

TUSCARORA TOWNSHIP

WASTEWATER TREATMENT PLANT EXPANSION

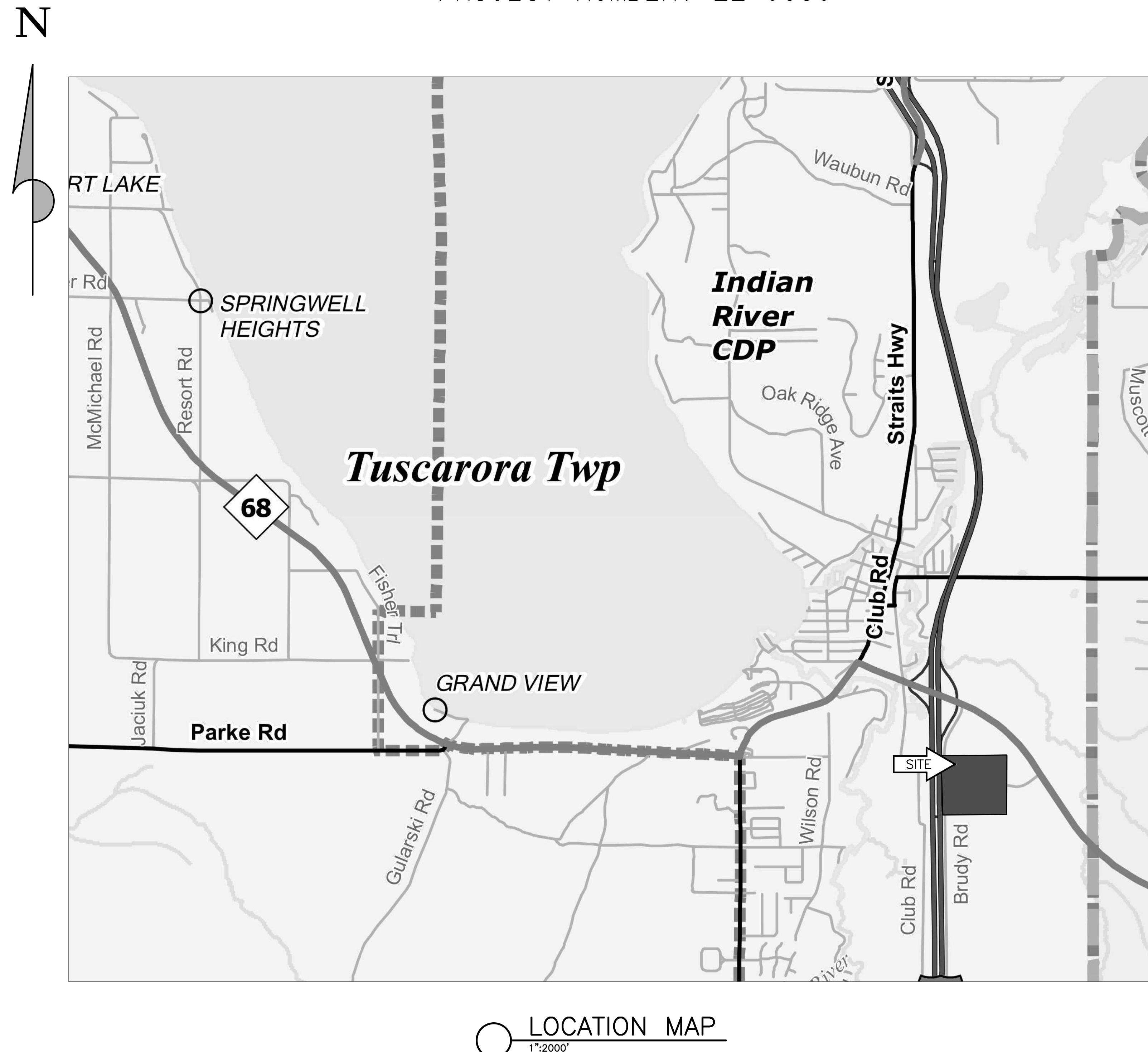
PROJECT OVERVIEW

THE PURPOSE OF THIS PROJECT IS TO EXPAND THE EXISTING WASTEWATER TREATMENT PLANT CAPACITY, APPROXIMATELY DOUBLING THE PLANT FROM 95,000 GPD TO 190,000 GPD. THE EXISTING PLANT UTILIZES A PROPRIETARY SYSTEM, AEROMOD SEQUOX PLUS. THE SAME SYSTEM WILL BE UTILIZED IN THE NEW EXPANSION DESIGN, ALONG WITH AN EQUALIZATION/SURGE TANK OF APPROXIMATELY 150,000 GALLONS TO ACCOMMODATE THE INCREASED FLOW.

THE EXISTING RAPID INFILTRATION BASINS ARE ALREADY APPROPRIATELY SIZED TO DISCHARGE 190,000 GPD.

PROJECT NUMBER: 22-6036

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TITLE SHEET LEGEND

PROPOSED PROJECT	- - -
EXISTING ROADS	- - -
CITY STREET	- - -
STATE ROUTES	- - -
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CITY, VILLAGE LIMITS	- - -
TOWNSHIP LIMITS	- - -
COUNTY LINE	- - -
CENSUS DESIGNATED PLACE	- - -



CONTRACT FOR: TUSCARORA TOWNSHIP WASTEWATER
TREATMENT PLANT EXPANSION



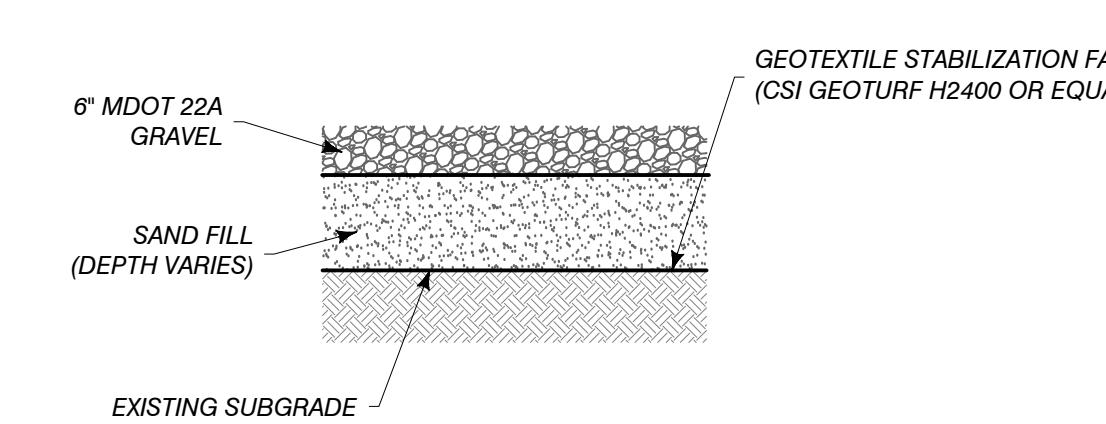
MARK	DATE	DESCRIPTION
0	7/28/23	PERMIT SUBMITTAL
1	1/5/24	REVISED PER EGE REVIEW
2	1/26/24	BID ISSUE
3	1/31/24	ADDENDUM 1

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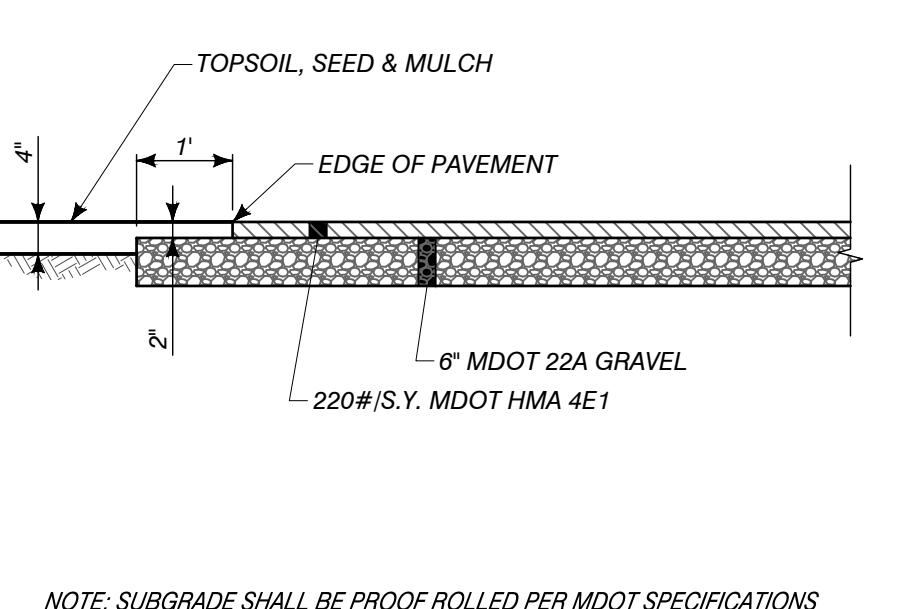
**Performance
Engineers, Inc.**
Civil / Structural Engineering

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Expires On: 02/06/2026

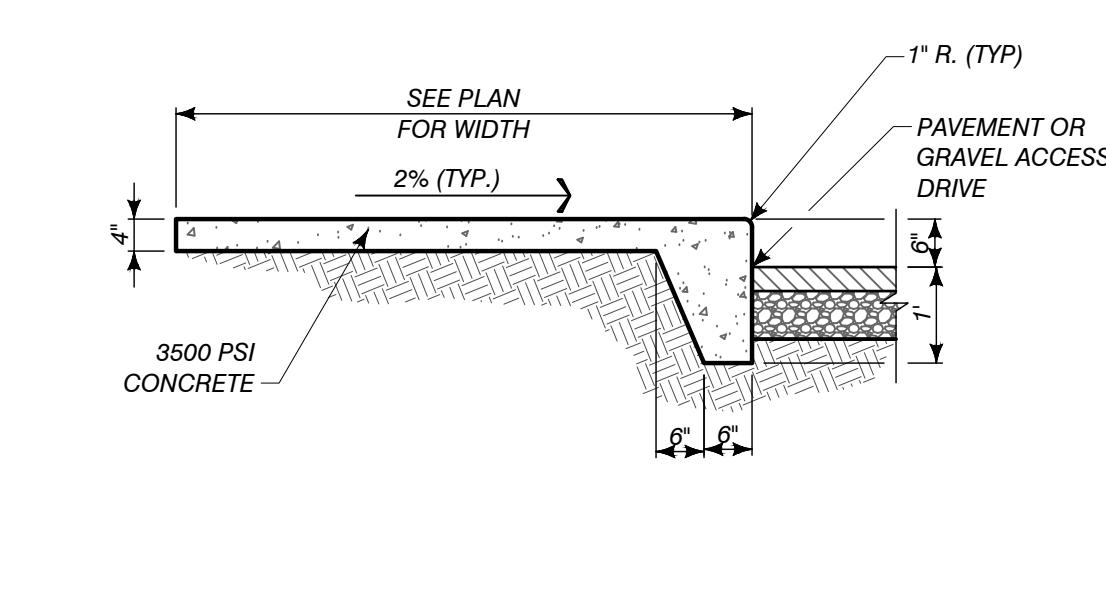
WATER AND SEWER SYMBOLS		PLAN SHEET PATTERNS		UNDERGROUND UTILITY LINESTYLES	
● PROPOSED CATCH BASIN	CONCRETE PAVEMENT/DRIVE APPROACH	ST	ST	EXISTING STORM SEWER	
● EXISTING CATCH BASIN		ST	ST	PROPOSED STORM SEWER	
● PROPOSED STORM MANHOLE		SAN	SAN	EXISTING SANITARY SEWER	
● EXISTING STORM MANHOLE		W	W	PROPOSED WATER LINE	
● PROPOSED SANITARY MANHOLE		W	W	EXISTING WATER LINE	
● EXISTING SANITARY MANHOLE		G	G	PROPOSED NATURAL GAS LINE	
● PROPOSED SANITARY CLEANOUT		U/E	U/E	EXISTING NATURAL GAS LINE	
● EXISTING SANITARY CLEANOUT		U/E	U/E	PROPOSED ELECTRIC	
● PROPOSED WATER MANHOLE		UIT	UIT	EXISTING ELECTRIC	
● EXISTING WATER MANHOLE		U/CATV	U/CATV	PROPOSED TELEPHONE	
● PROPOSED FIRE HYDRANT		F/O	F/O	EXISTING TELEPHONE	
● EXISTING FIRE HYDRANT		F/O	F/O	PROPOSED CABLE TV	
● PROPOSED WATER VALVE AND BOX				EXISTING CABLE TV	
● EXISTING WATER VALVE					PROPOSED FIBER OPTIC
● PROPOSED WATER SHUTOFF					EXISTING FIBER OPTIC
● EXISTING WATER SHUTOFF					
● PROPOSED WATER WELL					
● EXISTING WATER WELL					
UTILITIES SYMBOLS		ROAD SURFACE PATTERNS		UNDERGROUND UTILITY LINESTYLES	
● EXISTING TELEPHONE MANHOLE	ASPHALT	SEASONAL		ST	EXISTING STORM SEWER
● EXISTING CABLE TV MANHOLE				ST	PROPOSED STORM SEWER
● EXISTING NATURAL GAS MANHOLE				SAN	EXISTING SANITARY SEWER
● EXISTING GAS METER				W	PROPOSED WATER LINE
● EXISTING GAS VALVE				W	EXISTING WATER LINE
● EXISTING ELECTRICAL MANHOLE				G	PROPOSED NATURAL GAS LINE
● PROPOSED PRIMARY ELECT. HAND HOLE				U/E	EXISTING NATURAL GAS LINE
● EXIST. PRIMARY ELECT. HAND HOLE				U/E	PROPOSED ELECTRIC
● PROP. SECONDARY ELECT. HAND HOLE				UIT	EXISTING ELECTRIC
● EXIST. SECONDARY ELECT. HAND HOLE				UIT	PROPOSED TELEPHONE
● EXISTING TRANSFORMER				U/CATV	EXISTING TELEPHONE
● PROPOSED UTILITY POLE				F/O	PROPOSED CABLE TV
● EXISTING UTILITY POLE				F/O	EXISTING CABLE TV
● PROPOSED LIGHT POST					PROPOSED FIBER OPTIC
● EXISTING LIGHT POST					EXISTING FIBER OPTIC
→ PROPOSED GUY WIRE					
→ EXISTING GUY WIRE					
LANDSCAPING SYMBOLS		ABOVE GROUND UTILITY LINESTYLES		UNDERGROUND UTILITY LINESTYLES	
● PROPOSED TREE		SEASONAL		OHE	PROPOSED ELECTRIC
● EXISTING TREE				OHE	EXISTING ELECTRIC
● PROPOSED CONIFER TREE				OHT	PROPOSED TELEPHONE
● EXISTING CONIFER TREE				OHT	EXISTING TELEPHONE
● PROPOSED SHRUB				CATV	PROPOSED CABLE TV
● EXISTING SHRUB				CATV	EXISTING CABLE TV
PROPERTY SYMBOLS		PROPERTY/EASEMENT LINESTYLES		UNDERGROUND UTILITY LINESTYLES	
● MONUMENT BOX				R	PROPERTY LINE
● MONUMENT				R/W	RIGHT OF WAY
● NEW PROPERTY CORNER					SETBACK LINE
● EXISTING PROPERTY CORNER					PROPOSED FENCE
● BENCH MARK					EXISTING FENCE
● NAIL SET					PROPOSED UNIT LINE
● SOIL BORING INDICATOR					EXISTING UNIT LINE
● ADJUST STRUCTURE					
● ADJUST FIRE HYDRANT					
● ADJUST BY OTHERS					
● RELOCATE BY OTHERS					
● DRIVEWAY TYPE					
● SIDEWALK RAMP TYPE					
● SALVAGE					
● PROPOSED BUILDING					
● EXISTING BUILDING					
● ABANDON					
● BULKHEAD					
● CLEARING					
● REMOVAL					
● SAVE					
ABBREVIATIONS		TOPO LINESTYLES		UNDERGROUND UTILITY LINESTYLES	
● ABS	ACRYLONITRILE BUTADIENE STYRENE	HYD	HYDRANT	SP EL	SPOT ELEVATION
● ADA	AMERICANS WITH DISABILITIES ACT	INV	INVERT ELEVATION	SSW	SANITARY SEWER
● ALT.	ALTERNATE	IRR	IRRIGATION WATER	STM	STORM SEWER
● ASPH.	ASPHALT	LCY	LOOSE CUBIC YARD	ST	STREET
● BC	BACK OF CURB	LP	LIGHT POLE	STA	STATION
● BLDG.	BUILDING	LFT	LINEAR FOOT	STD	STANDARD
● BM	BENCHMARK	LS	LUMP SUM	SW	SIDEWALK
● CB	CATCH BASIN	MB	MAIL BOX	TBM	TEMPORARY BENCHMARK
● CIP	CAST IRON PIPE	MH	MANHOLE	TD	TRENCH DRAIN
● CL	CENTER LINE	N	NORTH	TEL	TELEPHONE
● CMP	CORRUGATED METAL PIPE	NTS	NOT TO SCALE	TOC	TOP OF CONCRETE
● CO	CLEANOUT	PC	POINT OF CURVE	TC	TOP OF CURB
● CONC	CONCRETE	PED	PEDESTAL	T/F/TG	TOP OF CONCRETE FOOTING
● CFT	CUBIC FEET	PERF	PERFORATED	T/WALL	TOP OF CONCRETE WALL
● CYD	CUBIC YARD	PL	PIPE LINE	TP	TELEPHONE POLE
● DIP	DOUBLE IRON PIPE	PP	POWER POLE	TYP	TYPICAL
● E	EAST	PROP	PROPOSED	UGND	UNDERGROUND
● EL	ELEVATION	PVC	POLY(VINYL CHLORIDE) (PLASTIC)	UP	UTILITY POLE
● FFE	FINISH FLOOR ELEVATION	R	RADIUS	UTIL	UTILITY
● FH	FIRE HYDRANT	RCP	REINFORCED CONCRETE PIPE	VAR	VARIABLES
● FC	FACE OF CURB	RD	ROAD	VC	VERTICAL CURVE
● G	NATURAL GAS	REQD	REQUIRED	VCP	VITRIFIED CLAY PIPE
● GEN	GENERATOR	ROW	RIGHT OF WAY	VEH	VEHICLE
● GIP	GALVANIZED IRON PIPE	S	SOUTH	VOL	VOLUME
● HC	HANDICAP	SAN	SANITARY	W/O	WITHOUT
● HDPE	HIGH DENSITY POLYETHYLENE	SB-xx	SOIL BORING-XX (E.G., SB-01)	WM	WEST
● HDWL	HEADWALL	SCHD	SCHEDULE (PIPE)	YD	YARD DRAIN
● HH	HAND HOLE	SFT	SQUARE FOOT		



