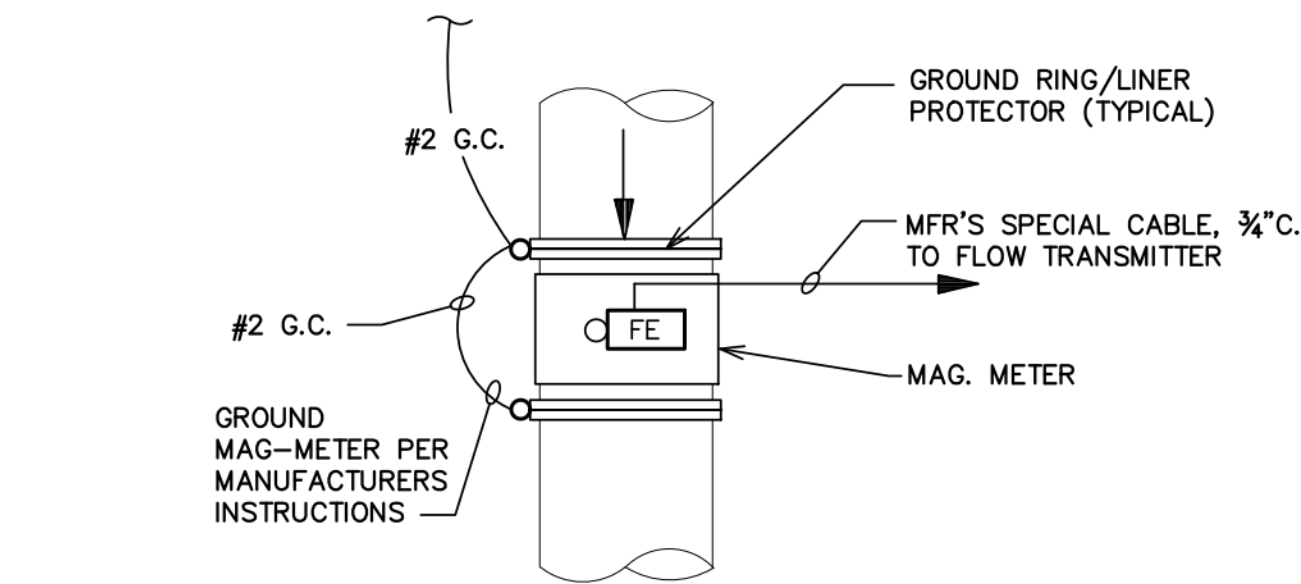
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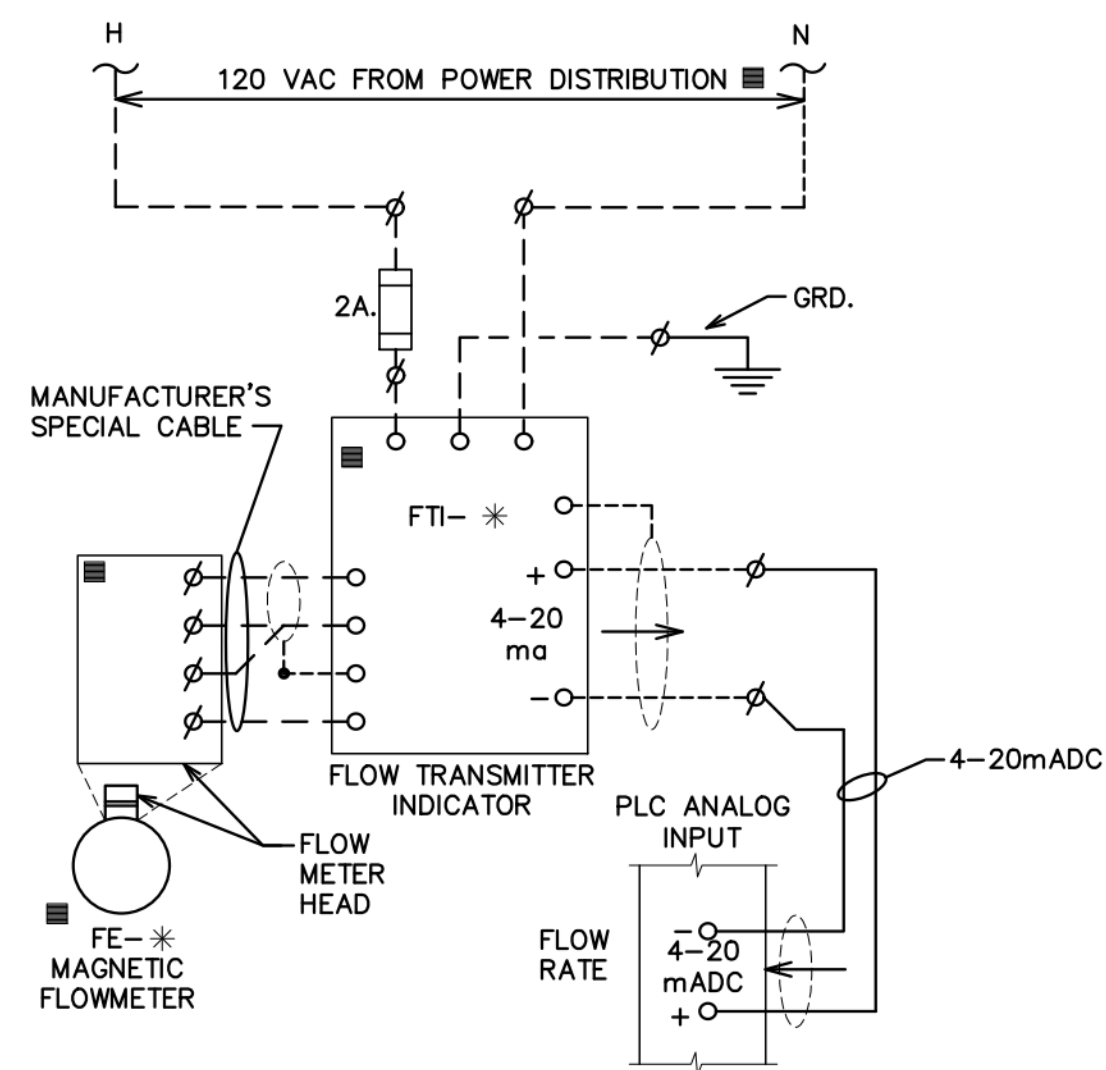
EXHAUST FAN EF-1