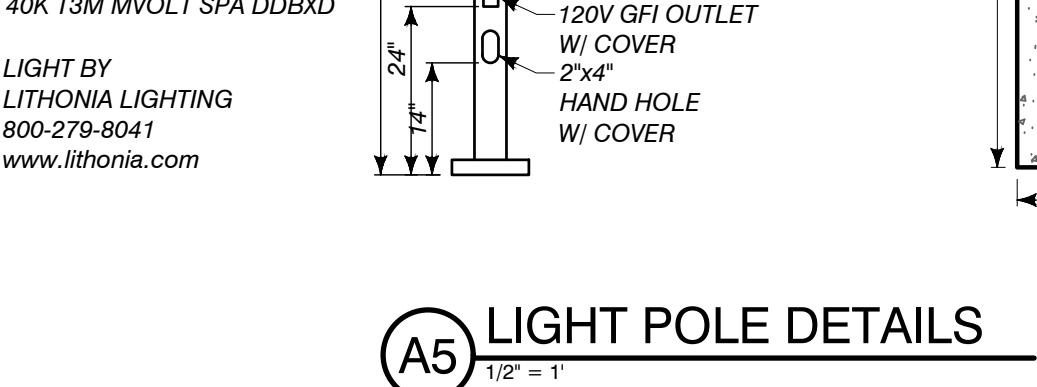
A2 GRAVEL DRIVE SECTION



A3 PAVEMENT SECTION



A4 INTEGRAL SIDEWALK/CURB DETAIL



A5 LIGHT POLE DETAILS

GENERAL NOTES

- ALL ELEVATIONS ARE BASED ON NAD83 DATUM AND THE STATE PLANE COORDINATE SYSTEM.
- SPECIAL CARE SHALL BE TAKEN IN EXCAVATING IN THE PROXIMITY OF ALL UNDERGROUND UTILITIES. THE CONTRACTOR SHALL SECURE ASSISTANCE FROM THE APPROPRIATE UTILITY COMPANY IN LOCATING ITS LINES. THE CONTRACTOR SHALL ALSO PROVIDE SUPPORT FOR ANY UTILITY WITHIN THE EXCAVATION, PROVIDE PROPER COMPACTION UNDER ANY UNDERRUNNED UTILITY STRUCTURE AND, IF NECESSARY, INSTALL TEMPORARY SHEETING OR USE A TRENCH BOX TO MINIMIZE THE EXCAVATION. THE CONTRACTOR SHALL PROTECT AND SAVE HARMLESS FROM DAMAGE ALL UTILITIES, WHETHER PRIVATELY OR PUBLICLY OWNED, ABOVE OR BELOW GROUND SURFACE, WHICH MAY BE ENCOUNTERED DURING CONSTRUCTION, AT NO ADDITIONAL COST TO THE OWNER.
- THE LOCATION OF EXISTING PUBLIC UTILITIES AND UNDERGROUND STRUCTURES SUCH AS PIPE LINES, ELECTRIC CONDUITS, SEWER AND WATER LINES, OF RECORD ARE SHOWN ON THE PLANS. THE INFORMATION IS BELIEVED TO BE REASONABLY CORRECT AND COMPLETE. HOWEVER, NEITHER THE CORRECTNESS NOR THE COMPLETENESS OF SUCH INFORMATION IS GUARANTEED. PRIOR TO THE START OF ANY OPERATIONS IN THE VICINITY OF ANY UTILITIES, THE CONTRACTOR SHALL COORDINATE THE RELOCATION OF ANY UTILITIES WITH THE UTILITY PROVIDER. COST OF REPAIR FOR ANY DAMAGED UTILITY LINES THAT IS PROPERLY STAKED SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- FOR PROTECTION OF UNDERGROUND UTILITIES AND IN CONFORMANCE WITH PUBLIC ACT 174, 2013, THE CONTRACTOR SHALL CALL 811 A MINIMUM OF THREE (3) FULL WORKING DAYS, EXCLUDING SATURDAYS, SUNDAYS, AND HOLIDAYS PRIOR TO EACH EXCAVATION IN AREAS WHERE PUBLIC UTILITIES HAVE NOT BEEN PREVIOUSLY LOCATED. MEMBERS WILL THUS HAVE BEEN ROUTINELY NOTIFIED. THIS DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF NOTIFYING UTILITY OWNERS WHO MAY NOT BE PART OF THE "MISS DIG" ALERT SYSTEM.
- EXISTING PROPERTY OWNERS ARE IDENTIFIED ON THE PLANS. IF A PROPERTY CORNER IRON IS DISTURBED DURING CONSTRUCTION IT SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE BY A PROFESSIONAL LAND SURVEYOR.
- CONTRACTOR SHALL RESTORE ALL LAWNS, LANDSCAPE PLANTINGS, SIDEWALKS, COMMERCIAL SIGNS, ETC., AS REQUIRED AT NO ADDITIONAL COST TO THE OWNER.
- CONTRACTOR SHALL PROVIDE ADEQUATE SUPPORT FOR UTILITY POLES AS NECESSARY. CONTRACTOR SHALL CONSULT WITH THE UTILITY COMPANY PRIOR TO ANY DISTURBANCE OF UTILITY POLE OR ANCHORING SYSTEM.

FACILITY CONSTRUCTION NOTES

- ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE CURRENT REQUIREMENTS OF TUSCARORA TOWNSHIP. INSTALLATION OF PIPING SHALL BE PERFORMED IN ACCORDANCE WITH ASTM STANDARDS AND THE PLANS AND SUPPLEMENTAL SPECIFICATIONS PROVIDED.
- OWNER WILL PROVIDE THE CONTRACTOR WITH REQUIRED EGLE PERMIT FOR THE SANITARY SEWER CONSTRUCTION. CONSTRUCTION IS NOT TO BEGIN UNTIL THIS PERMIT HAS BEEN OBTAINED. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH ALL EGLE PERMIT CONDITIONS.
- THE EXISTING WWTP IS TO REMAIN IN-SERVICE DURING THE CONSTRUCTION OF THE EXPANSION. CONTRACTOR MUST COORDINATE ALL ACTIVITIES THAT IMPACT ACCESS TO THE EXISTING FACILITIES WITH THE WWTP OPERATOR.
- NEW SANITARY SEWER CONSTRUCTION SHALL PROGRESS SUCH THAT THE NEW FACILITIES ARE COMPLETE, INSPECTED AND FULLY OPERATIONAL BEFORE CONNECTION TO EXISTING PLANT.
- THE CONTRACTOR SHALL BE REQUIRED TO COORDINATE CONSTRUCTION INSPECTION BY THE ENGINEER INCLUDING ALL TESTING. ALL TESTING COSTS, ARE TO BE INCLUDED IN THE UNIT PRICE OF THOSE ITEMS MOST CLOSELY ASSOCIATED WITH THE WORK.
- THE CONTRACTOR SHALL COORDINATE START-UP OF THE PLANT EXPANSION WITH AEROMOD, THE OPERATOR, AND THE ENGINEER. COSTS ASSOCIATED WITH THE MANUFACTURER'S START-UP SHALL BE INCLUDED IN THE CONTRACT.

RECORD DRAWINGS

AFTER COMPLETION OF ALL CONSTRUCTION AND BEFORE FINAL PAYMENT IS MADE, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER ONE COMPLETE SET OF FULL SIZE BLUE LINE CONTRACT DRAWINGS WITH ALTERATIONS SHOWN IN RED PENCIL.

THESE RECORD DRAWINGS SHALL BE MAINTAINED BY THE CONTRACTOR AT THE WORK SITE AND SHALL BE UPDATED BASED ON JOB PROGRESS TO REFLECT ALL CHANGES AND DEVIATIONS AND ACTUAL ROUTING OF ALL FIELD-ROUTED UTILITIES AND SERVICES. ALL LINES, LETTERS, AND DETAILS SHALL BE SHARP, CLEAR, AND FULLY LEGIBLE. ALL ADDITIONS TO THE DRAWINGS SHALL BE PRECISELY DRAWN TO SCALE OF THE ORIGINAL DRAWING AND THEIR LOCATIONS SHALL BE DIMENSIONED.

RECORD DRAWINGS SHALL BE MADE AVAILABLE FOR ENGINEER/OWNER REVIEW ON A WEEKLY BASIS AT THE JOB SITE. THIS REVIEW OF RECORD DRAWINGS WILL BE PART OF THE MONTHLY MONETARY PROGRESS REVIEW.

FINAL CLEAN UP

BEFORE FINAL ACCEPTANCE OF THE WORK, THE CONTRACTOR SHALL REMOVE ALL FALSEWORK, UNUSED MATERIALS, EROSION CONTROL DEVICES AND RUBBISH, UNLESS OTHERWISE PROVIDED IN THE CONTRACT OR ORDERED BY THE ENGINEER. THE CONTRACTOR SHALL REMOVE FROM THE RIGHT-OF-WAY ALL MACHINERY, EQUIPMENT, AND SURPLUS MATERIAL AND LEAVE ALL AREAS OCCUPIED BY THE CONTRACTOR IN CONJUNCTION WITH THE CONTRACT IN A NEAT AND PRESENTABLE CONDITION SATISFACTORY TO THE ENGINEER. THE CONTRACTOR SHALL REPLACE OR REPAIR ALL DAMAGED FENCES. THE CONTRACTOR SHALL RESTORE IN AN ACCEPTABLE MANNER ALL PROPERTY WHICH MAY HAVE BEEN USED OR DAMAGED DURING THE PROSECUTION OF THE WORK. PAVED ROADBEDS SHALL BE CLEANED WITHIN FIVE WORKING DAYS PRIOR TO OPENING THE PAVEMENT SURFACE TO TRAFFIC. CLEANING OF ROADBEDS IN RESIDENTIAL AND URBAN AREAS SHALL BE PERFORMED IN A MANNER THAT WILL NOT CAUSE AIRBORNE DUST.

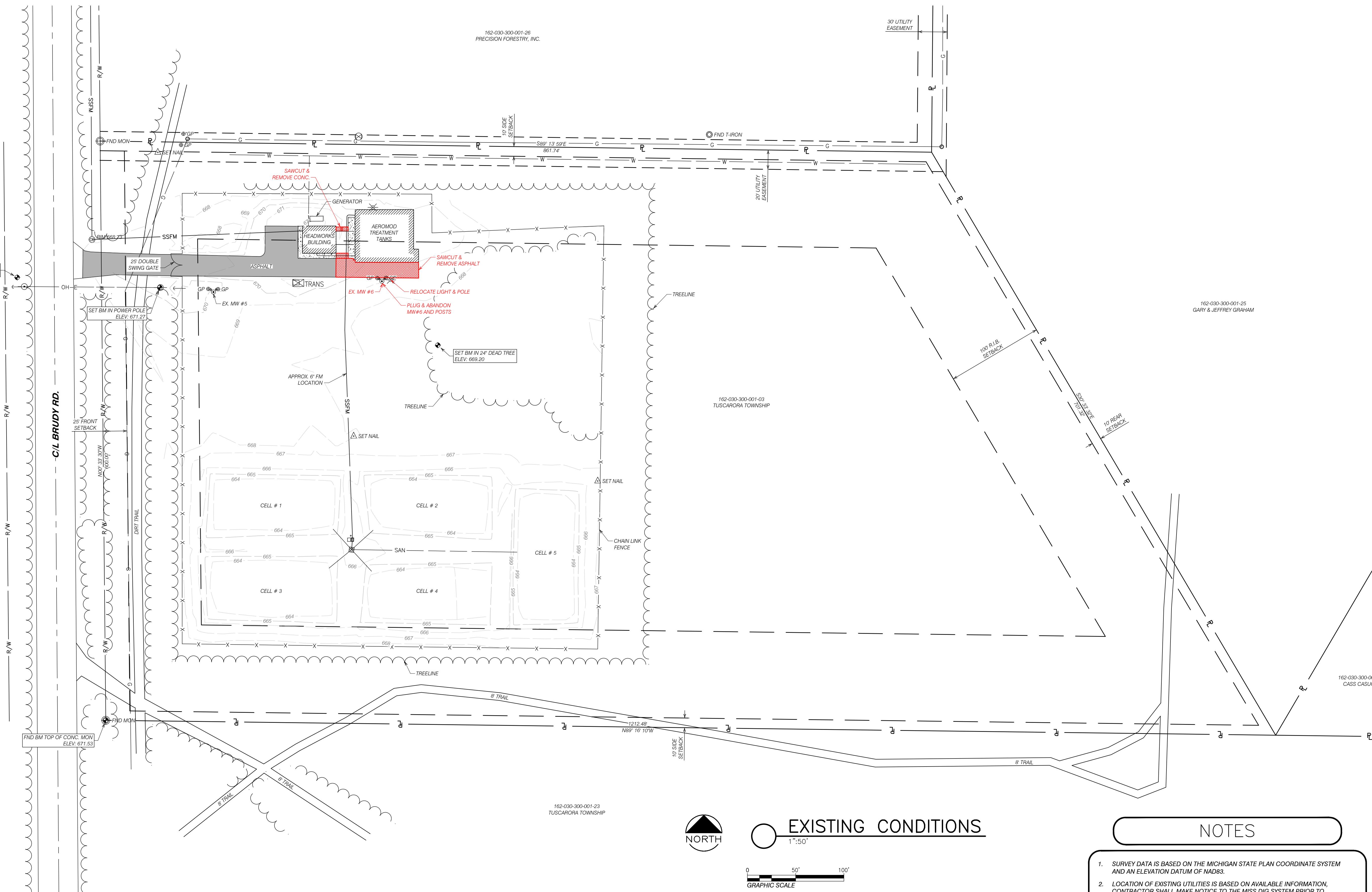
UNLESS OTHERWISE PROVIDED, FULL COMPENSATION FOR REMOVAL AND DISPOSAL OF MATERIALS FOR FINAL CLEAN UP WILL BE CONSIDERED AS INCLUDED IN OTHER ITEMS OF WORK AND NO SEPARATE PAYMENT WILL BE MADE.

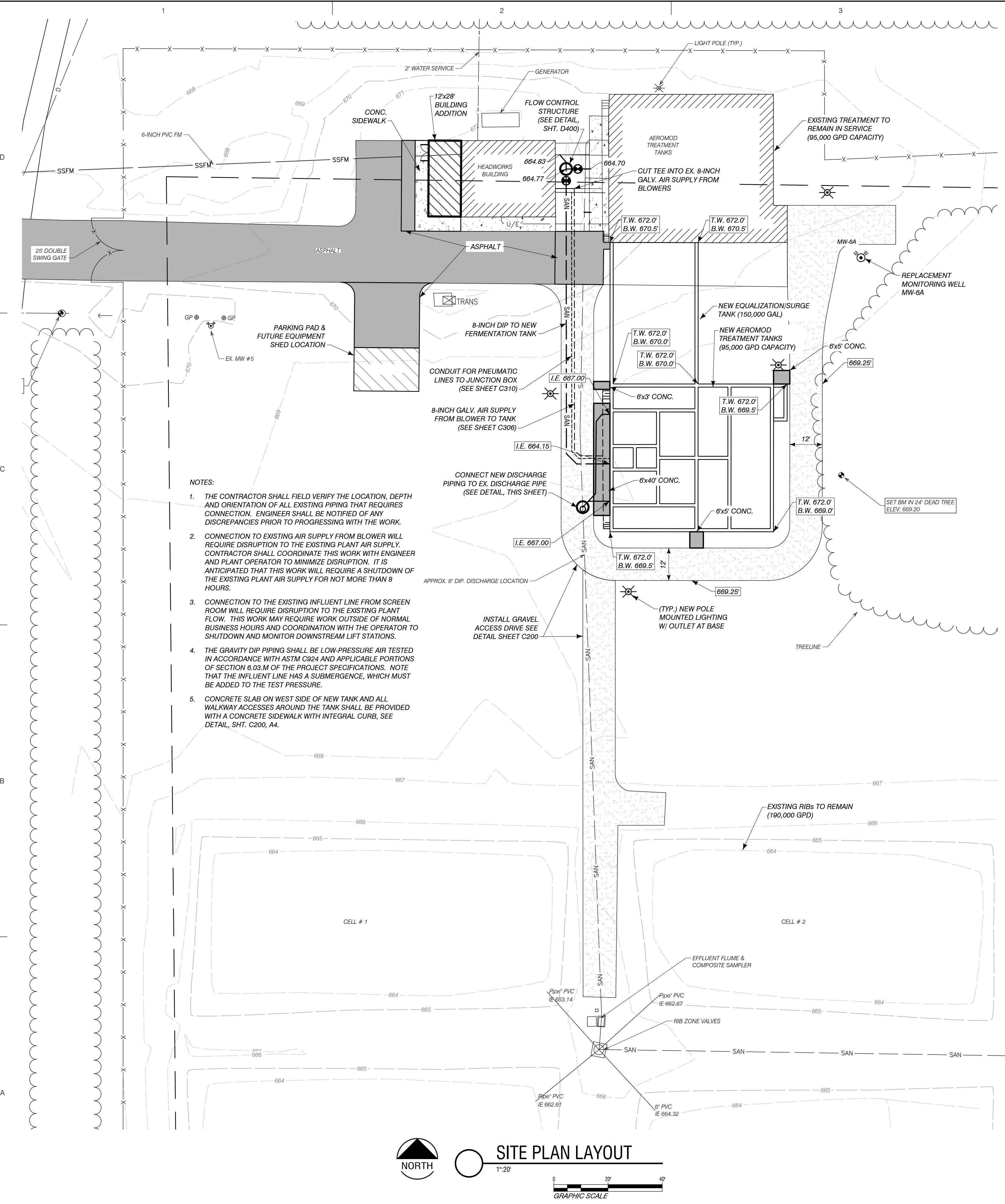
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TUSCARORA TOWNSHIP
WWTP EXPANSION
4605 PRUDY RD.
INDIAN RIVER, MI 49749
OWNER: TUSCARORA TOWNSHIP

PROJECT NO: 23-6036
CAD DWG FILE: 6036PLANT.DWG
DRAWN BY: PEI
DESIGNED BY: AMI
CHECKED BY: AEN
SEAL

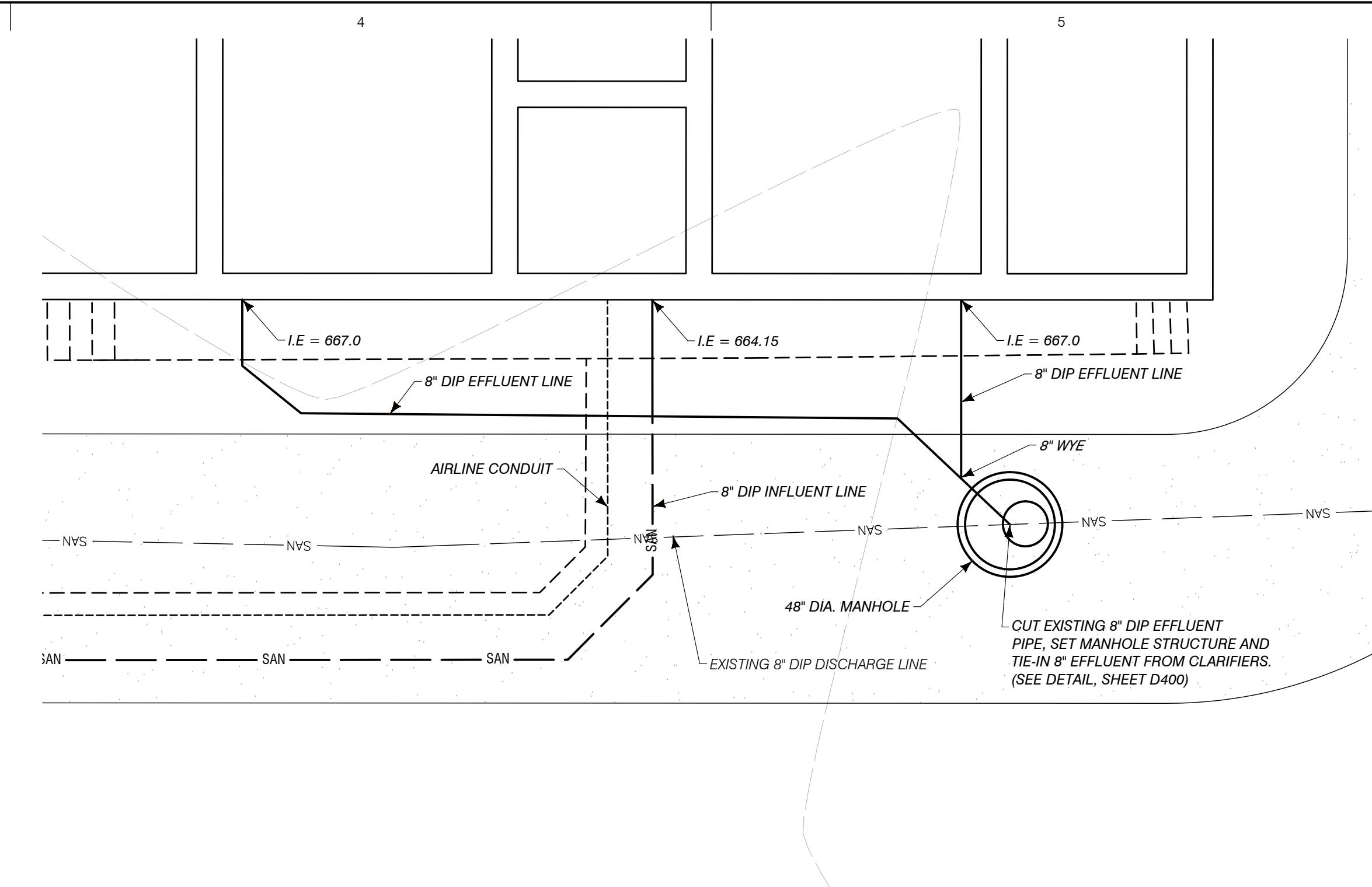




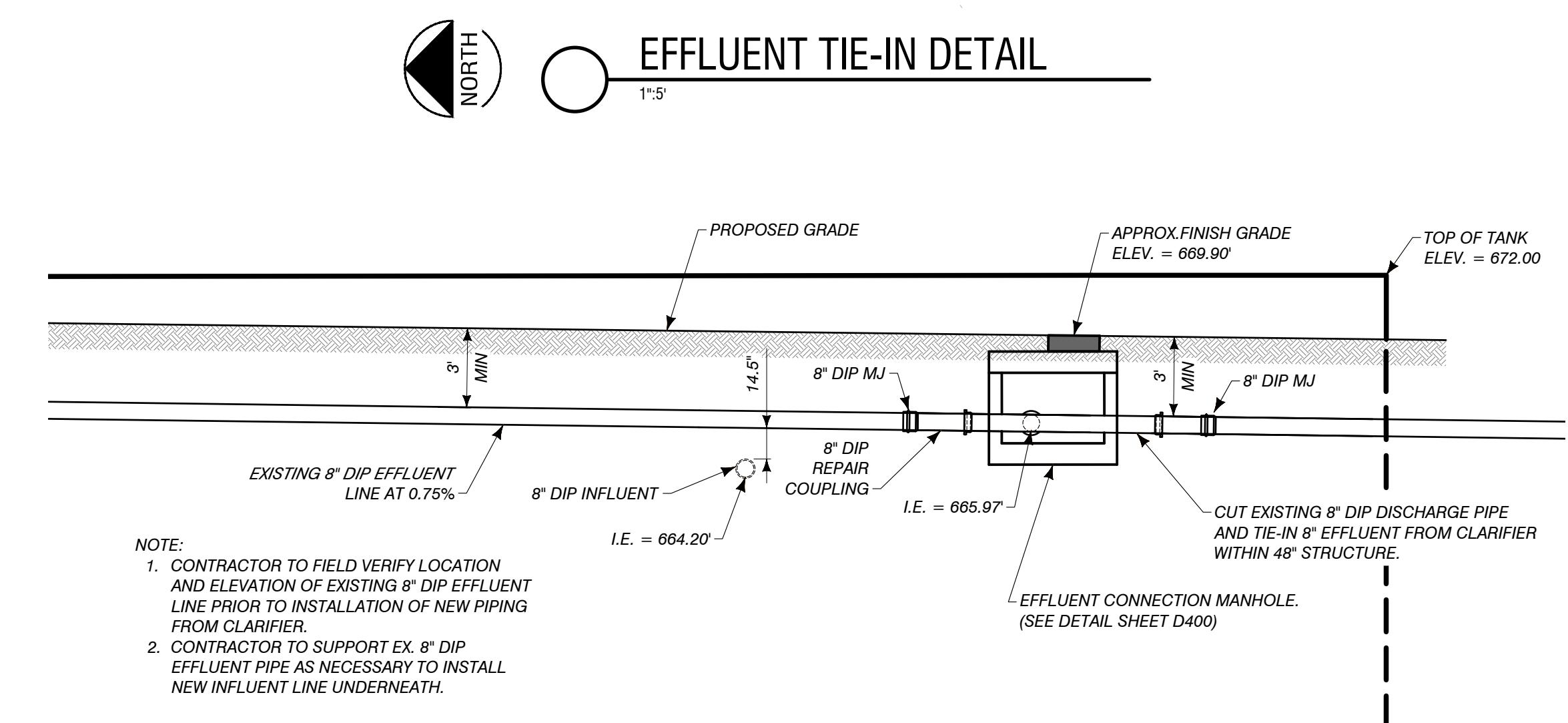
The diagram shows a site plan layout. On the left, a circular north arrow contains a black triangle pointing upwards, with the word "NORTH" printed below it. To the right of the north arrow is a circular callout bubble containing the text "1\" data-bbox="398 218 448 248">:20'". Below the callout bubble is a horizontal scale bar with tick marks at 0 and 20'. To the right of the scale bar is the large, bold text "SITE PLAN LAYOUT".

A horizontal scale bar with numerical markings at 0 and 20. A vertical tick mark is positioned exactly halfway between the 0 and 20 markings.

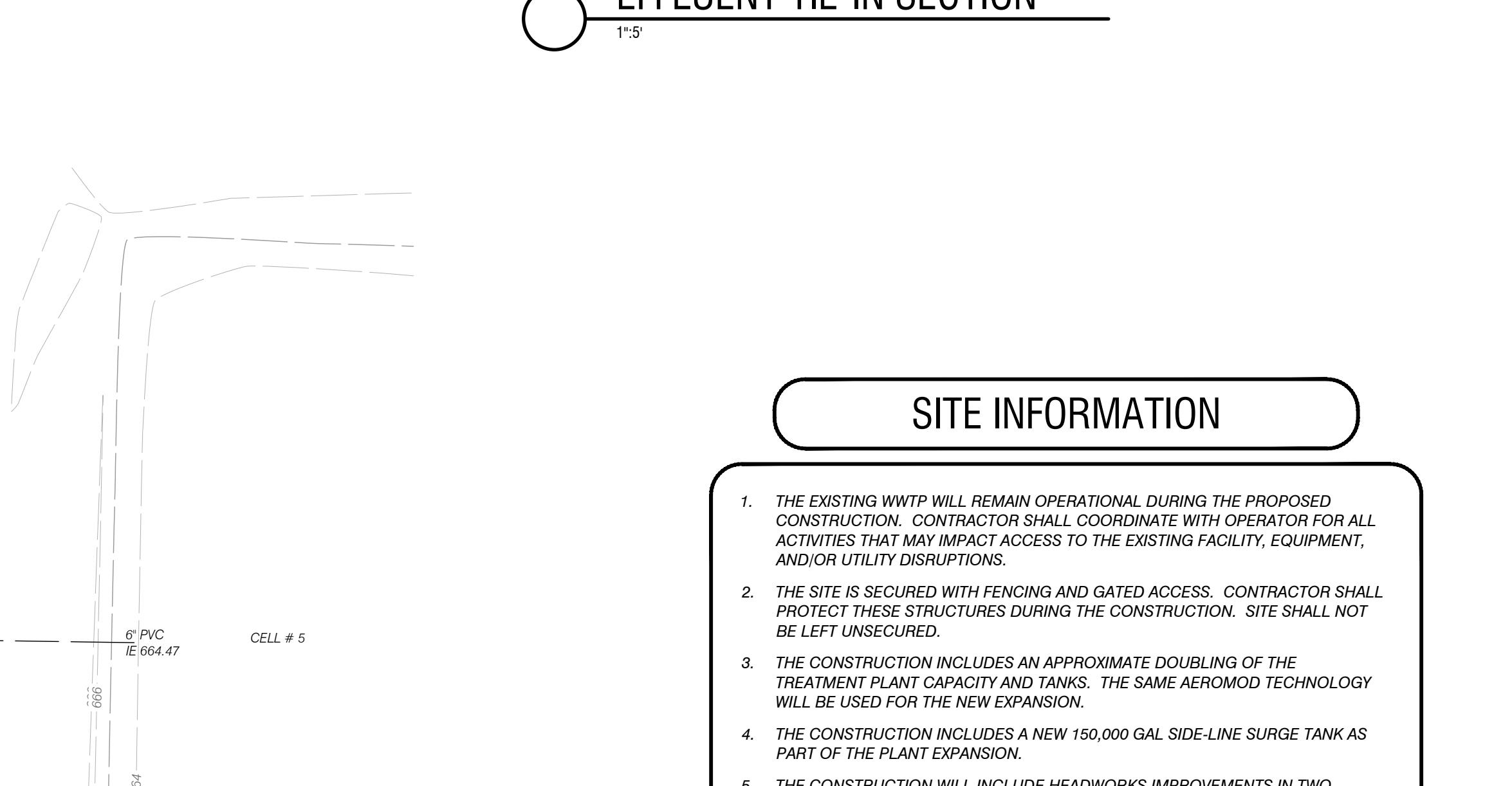
GRAPHIC SCALE



EFFLUENT TIE-IN DETAIL

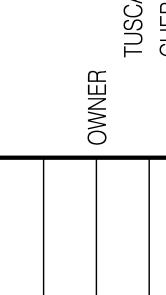


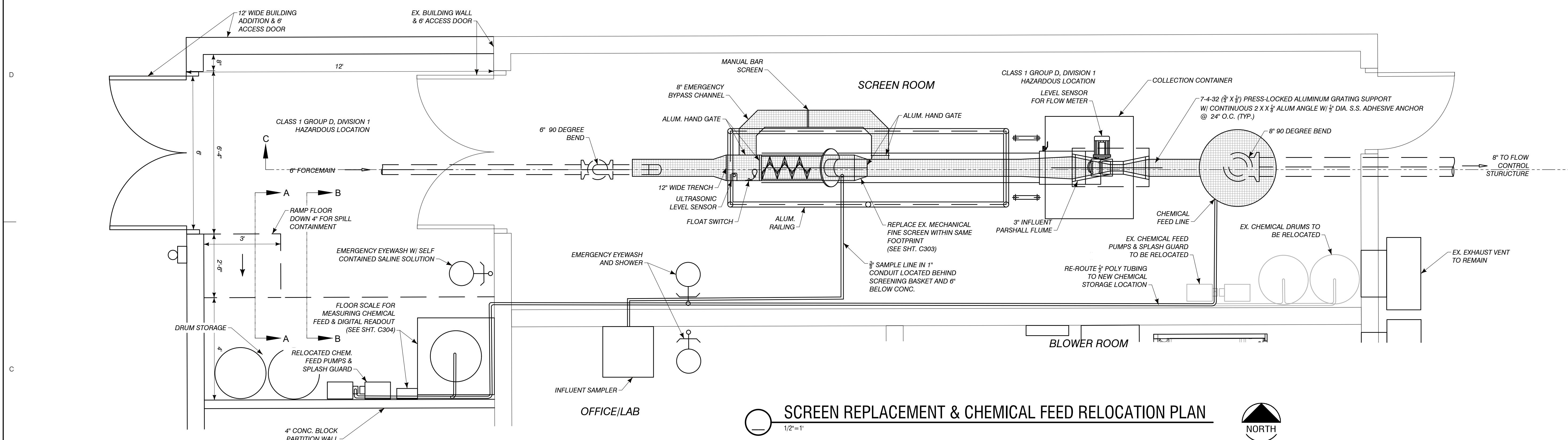
EFFLUENT TIE-IN SECTION



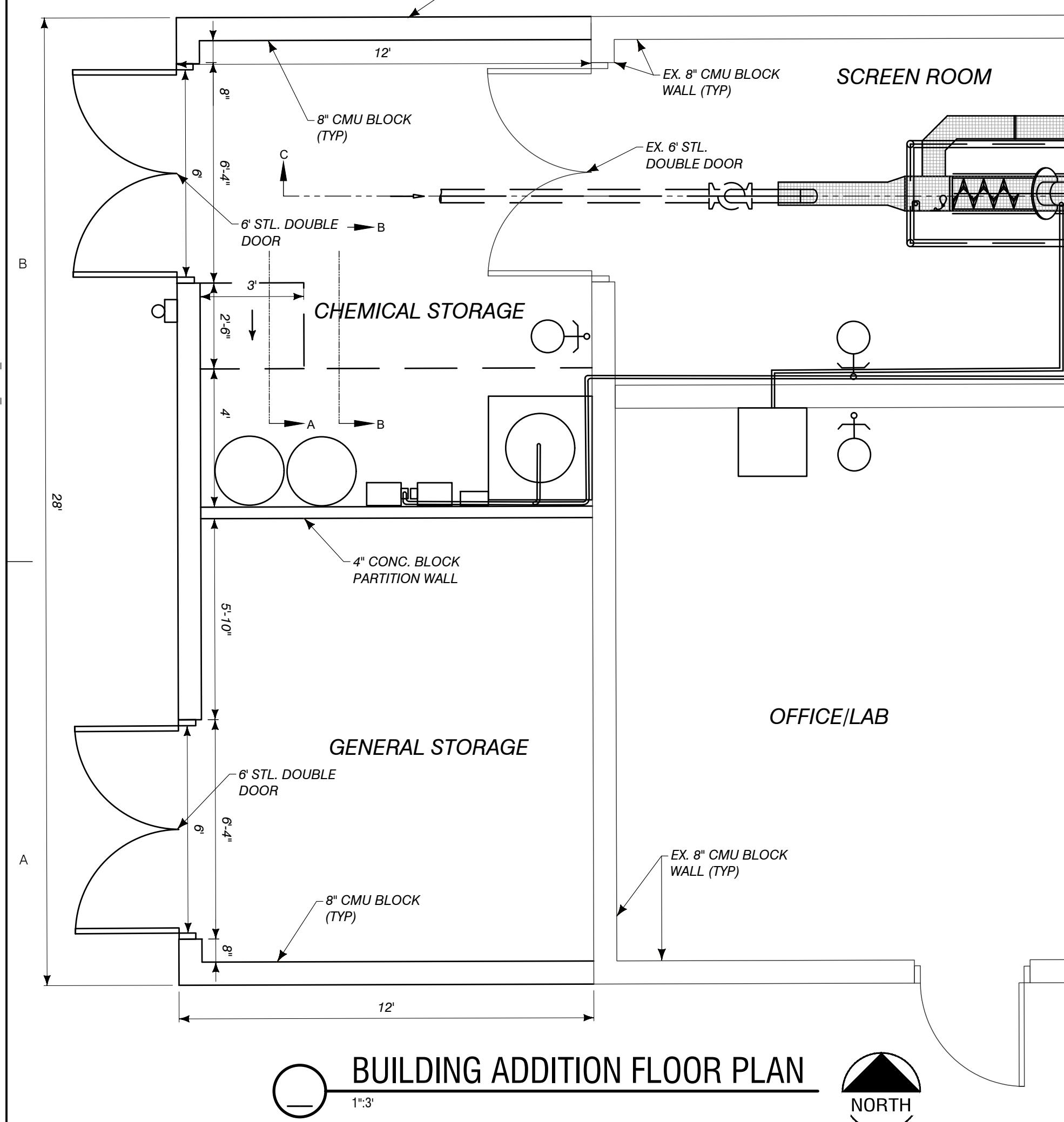
SITE INFORMATION

1. THE EXISTING WWTP WILL REMAIN OPERATIONAL DURING THE PROPOSED CONSTRUCTION. CONTRACTOR SHALL COORDINATE WITH OPERATOR FOR ALL ACTIVITIES THAT MAY IMPACT ACCESS TO THE EXISTING FACILITY, EQUIPMENT, AND/OR UTILITY DISRUPTIONS.
2. THE SITE IS SECURED WITH FENCING AND GATED ACCESS. CONTRACTOR SHALL PROTECT THESE STRUCTURES DURING THE CONSTRUCTION. SITE SHALL NOT BE LEFT UNSECURED.
3. THE CONSTRUCTION INCLUDES AN APPROXIMATE DOUBLING OF THE TREATMENT PLANT CAPACITY AND TANKS. THE SAME AEROMOD TECHNOLOGY WILL BE USED FOR THE NEW EXPANSION.
4. THE CONSTRUCTION INCLUDES A NEW 150,000 GAL SIDE-LINE SURGE TANK AS PART OF THE PLANT EXPANSION.
5. THE CONSTRUCTION WILL INCLUDE HEADWORKS IMPROVEMENTS IN TWO PHASES. THE FIRST PHASE INCLUDES REPLACEMENT OF THE EXISTING MECHANICAL FINE SCREEN WITHIN THE EXISTING FLOW CHANNEL FOOTPRINT.
6. THE SECOND PHASE INVOLVES A BUILDING ADDITION TO EXTEND THE GABLE END BY 12' WESTERLY TO CREATE A NEW CHEMICAL STORAGE AREA AND A GENERAL STORAGE AREA. UPON COMPLETION OF THE BUILDING ADDITION, THE CHEMICAL STORAGE WILL BE RELOCATED.
7. THE CONSTRUCTION INCLUDES A NEW 150,000 GAL SIDE-LINE SURGE TANK AS PART OF THE PLANT EXPANSION.
8. THE EXISTING RIBs WILL REMAIN IN THE EXISTING CONFIGURATION.