COMMUNICATIONS RISER DIAGRAM

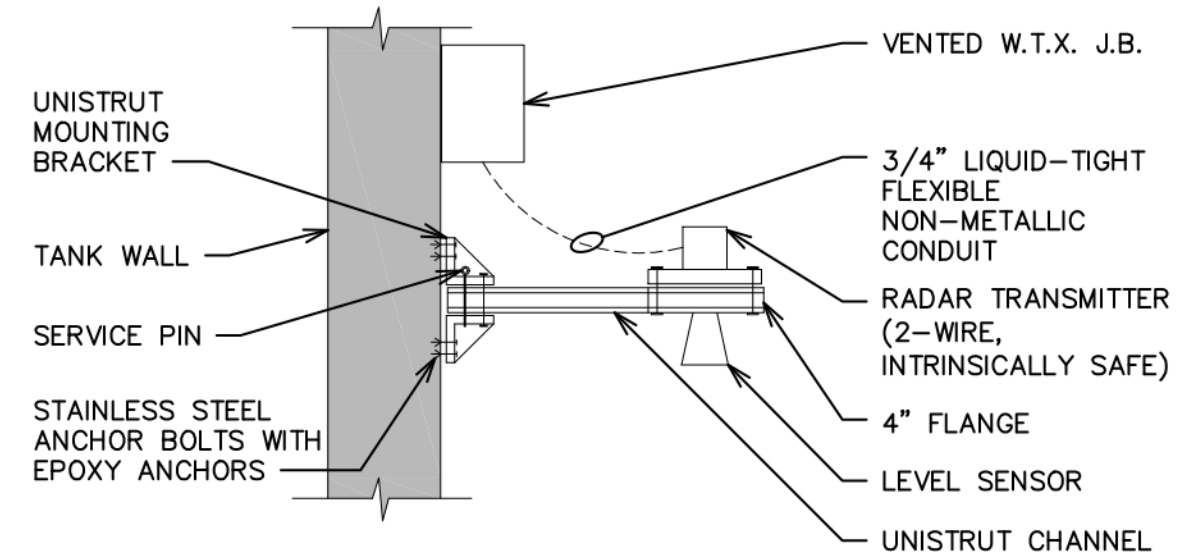


TYPICAL MAGNETIC FLOW METER INSTALLATION DETAIL
N.T.S.