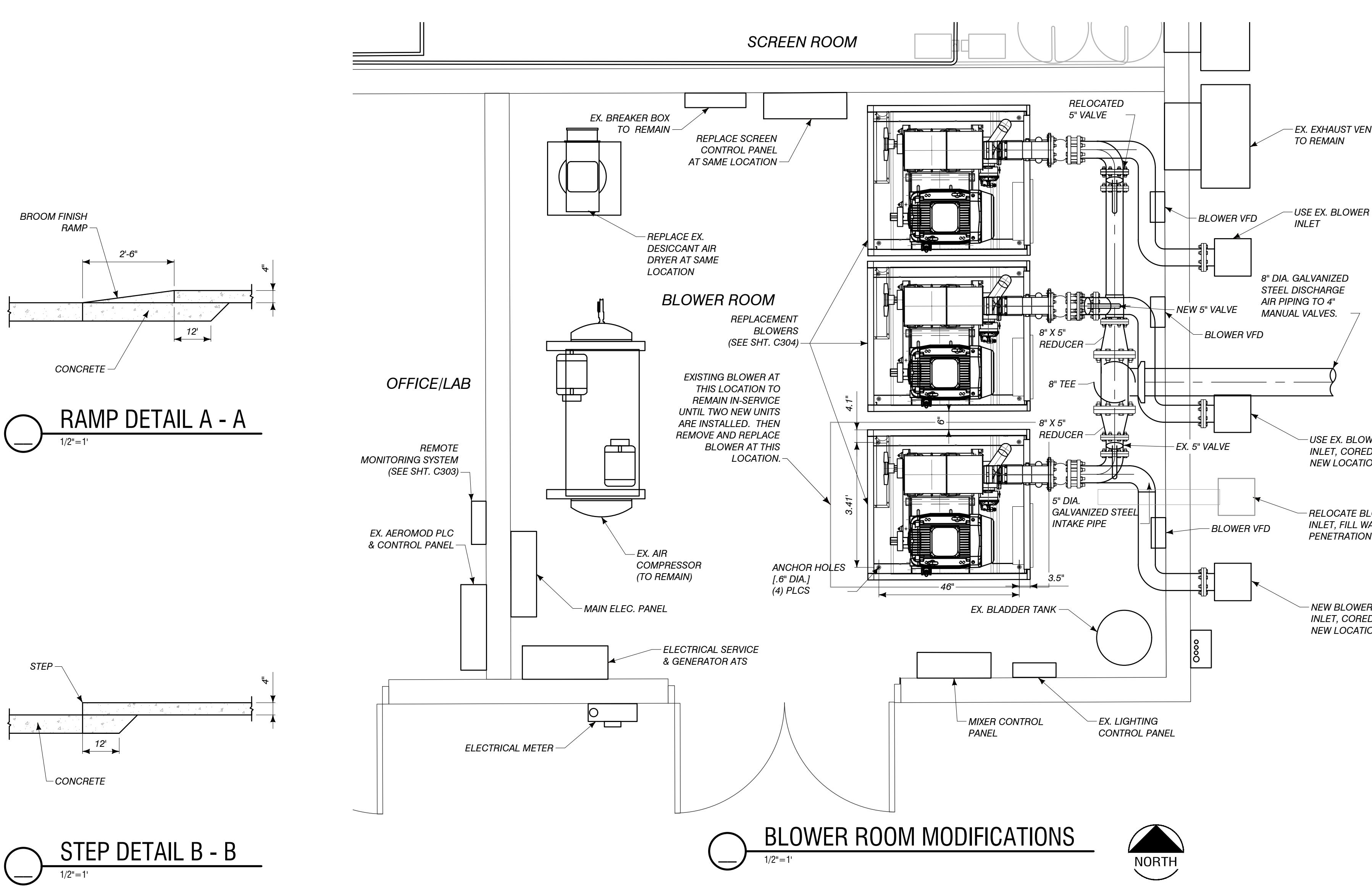
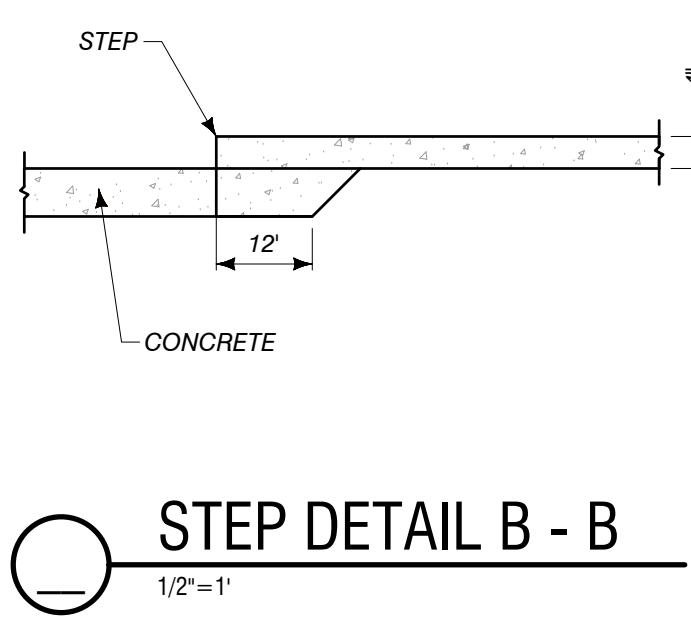
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<p>OWNER TUSCARORA TOWNSHIP CHEBOYGAN COUNTY, MICHIGAN</p>			
<p>PROJECT NO: 23-6036 CAD DWG FILE: 6036 SITE.DWG DRAWN BY: PEI DESIGNED BY: AEN CHECKED BY:</p>			
<p>SEAL</p>			
<p>SHEET TITLE SITE PLAN</p>			
<p>C301</p>			
<p>SHEET 4 OF 31</p>			



SCREEN REPLACEMENT & CHEMICAL FEED RELOCATION PLAN

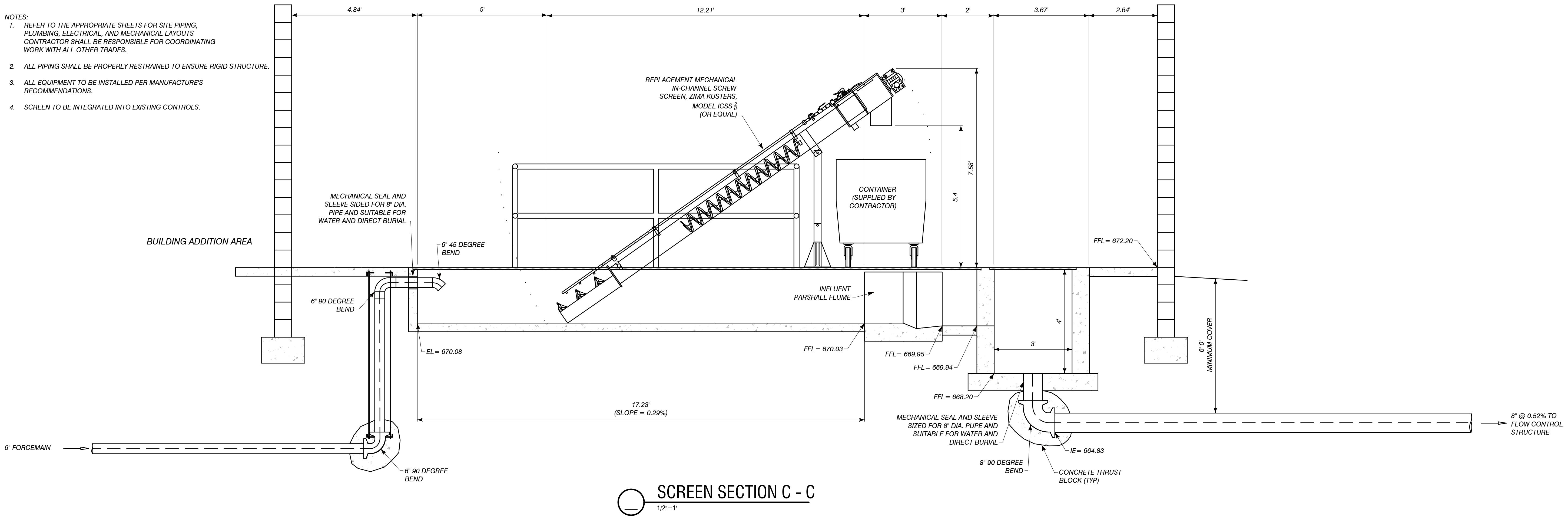


RAMP DETAIL A - A



BLOWER ROOM MODIFICATIONS





Specifications:

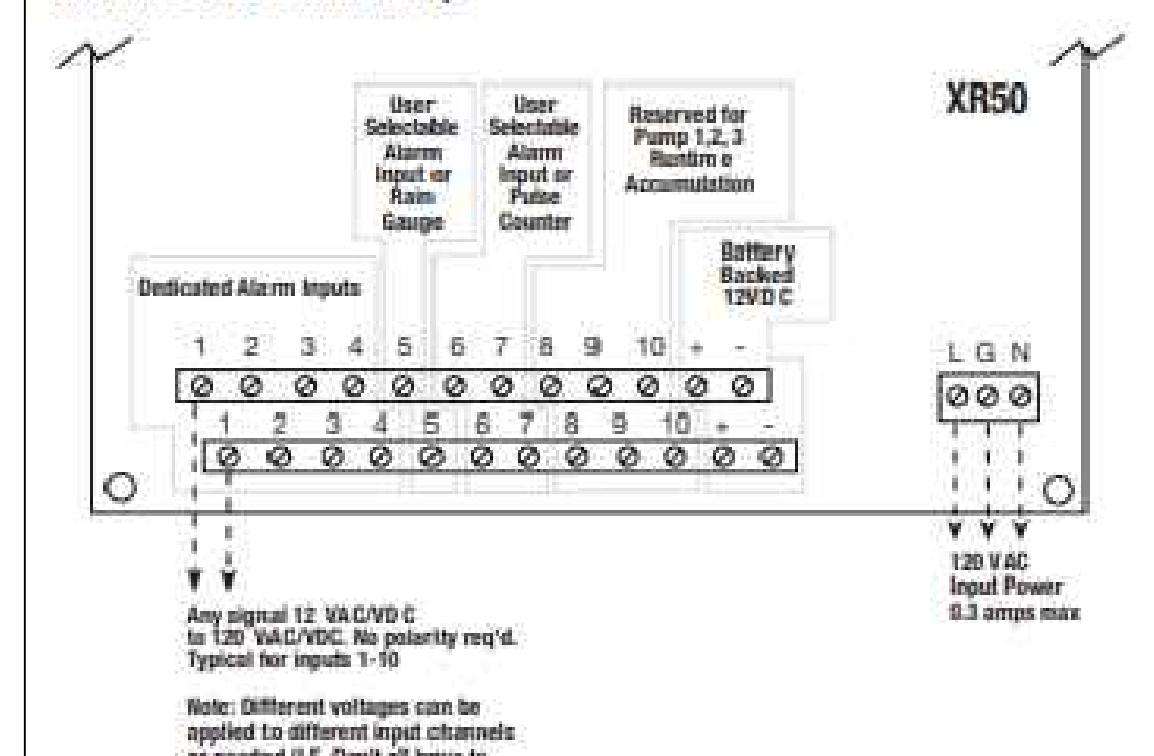
Power Supply	80-265 VAC +/-10% or 15-20 VDC +/-10%
Max. Power Consumption	0.3 amps @ 120 VAC or 2.1 amps @ 15 VDC
DI Inputs	(10) universal input 120VAC/VAC thru 120VDC/VDC +/-10%
Counter Inputs	(2) avail. At 30Hz max. Freq
Rain Gauge Input	(1) Avail for pulse only. Each pulse must = 0.01" rain
Operating Temp.	-20 to 150 F
Storage Temp.	-20 to 180 F
Humidity	5-95% RH, non-condensing
Enclosure	Weatherproof, equivalent to NEMA 4X (Optional)
Terminals	Removable, spring clamp style
Weight	5.6 lbs.
Communications	Local RS232 Port
Memory Type	EEPROM, Flash
Isolation Voltage	4000 VAC opto-isolated
Input Impedance	10Kohm min.
Surge	ANSI C37.90.1
Dimensions	8.25w x 8.6h x 2.75d
Aux. Power Out	100 mA @ 12 VDC
Battery Charger	15 VDC capable of charging 800 mAH -17 AH gel cell



OMNISITE MODEL XR50 CELLULAR REMOTE MONITORING SYSTEM (OR EQUAL)

Wiring Diagrams

The XR50 Field Terminal Strip



REMOTE MONITORING EQUIPMENT
NOT TO SCALE

SCREEN REPLACEMENT NOTES:

1. THE PLANT SHALL BE KEPT OPERATIONAL WHILE THE MECHANICAL SCREEN EQUIPMENT IS REPLACED.
2. THE INFLUENT SHALL UTILIZE THE MANUAL BAR SCREEN FOR THE DURATION OF THE SCREEN REPLACEMENT PROCESS. CONTRACTOR SHALL COORDINATE WITH OPERATOR TO ENSURE CONTINUITY OF SERVICE.
3. THE REPLACEMENT SCREEN FITS INTO THE EXISTING CHANNEL. HOWEVER, THERE MAY BE INCIDENTAL MODIFICATIONS TO THE SURROUNDING SURFACES TO ACCOMMODATE NEW ANCHORING LOCATIONS, THE DEWATERED SOLIDS DISCHARGE, AND CONDUIT ROUTING FOR ELECTRICAL CONNECTIONS. CONTRACTOR SHALL FIELD VERIFY AND MAKE NECESSARY ADJUSTMENTS.
4. THE REPLACEMENT SCREEN SHALL BE A ZIMA KUSTERS, MODEL ICSS 2/6 SCREW SCREEN WITH AUTOMATED OPERATION FOR FLOW DETECTION, WASHING, AND COMPACTING OF DEBRIS. SCREEN OPENING SIZE SHALL NOT BE GREATER THAN 1/2".
5. THE NEW SCREEN CONTROLS SHALL BE MOUNTED IN THE SAME LOCATION WITHIN THE BLOWER ROOM AS THE EXISTING SCREEN CONTROLS. THE NEW CONTROLS SHALL ALSO BE INTEGRATED BACK TO THE SCADA AND REMOTE ALARM SYSTEM.