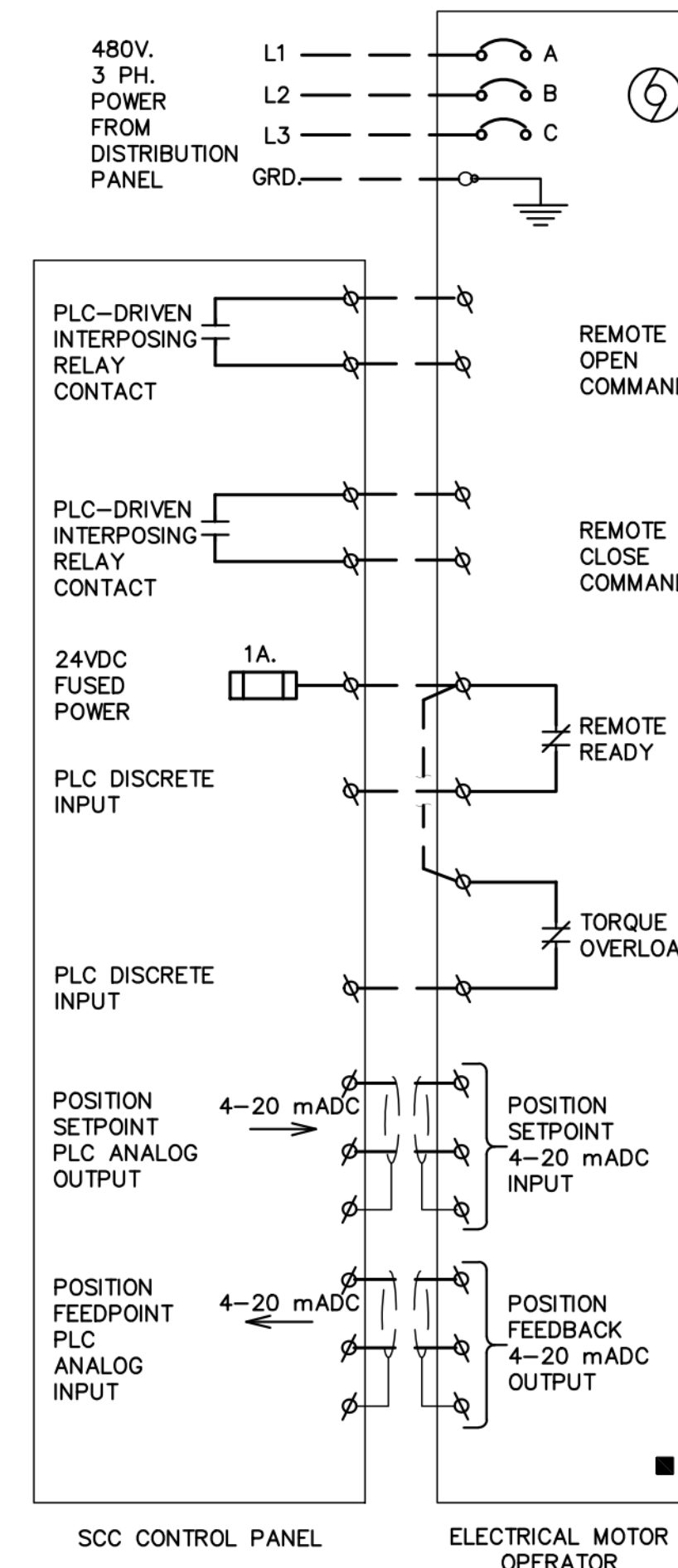
MAGNETIC FLOWMETER WIRING DIAGRAM (TYPICAL)

ALL DEVICES LOCATED IN CONTROL PANEL UNLESS OTHERWISE INDICATED BY ■
(MAGNETIC FLOWMETERS INSTALLED BELOW GRADE SHALL HAVE POTTED/SEALED HEADS, AND BE RATED SUITABLE FOR OCCASIONAL SUBMERGENCE; AS NOTED ON THE DRAWINGS)