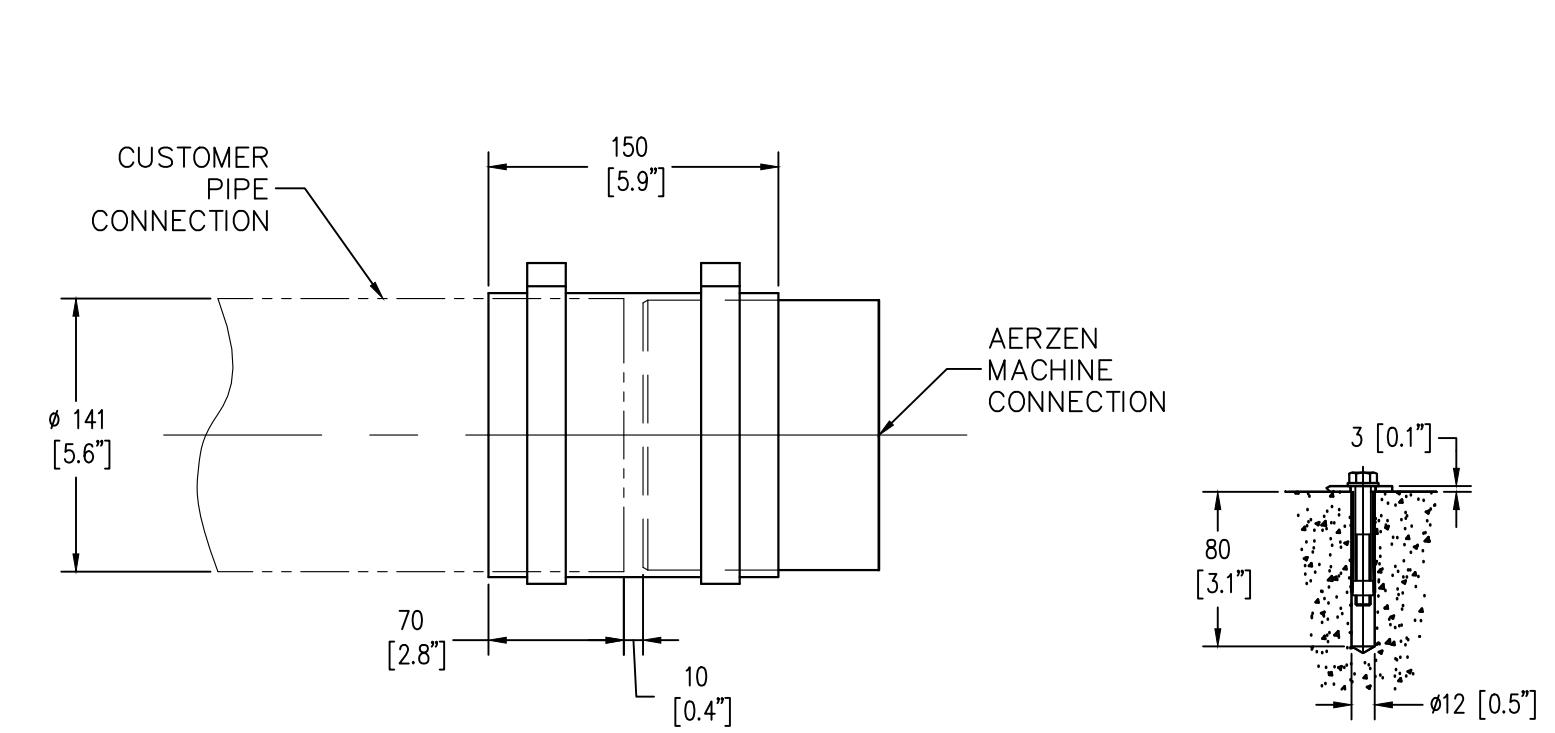
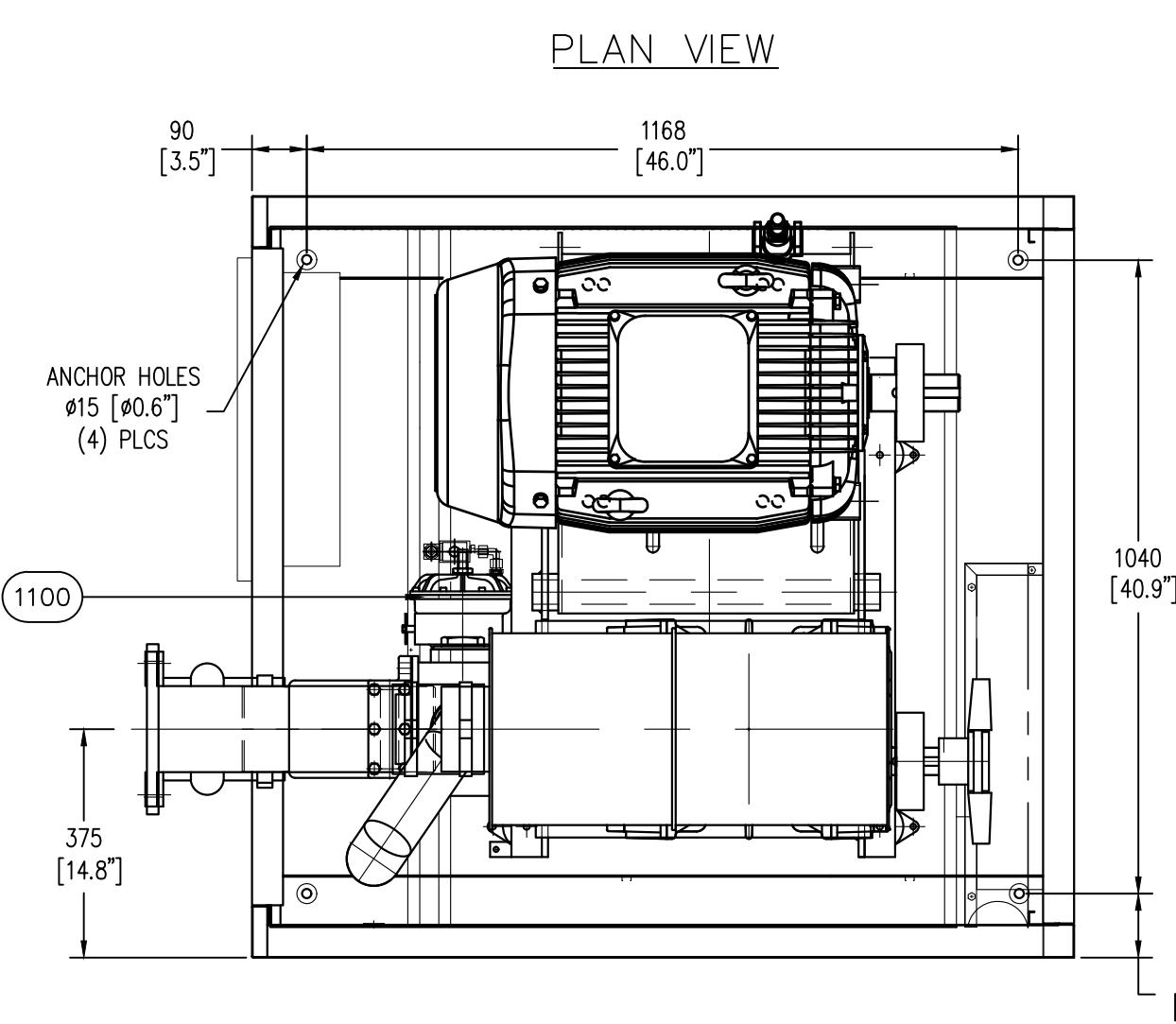
GENERAL HEADWORKS IMPROVEMENT NOTES:

1. REFER TO THE APPROPRIATE SHEETS FOR SITE PIPING, PLUMBING, ELECTRICAL, AND MECHANICAL LAYOUTS. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WORK WITH ALL OTHER TRADES.
2. ALL PIPING SHALL BE PROPERLY RESTRAINED TO WALL AND FLOOR TO ENSURE RIGID STRUCTURE.
3. ALL EQUIPMENT TO BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
4. ALL WALL PENETRATIONS FROM SCREEN ROOM INCLUDING AIR LINES, SAMPLE LINES, WATER, AND ELECTRIC CONDUIT, SHALL BE PROPERLY SEALED FROM CLASS 1, DIVISION 1, GROUP D AREA.
5. SEAL ALL WALL OR CEILING PENETRATIONS TO SCREEN ROOM.
6. THE CHEMICAL METERING PUMPS AND VALVING SHALL BE LOCATED INSIDE THE CONTAINMENT AREA.
7. THE CHEMICAL METERING PUMPS SHALL BE LOCATED ON AN FRP SHELF ABOVE THE LIQUID LEVEL OF THE STORAGE CONTAINERS.
8. CHEMICAL FEED SYSTEM PIPING WITHIN THE BUILDING MUST BE CLEARLY LABELED AS HAZARDOUS.
9. 'NO SMOKING' SIGNS MUST BE PLACED WHERE APPROPRIATE AND OTHERWISE REQUIRED PER APPLICABLE CODES AND REGULATIONS.
10. FIRST AID KITS SHOULD BE PROVIDED IN SUFFICIENT NUMBER AND IN SUITABLE LOCATIONS THROUGHOUT THE PLANT SITE WITH CONSIDERATION TO SPECIFIC HAZARDS AND THE NUMBER OF PERSONNEL.

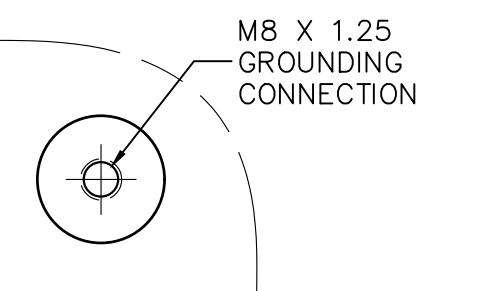
HEADWORKS DETAILS

C303

SHEET 6 OF 31



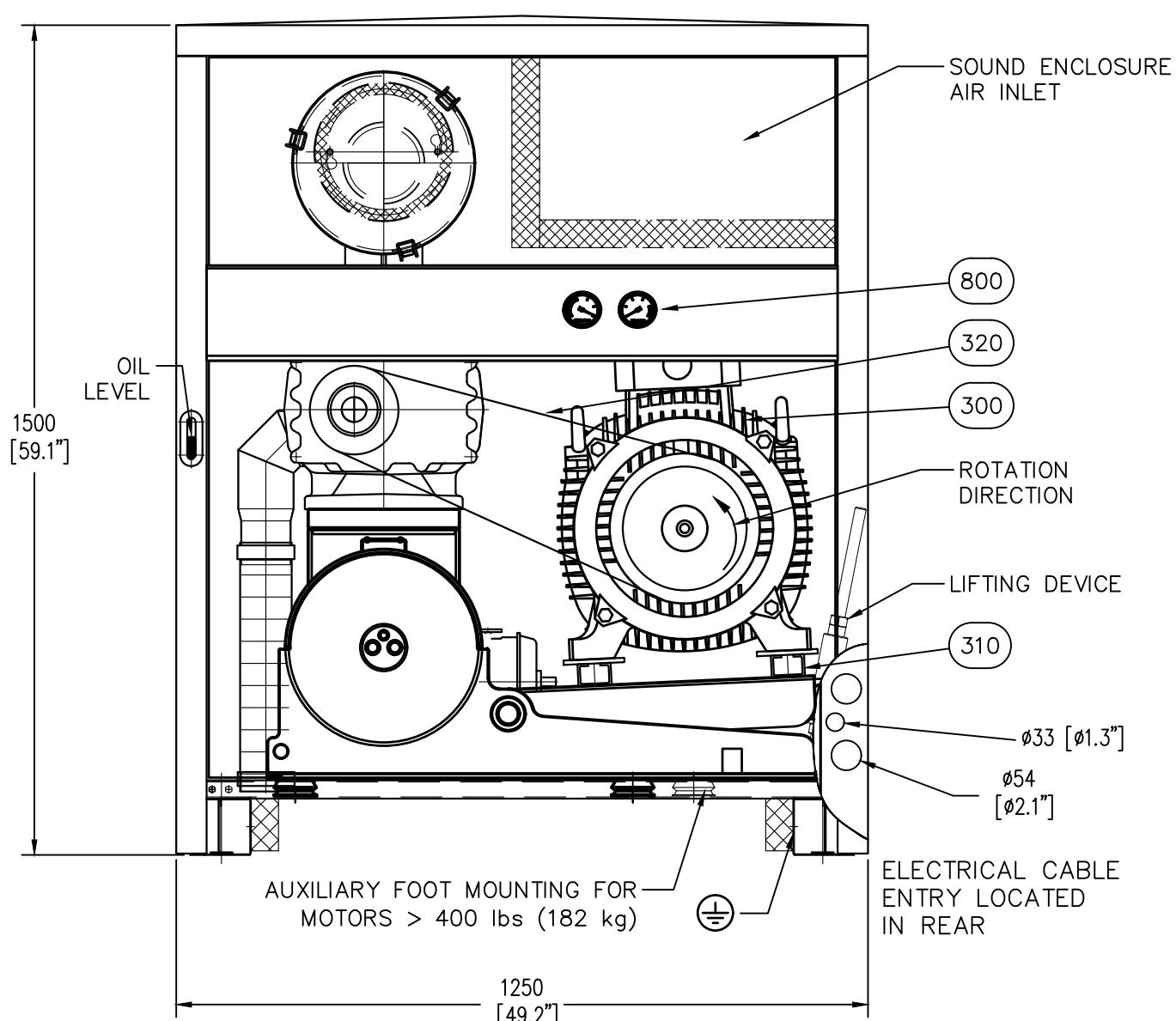
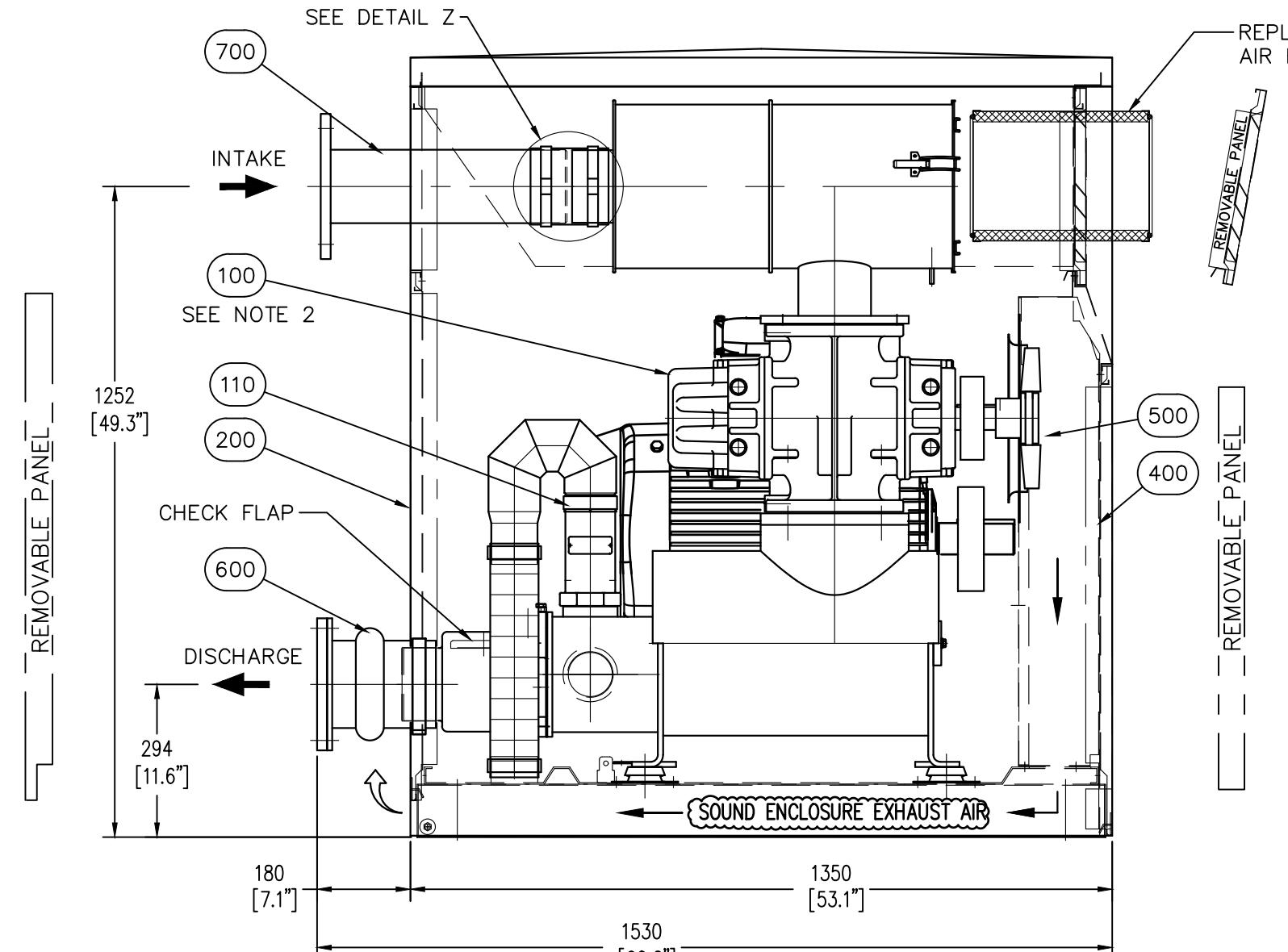
ITEM	QTY	DESCRIPTION	DESCRIPTION 2
100	1	BLOWER TORSO	GM25S, DN125
110	1	PRESSURE RELIEF VALVE	
200	1	SOUND ENCLOSURE	
300	1	ELECTRIC MOTOR	SHOWN WITH A 380 NEMA MOTOR
310	1	MOTOR MOUNTING	
320	1	BELT DRIVE	
400	1	BELT GUARD	
500	1	COOLING FAN	
600	1	DISCHARGE CONNECTION	5"-150# ANSI
700	1	INLET CONNECTION	5"-150# STUB PIPE
800	1	INSTRUMENTATION	
1100	1	UNLOADING VALVE	(OPTIONAL)



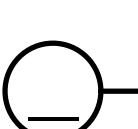
DETAIL Z
SLEEVE CONNECTION
CUSTOMER PIPE ENGAGEMENT
LEAVES 10 [0.4"] GAP
3X SCALE

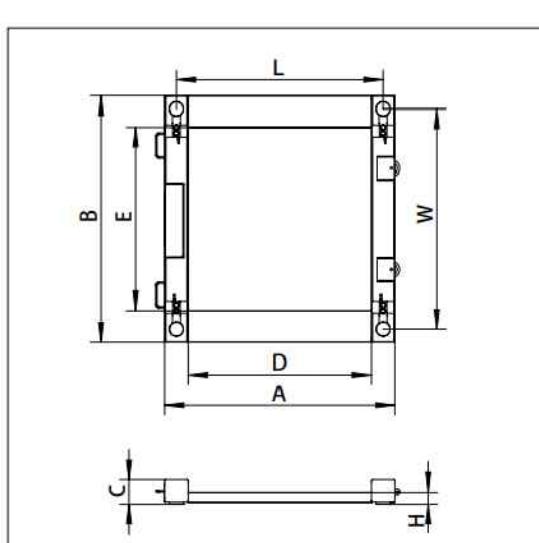
SOUND ENCLOSURE ANCHOR
RECOMMENDATION
SHOW WITH OPTIONAL ANCHOR
AERZEN PART NO. 2000053552
3X SCALE

EARTH GROUND
MATL: 304 SS
8X SCALE

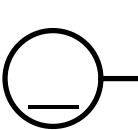


SIDE VIEW

 BLOWER DETAIL
NOT TO SCALE



30" x 30" 762 x 762 mm	
A	37.9 in. / 962 mm
B	40.4 in. / 1,024 mm
C	4 in. / 100 mm
D	30 in. / 762 mm
E	30 in. / 762 mm
H	2 in. / 50 mm
W	34 in. / 862 mm
L	36 in. / 914.4mm

 DRUM SCALE DETAIL
NOT TO SCALE

DRUM SCALE NOTES:

- DRUM SCALE SHALL HAVE A MEASURING CAPACITY OF NOT LESS THAN 1,000 LBS, MEASURED IN 0.2 LB INCREMENTS AND BE DESIGNED WITH A RAMPED ACCESS FOR LOADING A DRUM ONTO THE SCALE, OHAUS MODEL DFD32M1000ES OR EQUAL.
- THE SURFACE SHALL BE PAINTED CARBON STEEL WITH TREADED SURFACE.
- THE SCALE SHALL BE SUPPLIED WITH A DIGITAL REMOTE DISPLAY.
- CONTRACTOR SHALL REROUTE THE 3" CHEMICAL FEED TUBING FROM THE EXISTING DRUM STORAGE LOCATION TO THE NEW LOCATION. TUBING SHALL BE INSTALLED WITHIN A 1" DIA. PVC CONDUIT, SECURED TO THE WALL.
- DRUM SCALE AND REMOTE READER SHALL COMPLY WITH CLASS 1, DIVISION 1, GROUP D HAZARDOUS LOCATION REQUIREMENTS.

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TUSCARORA TOWNSHIP
WWTP EXPANSION
460 BRYDY RD.
INDIAN RIVER, MI 49749

OWNER
TUSCARORA TOWNSHIP

PROJECT NO: 23-6036
CAD DWG FILE: 6036PLANT.DWG
DRAWN BY: PEI
DESIGNED BY: AMI
CHECKED BY: AEN

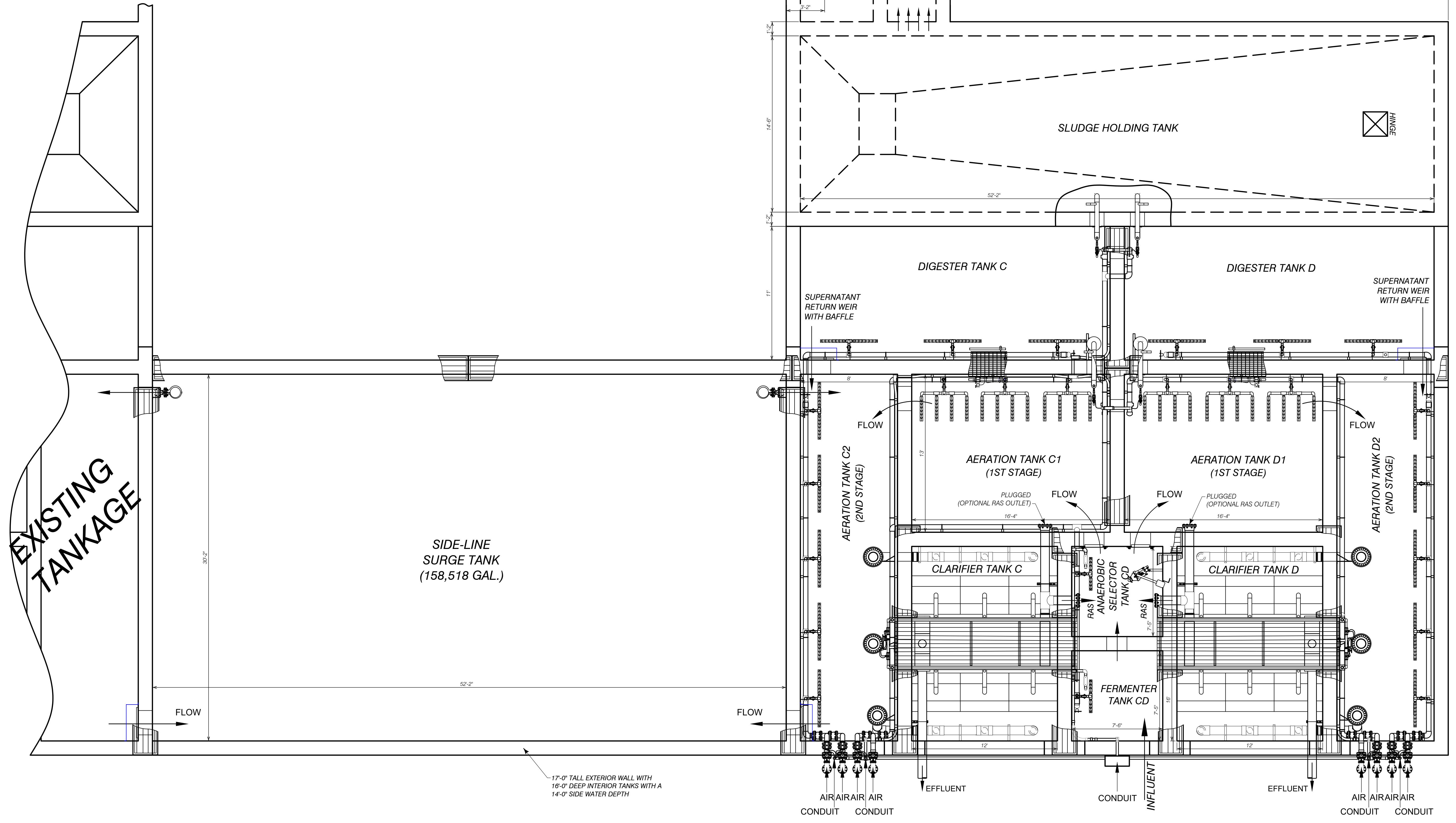
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SHEET TITLE
HEADWORKS EQUIPMENT
DETAILS

C304

SHEET 7 OF 31

EGLE
Approved
Issued On: 02/06/2024
Expires On: 02/06/2026



NOTE:

1. ALL TANK PIPING REQUIREMENTS SHOWN ON TANK PIPING LAYOUT.
2. ALL WALKWAY REQUIREMENTS SHOWN ON WALKWAY AND HANDRAIL LAYOUT.



NOT TO SCALE

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TUSCARORA TOWNSHIP
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460 BRADY RD.
INDIAN RIVER, MI 49749

OWNER
TUSCARORA TOWNSHIP

MARK	DATE	DESCRIPTION
0	7/28/23	PERMIT SUBMITTAL
1	1/5/24	REVISED PER EGE REVIEW
2	1/26/24	BID ISSUE
3	1/31/24	ADDENDUM 1

PROJECT NO: 23-6036
CAD DWG FILE: 6036PLANT.DWG

DRAWN BY: PEI

DESIGNED BY: AMI

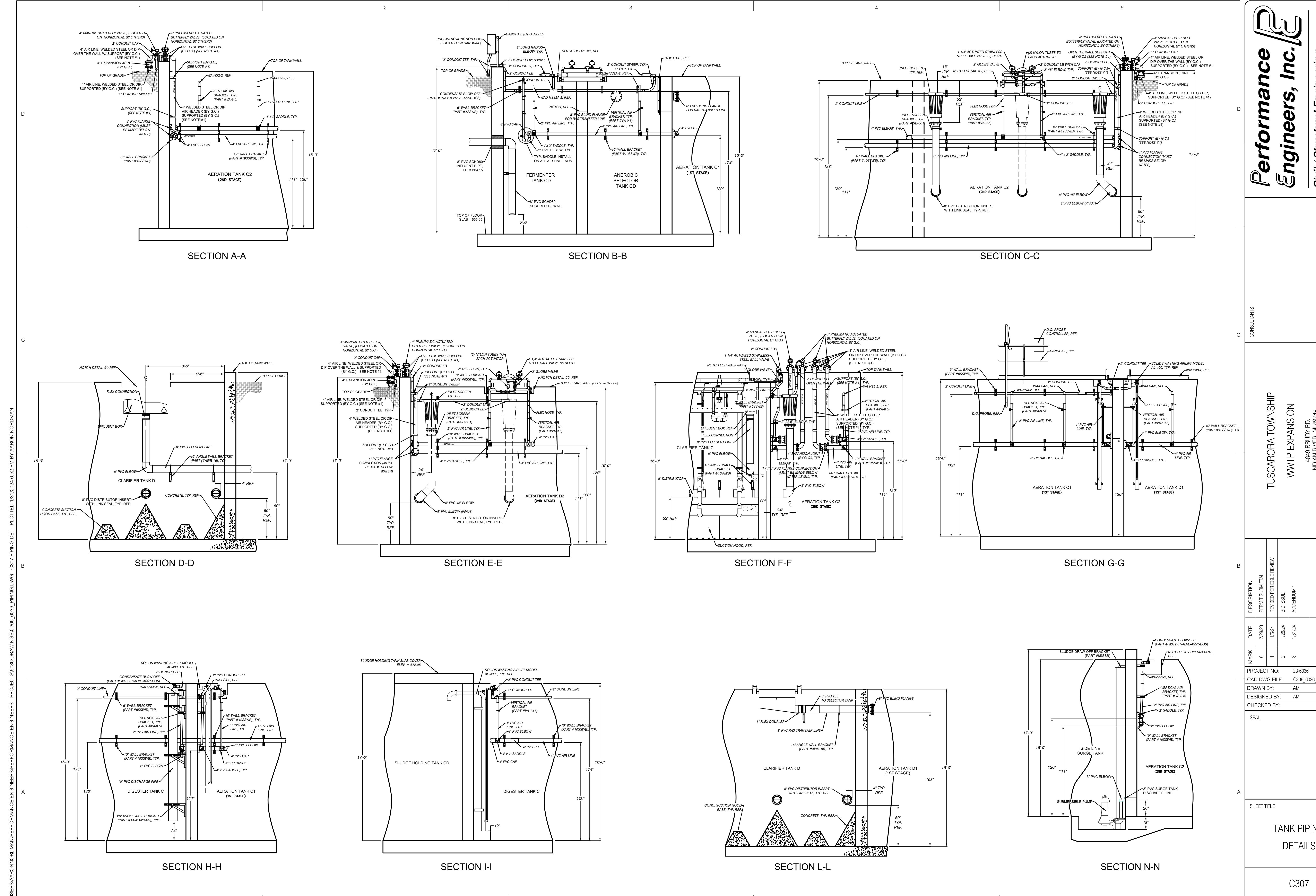
CHECKED BY: AEN

SEAL

PLANT EXPANSION LAYOUT

C305

SHEET 8 OF 31



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EXISTING
TANKAGE

NOTE:
 1. ALL TANK PIPING REQUIREMENTS
 SHOWN ON TANK PIPING LAYOUT.
 2. ALL WALKWAY REQUIREMENTS SHOWN
 ON WALKWAY AND HANDRAIL LAYOUT.
 3. THE AEROMOD PROCESS TANKS ARE ALL
 ASSUMED TO BE CLASS I, DIVISION I HAZARDOUS
 LOCATIONS. ALL CONDUITS IN THESE SPACES
 SHALL PROVIDE GAS TIGHT SEALS AND ALL
 EQUIPMENT SHALL BE OF APPROPRIATE
 EXPLOSION PROOF DESIGN.

1 2 3 4 5

SUBMERSIBLE PUMP
LOCATED IN 3x3' SUMP,
SEE DETAIL 8, SHT. S102

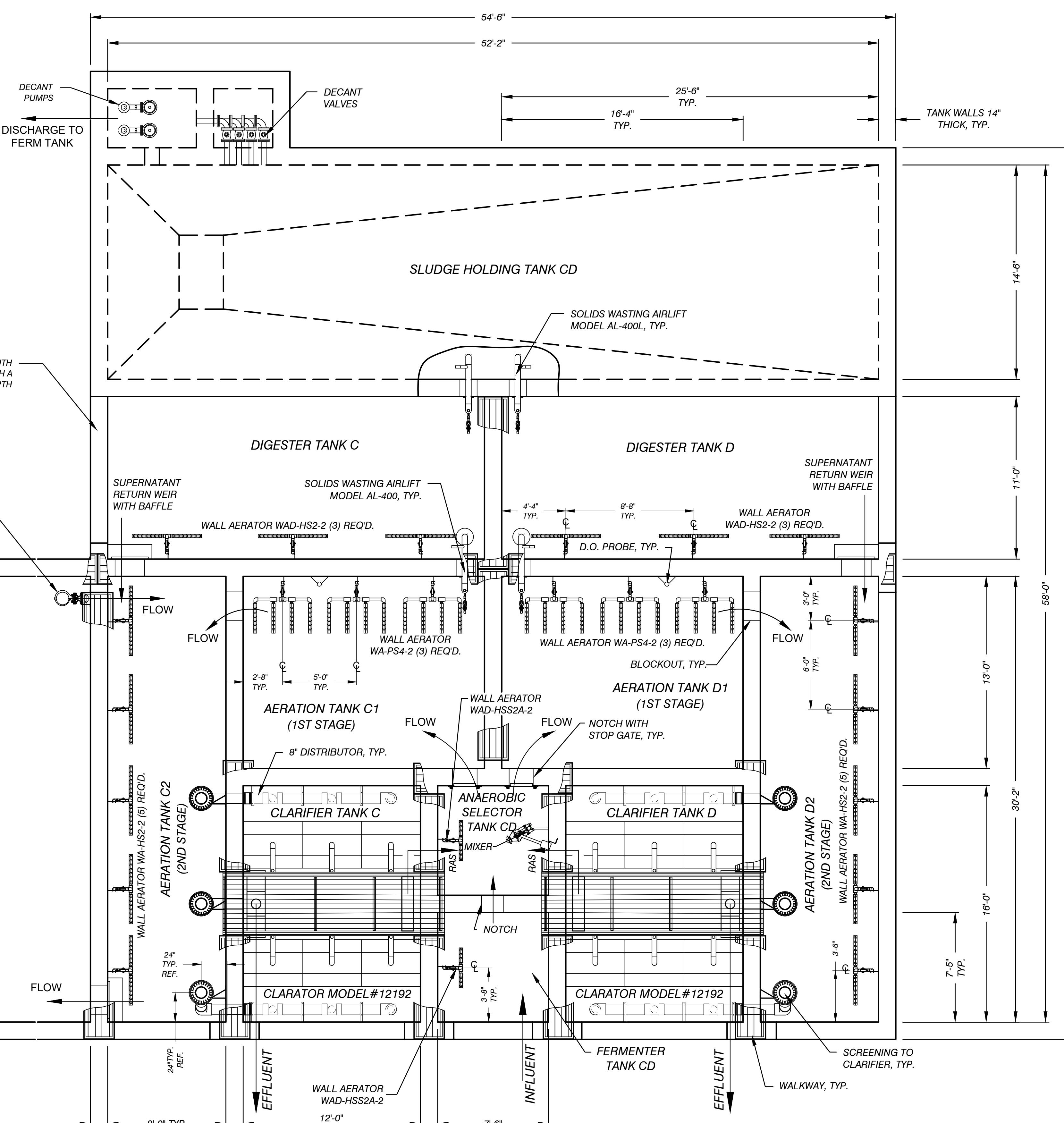
16'-0" DEEP WALL

SUBMERSIBLE PUMP
LOCATED IN 3x3' SUMP, SEE
DETAIL 8, SHT. S102

16'-0" DEEP WALL

SIDE-LINE
SURGE TANK

17'-0" TALL EXTERIOR WALL WITH
16'-0" DEEP INTERIOR TANKS WITH A
14'-0" SIDE WATER DEPTH



NOT TO SCALE

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FAX: (705) 537-0113

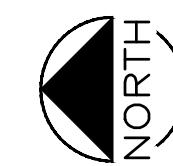
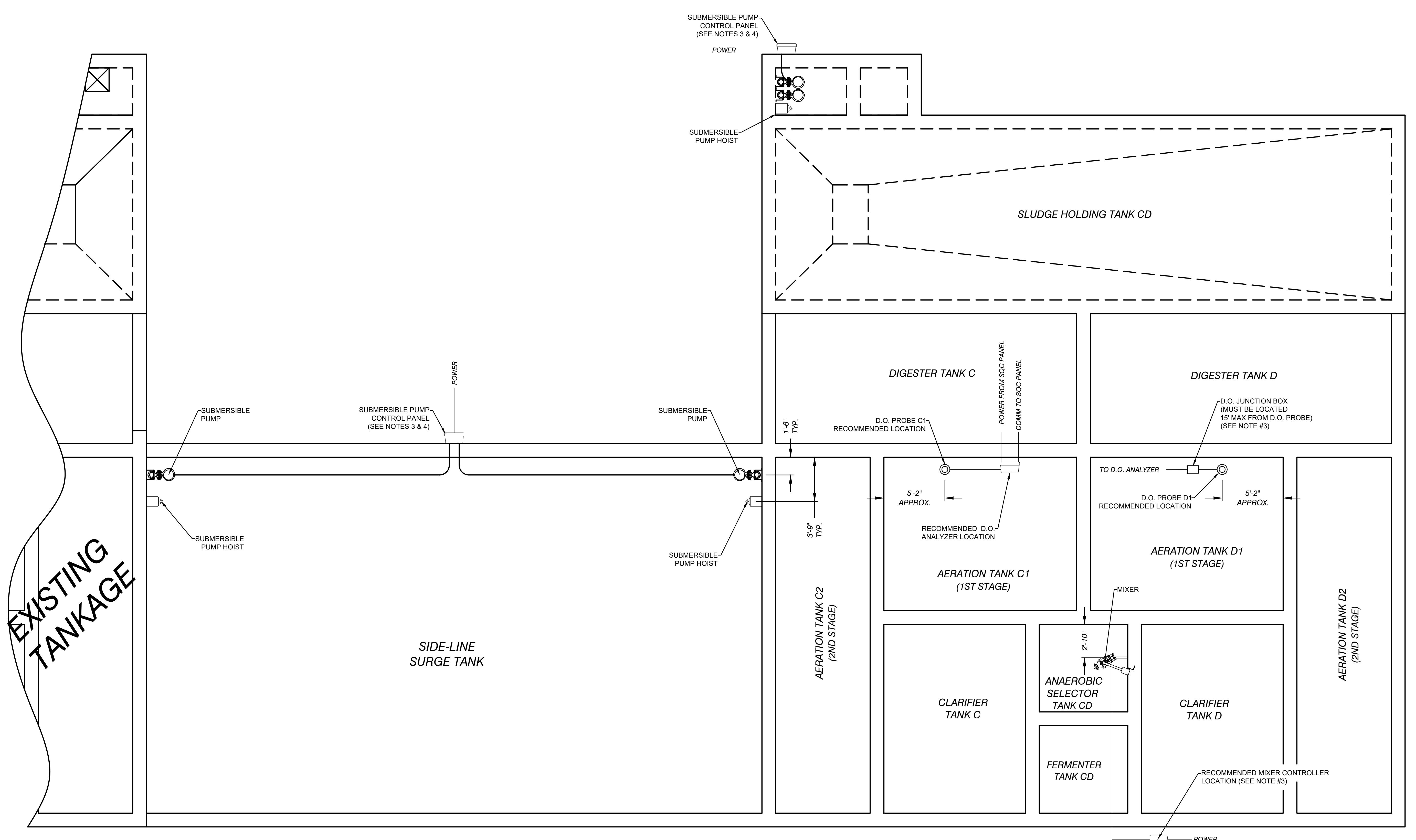
TUSCARORA TOWNSHIP
WWTP EXPANSION
4605 BRIDY RD.
INDIAN RIVER, MI 48749

OWNER
TUSCARORA TOWNSHIP
CHEBONIAN COUNTY
INDIAN RIVER, MI 48749

EQUIPMENT PLAN
VIEW

C308

SHEET 11 OF 31

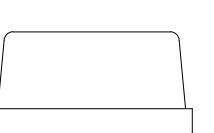


NOT TO SCALE

NOTE:

1. ALL POWER SUPPLIED FROM DISTRIBUTION PANEL UNLESS OTHERWISE NOTED.
2. EXTENSION CABLES WILL REQUIRE ADDITIONAL CONDUIT (1") TO D.O. PROBE CONTROLLER VIA THE JUNCTION BOX. (GENERAL CONTRACTOR).
3. LOCATION OF PANEL/JUNCTION BOXES ASSUMED TO BE CL 1, DIVISION 1 HAZARDOUS LOCATION UNLESS SPECIFICALLY EVALUATED AND LOCATED OTHERWISE. PANELS TO BE MOUNTED AT LOCATIONS APPROVED BY ENGINEER, AND INSTALLED IN ACCORDANCE WITH NEC CODE, INCLUDING GAS TIGHT CONDUIT SEALS FOR ALL PENETRATIONS.
4. CONTROLS AND JUNCTION BOXES TO BE SECURED TO S.S. UNISTRUT FRAME. UNISTRUT MAY BE MOUNTED TO TANK OR SECURED TO CONCRETE FOUNDATION.