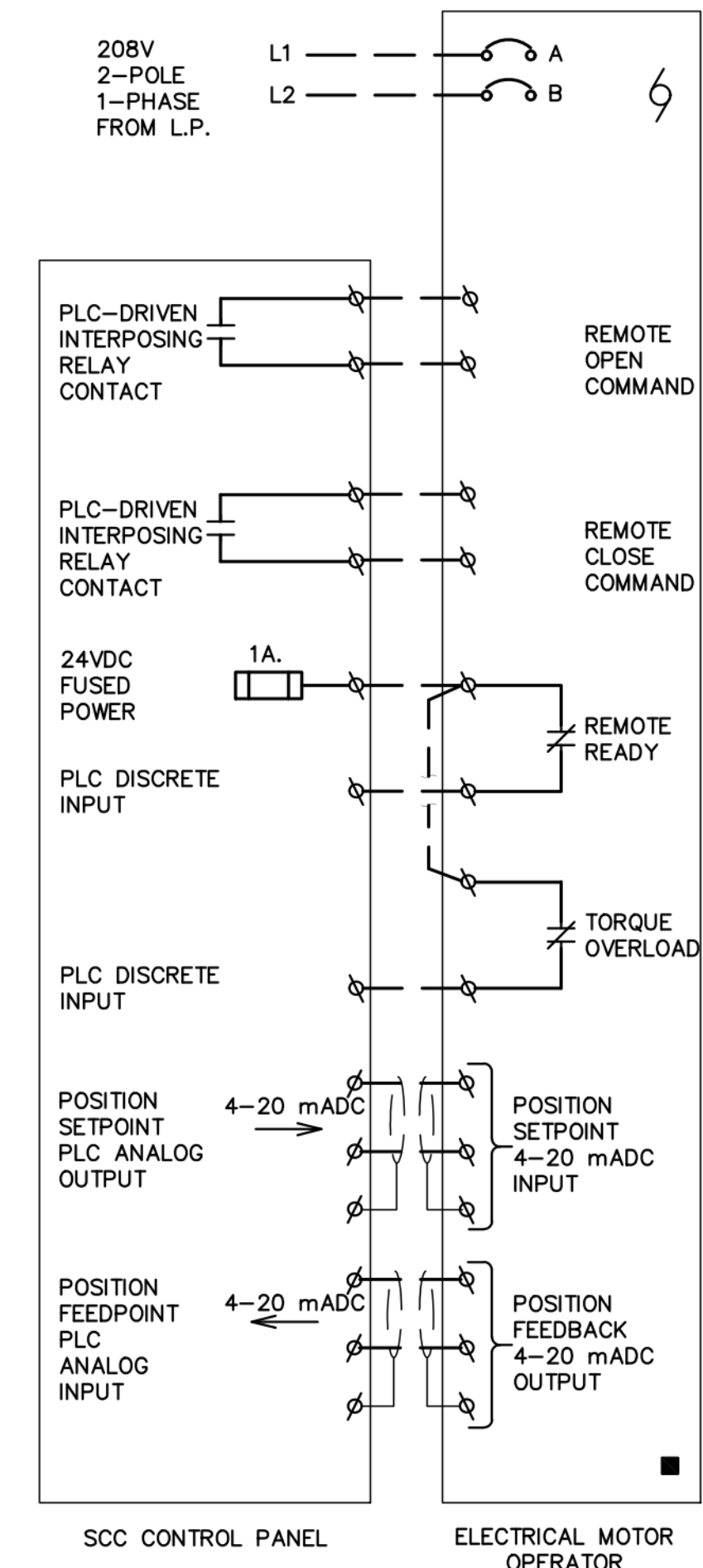
TYPICAL RADAR LEVEL SENSOR/ TRANSMITTER MOUNTING DETAIL

N.T.S.
NOTE: ALL UNISTRUT AND HARDWARE SHALL BE 316 S.S.