SYMBOL KEY



CONTROL PANEL (EXPLOSION PROOF - TYP.)



JUNCTION BOX (EXPLOSION PROOF - TYP.)

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4600 BRADY RD.
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OWNER
TUSCARORA TOWNSHIP
CHEBONIAN COUNTY
MICHIGAN

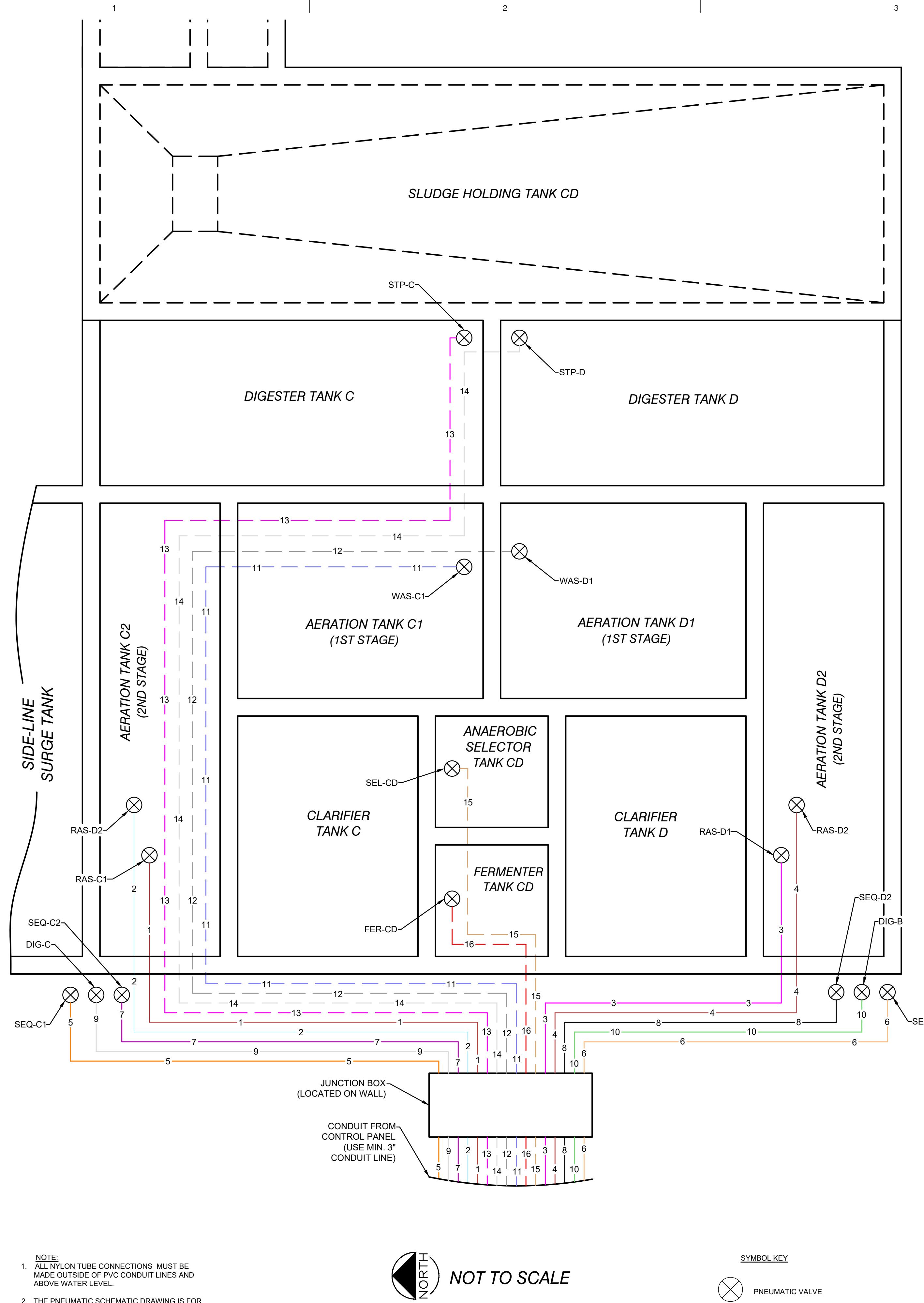
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2	1/26/24	BID ISSUE
3	1/31/24	ADDENDUM 1

SEAL

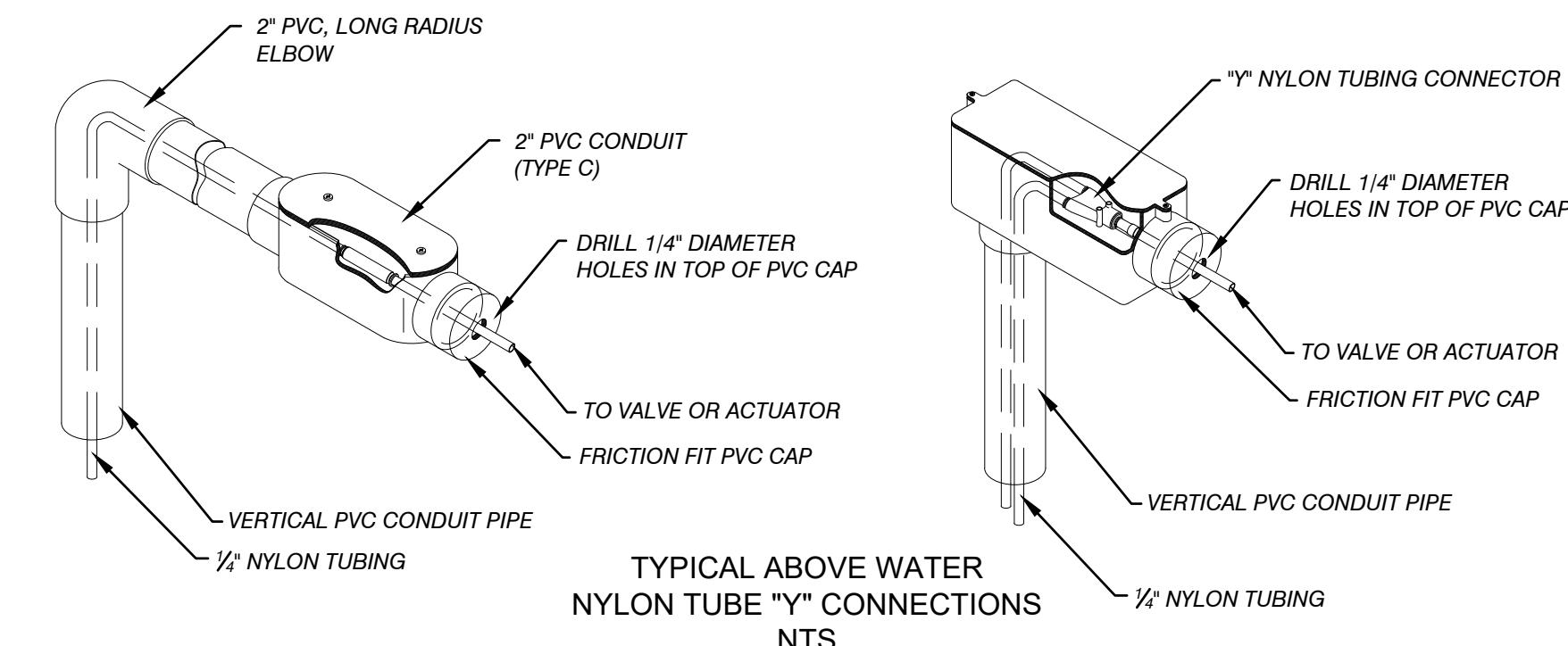
ELECTRICAL EQUIPMENT PLACEMENT

C309

SHEET 12 OF 31



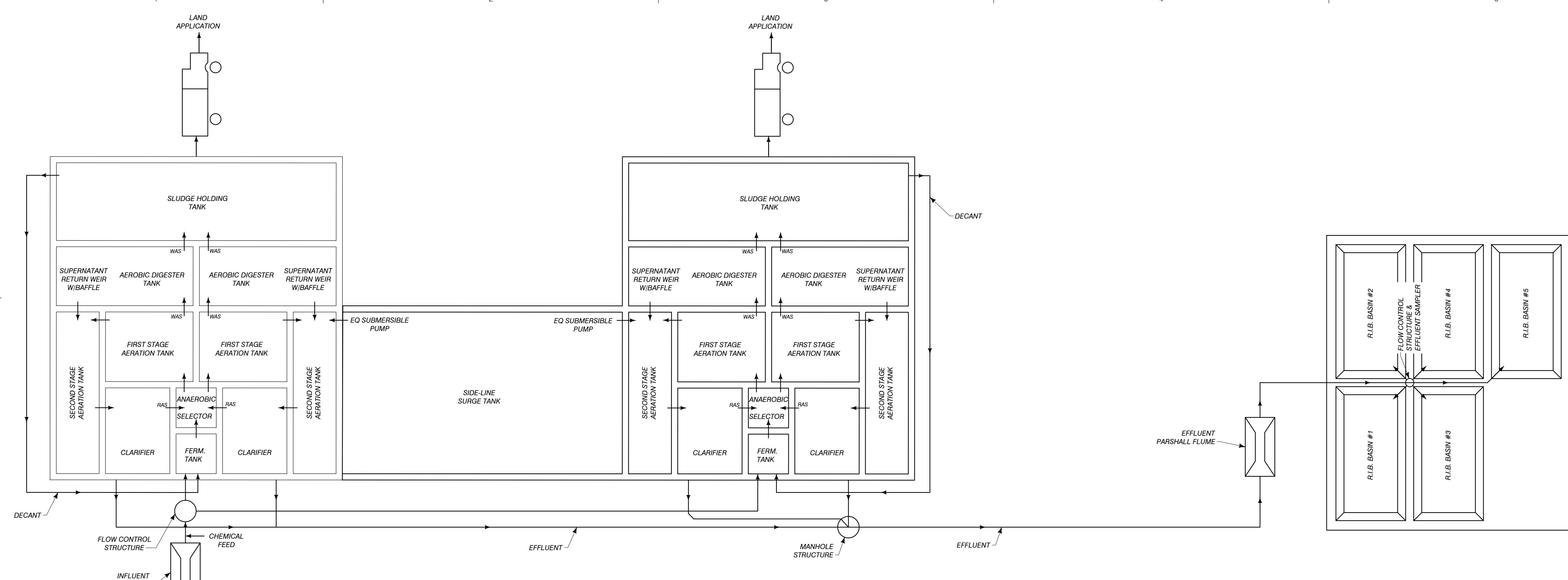
1 2 3 4 5



VALVE ABBREVIATION GUIDE			
XXX - X(X) # - #	INDICATES CYCLE/STAGE/ VALVE OR EQUIPMENT NUMBER	INDICATES CYCLE/STAGE	INDICATES TRAIN(S)/LOCATION
			INDICATES TYPE/FUNCTION FOR VALVE OR EQUIPMENT
RAS	= RETURN ACTIVATED SLUDGE (RAS) VALVE		
SEQ	= SEQUOX VALVE		
DIG	= DIGESTER VALVE		
WAS	= AIR LIFT VALVE		
SEL	= SELECTOR VALVE (MAY HAVE BIO-P AS A PREFIX)		
SHT	= SLUDGE HOLDING VALVE		
STP	= SLUDGE TRANSFER VALVE		
FER	= FERMENTOR VALVE		

NYLON TUBING GUIDE FOR PNEUMATIC SCHEMATICS				
PNEUMATIC LINE NUMBER	NYLON TUBE COLOR AND ITEM NUMBER	NUMBER OF TUBES	DESCRIPTION AND VALVE NO.	NORMAL VALVE POSITION
1	RED (04126)	TWO	CYCLE VALVE RAS-C1	CLOSED
2	BLUE (04166)	TWO	CYCLE VALVE RAS-C2	CLOSED
3	PINK (041G6)	TWO	CYCLE VALVE RAS-D1	CLOSED
4	BROWN (041C6)	TWO	CYCLE VALVE RAS-D2	CLOSED
5	ORANGE (04136)	TWO	SEQUOX VALVE SEQ-C1	OPEN
6	NATURAL (04176)	TWO	SEQUOX VALVE SEQ-D1	OPEN
7	PURPLE (041D6)	TWO	SEQUOX VALVE SEQ-C2	OPEN
8	BLACK (04106)	TWO	SEQUOX VALVE SEQ-D2	OPEN
9	WHITE (04116)	TWO	DIGESTER VALVE DIG-A	OPEN
10	GREEN (04156)	TWO	DIGESTER VALVE DIG-B	OPEN
11	VIOLET (04186)	ONE	WASTING VALVE WAS-C1	CLOSED
12	GREY (04196)	ONE	WASTING VALVE WAS-D1	CLOSED
13	PINK (041G6)	ONE	WASTING VALVE STP-D	CLOSED
14	SILVER (041F6)	ONE	WASTING VALVE STP-D	CLOSED
15	TAN (041E6)	ONE	SELECTOR SEL-CD	CLOSED
16	RED (04126)	ONE	SELECTOR FER-CD	CLOSED

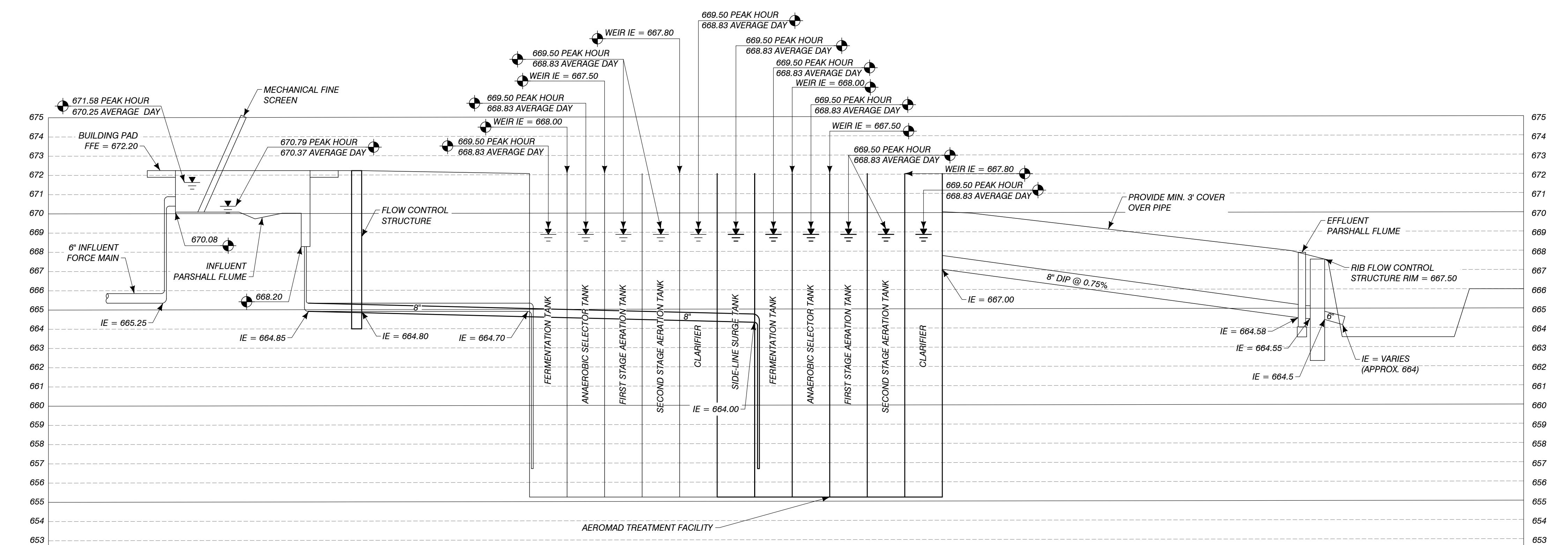
CONSULTANTS	TUSCARORA TOWNSHIP WWTP EXPANSION 4608 BRIDY RD. INDIAN RIVER, MI 49749		
OWNER	TUSCARORA TOWNSHIP CHEBONGAN COUNTY, MICHIGAN		
PROJECT NO:	23-6036		
CAD DWG FILE:	C309 6036 ELE.DWG		
DRAWN BY:	AMI		
DESIGNED BY:	AMI		
CHECKED BY:	PEI		
SEAL			
SHEET TITLE	PNEUMATIC EQUIPMENT PLACEMENT		
C310			
SHEET	13	OF	31





FLOW SCHEMATIC

NO SCALE





HYDRAULIC PROFILE

NO SCALE

HEET TITLE

FLOW SCHEMATIC & HYDRAULIC PROFILE

C311

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11

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S. Highway 24
Hesston, Kansas 66502