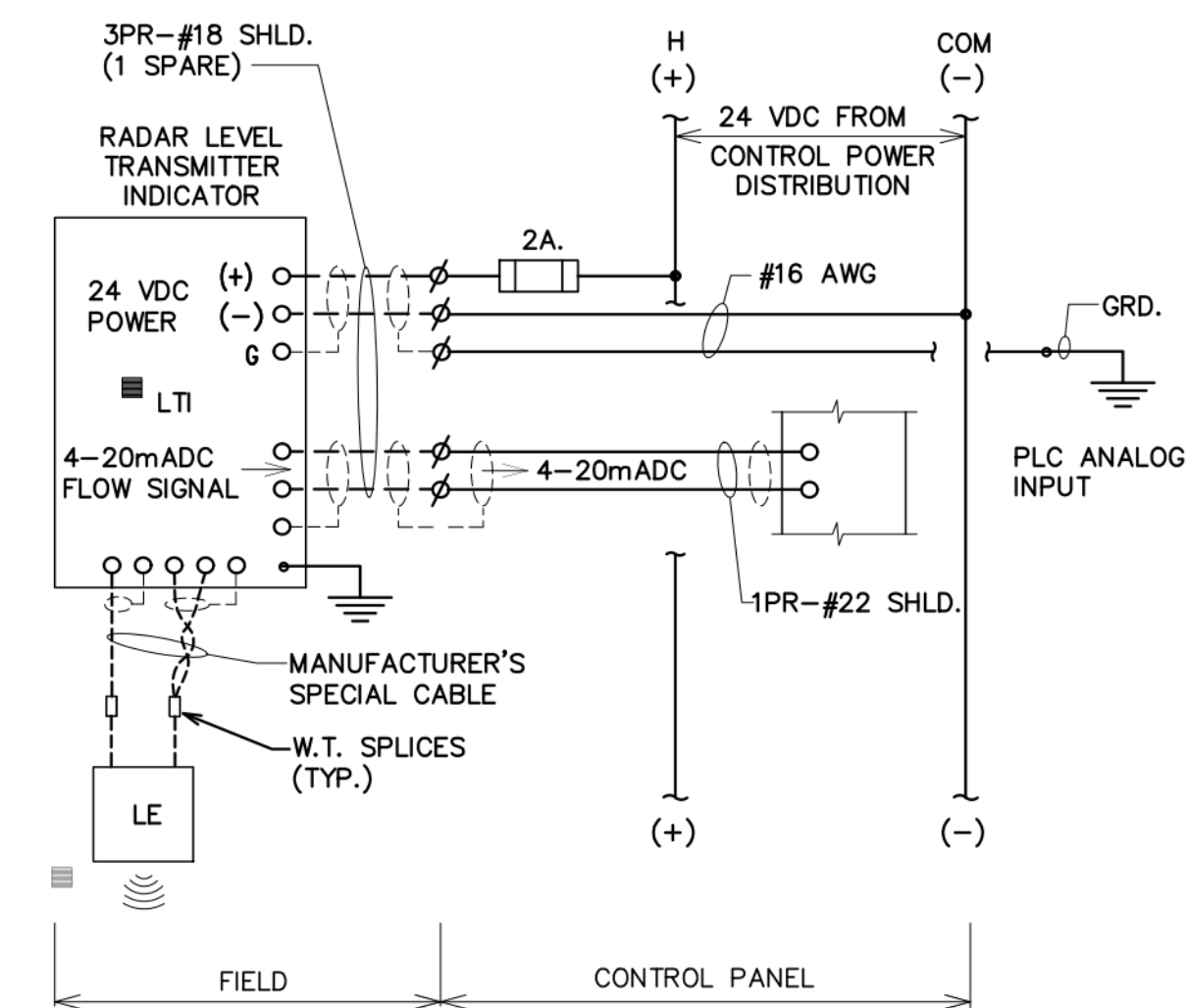
CLARIFIER VAULT VALVE OPERATOR CONNECTION DIAGRAM

NO SCALE



RAS FLOW CONTROL VALVE OPERATOR CONNECTION DIAGRAM

NO SCALE



RADAR LEVEL TRANSMITTER TYPICAL WIRING DIAGRAM

NO SCALE

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BATTERY B SECONDARY CLARIFIER FLOW CONTROL POWER WIRING DIAGRAMS

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