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1

15

USCARORA TOWNSHIP WWTP EXPANSION

4649 BRUDY RD.
INDIAN RIVER, MI 49749

SHIP
NTY, MICHIGAN

SHIRES, INC. 1000 N. GRANGE AVENUE, CHICAGO, ILLINOIS 60626

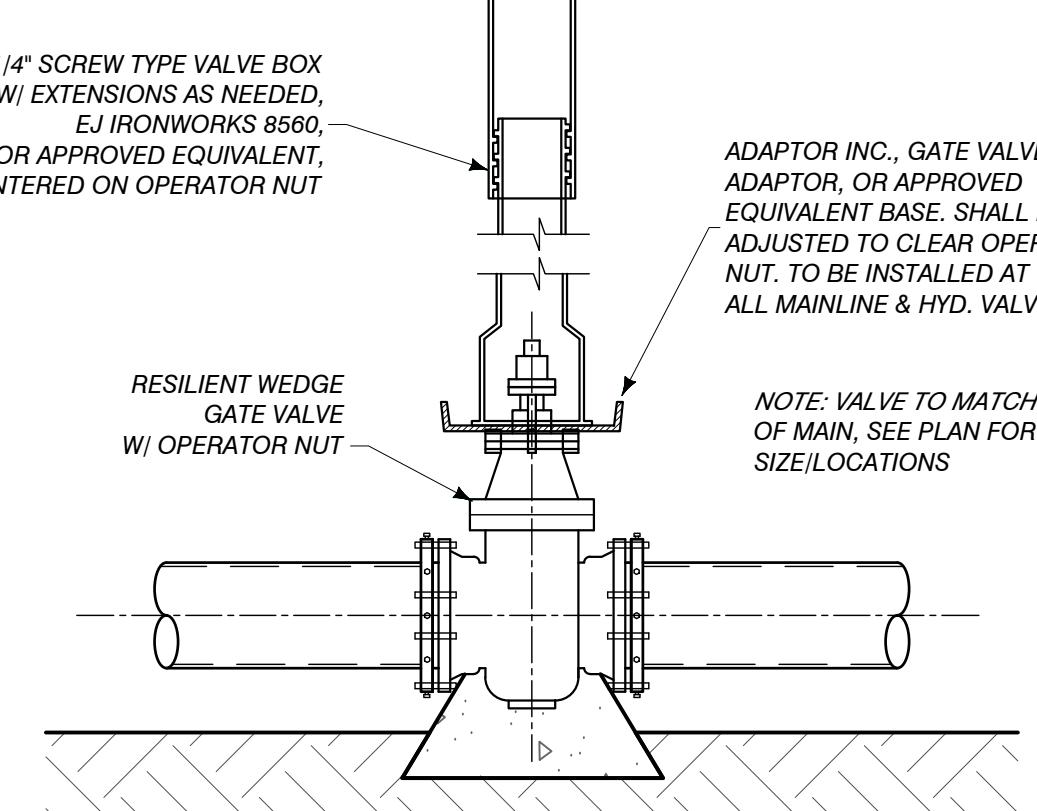
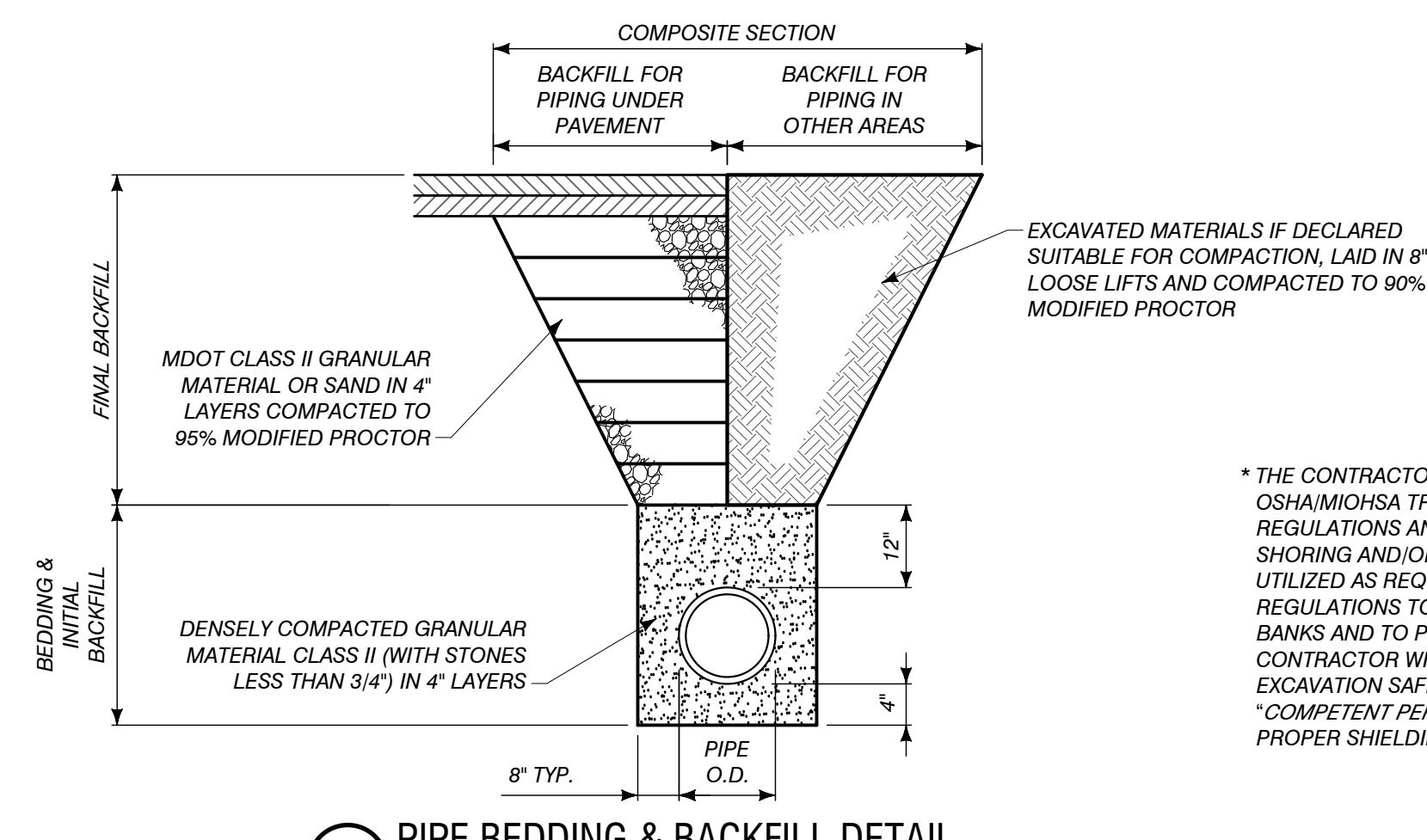
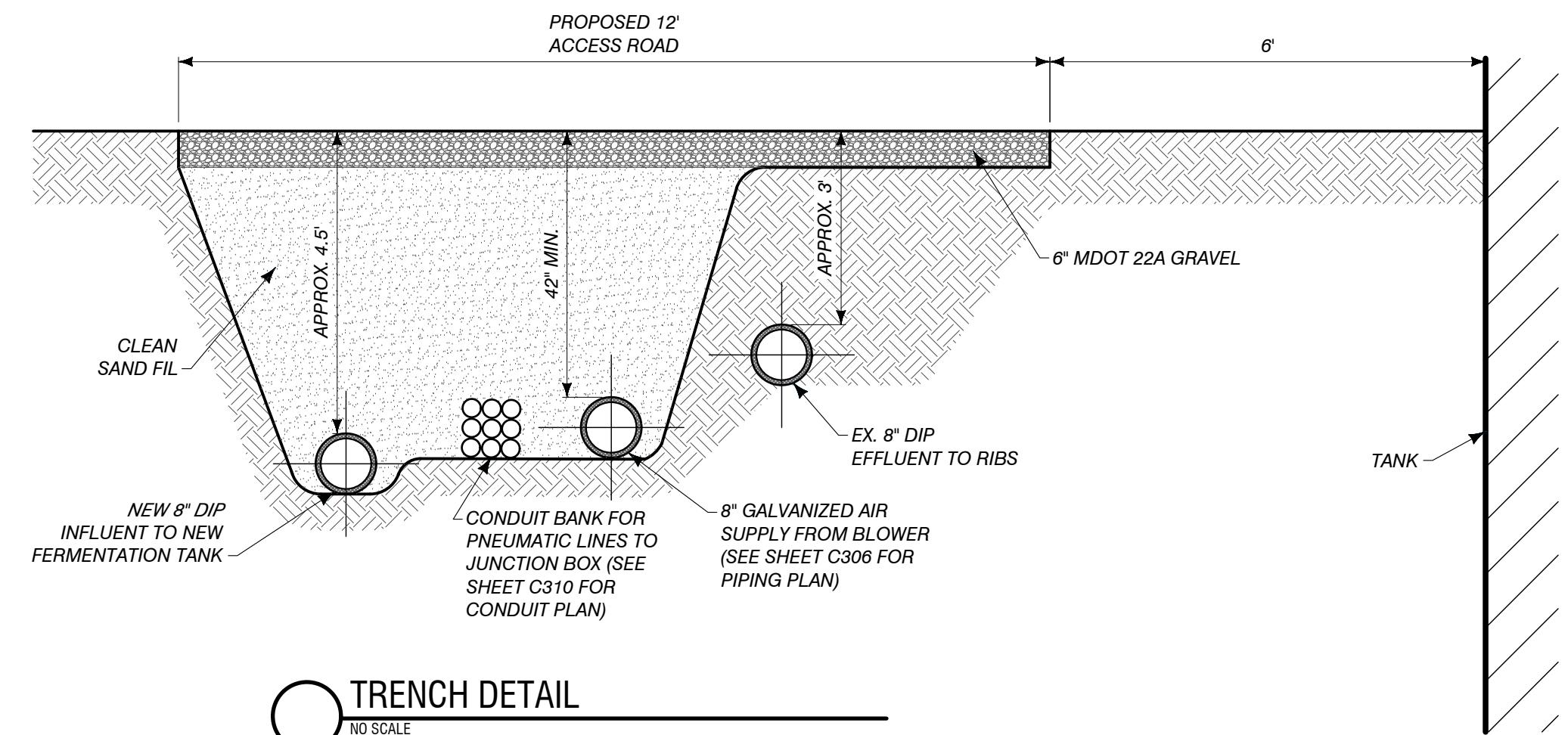
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3	1/31/24	ADDENDUM 1	

PROJECT NO:	23-6036
AD DWG FILE:	6036 HYD PROF.DWG
DRAWN BY:	PEI
DESIGNED BY:	CJR
CHECKED BY:	AEN

HEET TITLE

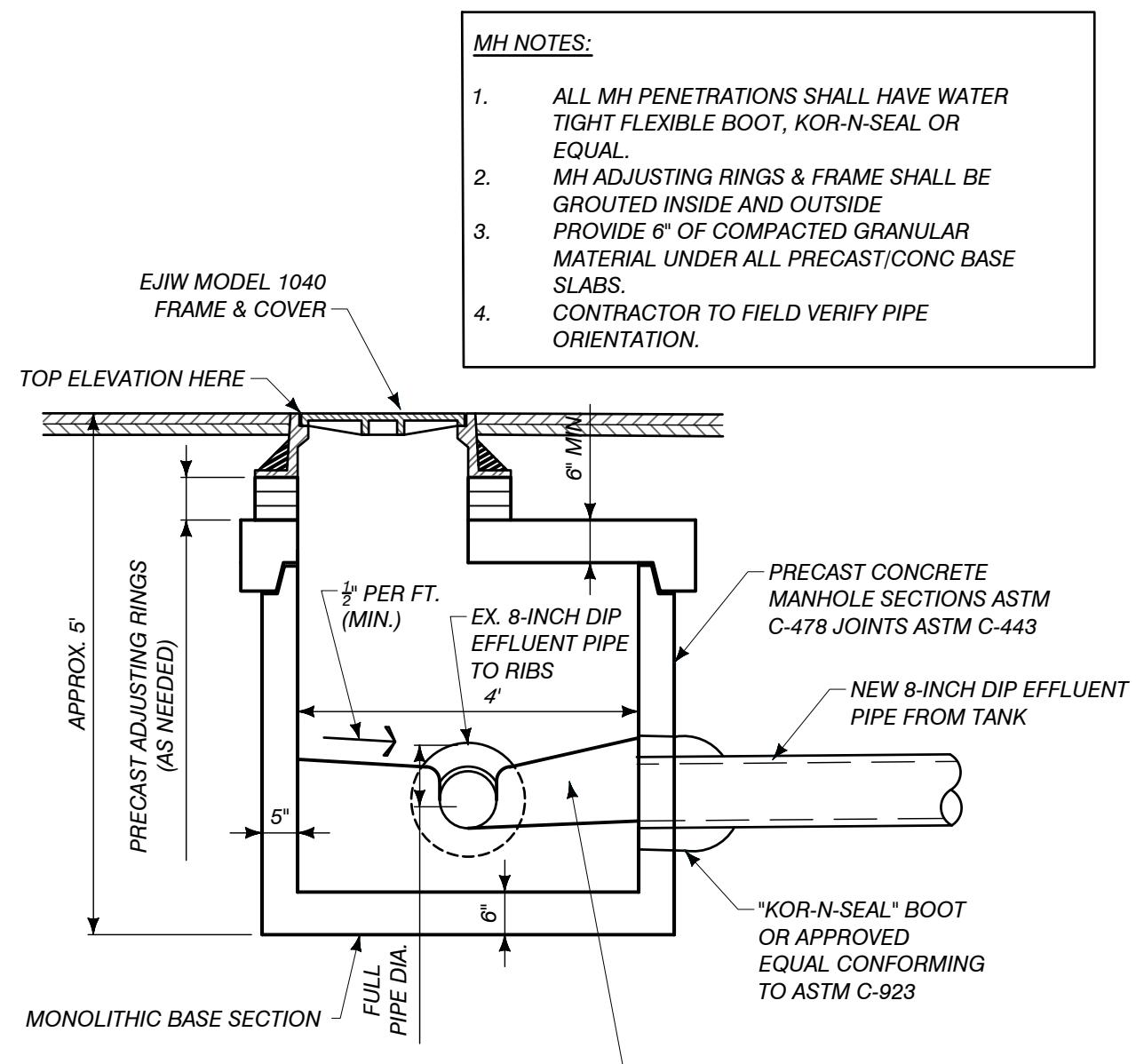
FLOW SCHEMATIC & HYDRAULIC PROFILE

C311

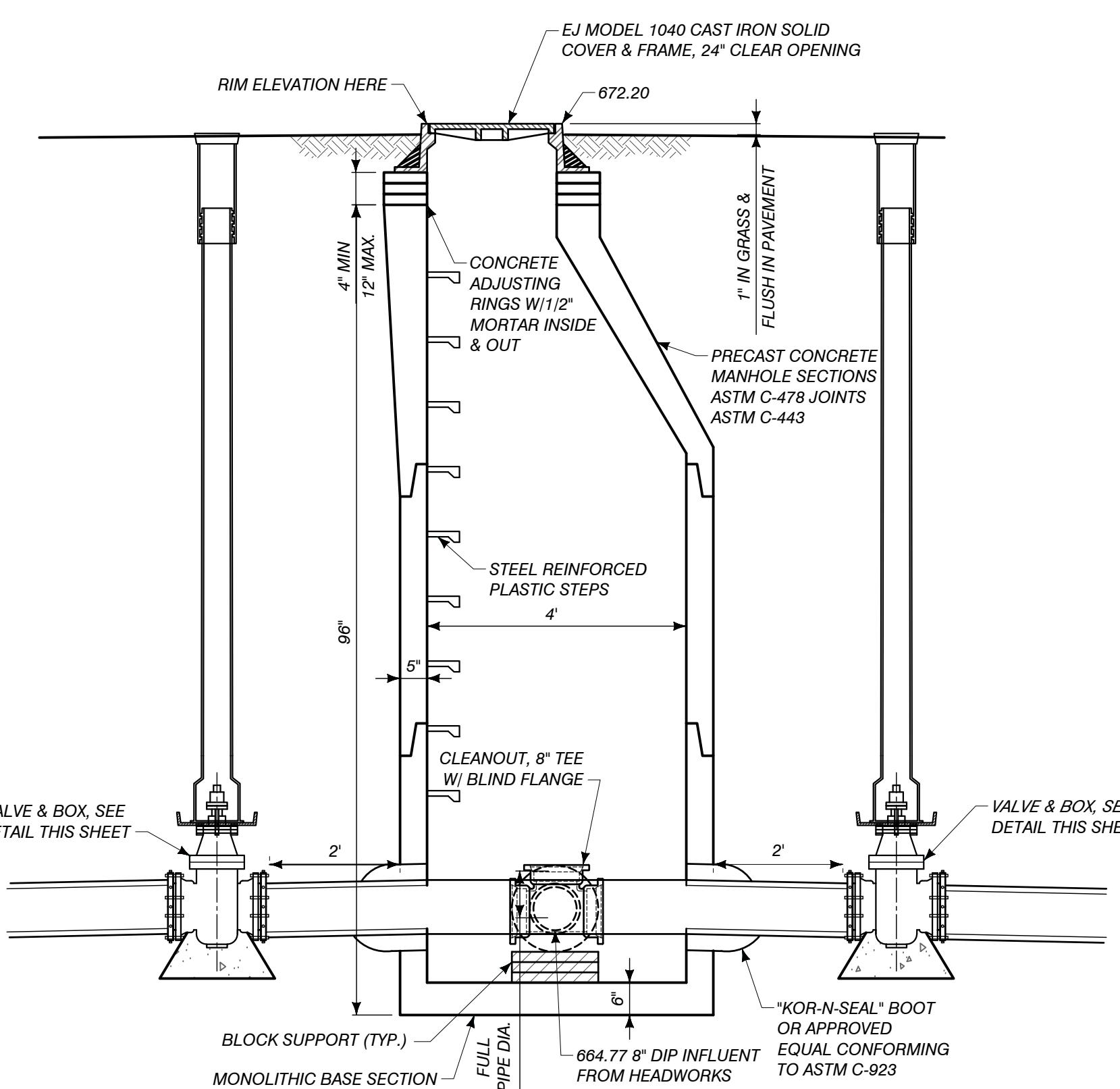


- ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE CURRENT REQUIREMENTS OF THE STATE OF MICHIGAN, EGLE, THE PLANS AND SUPPLEMENTAL SPECIFICATIONS PROVIDED.
- THE OWNER WILL PROVIDE THE CONTRACTOR WITH THE REQUIRED EGLE PERMIT FOR THE CONSTRUCTION. CONSTRUCTION IS NOT TO BEGIN UNTIL THIS PERMIT HAS BEEN OBTAINED AND SHALL COMPLY WITH ALL PERMIT TERMS AND CONDITIONS.
- ALL SANITARY SEWER GRAVITY PIPING SHALL BE DIP UNLESS OTHERWISE NOTED, INSTALLED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
- THE CONTRACTOR SHALL BE REQUIRED TO COORDINATE FOR CONSTRUCTION INSPECTION BY THE ENGINEER AND PROVIDE ADVANCE NOTICE FOR ANY WORK THAT IMPACTS THE OPERATION OF THE EXISTING WWTP. THE EXISTING WWTP SHALL REMAIN IN-SERVICE AT ALL TIMES UNLESS PRIOR ARRANGEMENTS HAVE BEEN MADE. THIS MAY REQUIRE SCHEDULED DISRUPTIONS TO OCCUR DURING OFF PEAK HOURS.
- THE WORK WILL OCCUR IN AND AROUND AN ACTIVE WWTP. AS SUCH THE CONTRACTOR SHALL BE RESPONSIBLE FOR TAKING APPROPRIATE SAFETY MEASURES TO PROTECT THE HEALTH AND SAFETY OF WORKERS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DEVELOP A SITE HEALTH AND SAFETY PLAN, ADHERING TO NFPA 241 AND/OR 820, OSHA, NEC 70, AND ANY OTHER APPLICABLE REGULATIONS THAT MAY PERTAIN TO SPECIFIC ACTIVITIES. THIS INCLUDES WORK WITHIN CLASS 1, DIVISION 1, HAZARDOUS LOCATIONS.
- CONTRACTOR SHALL FIELD VERIFY LOCATION, DEPTH, AND ORIENTATION OF ALL CONNECTIONS TO EXISTING PIPING AND/OR UNDERGROUND EQUIPMENT AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES. THIS WORK IS INCIDENTAL TO THE INSTALLATION OF THE NEW FACILITY.

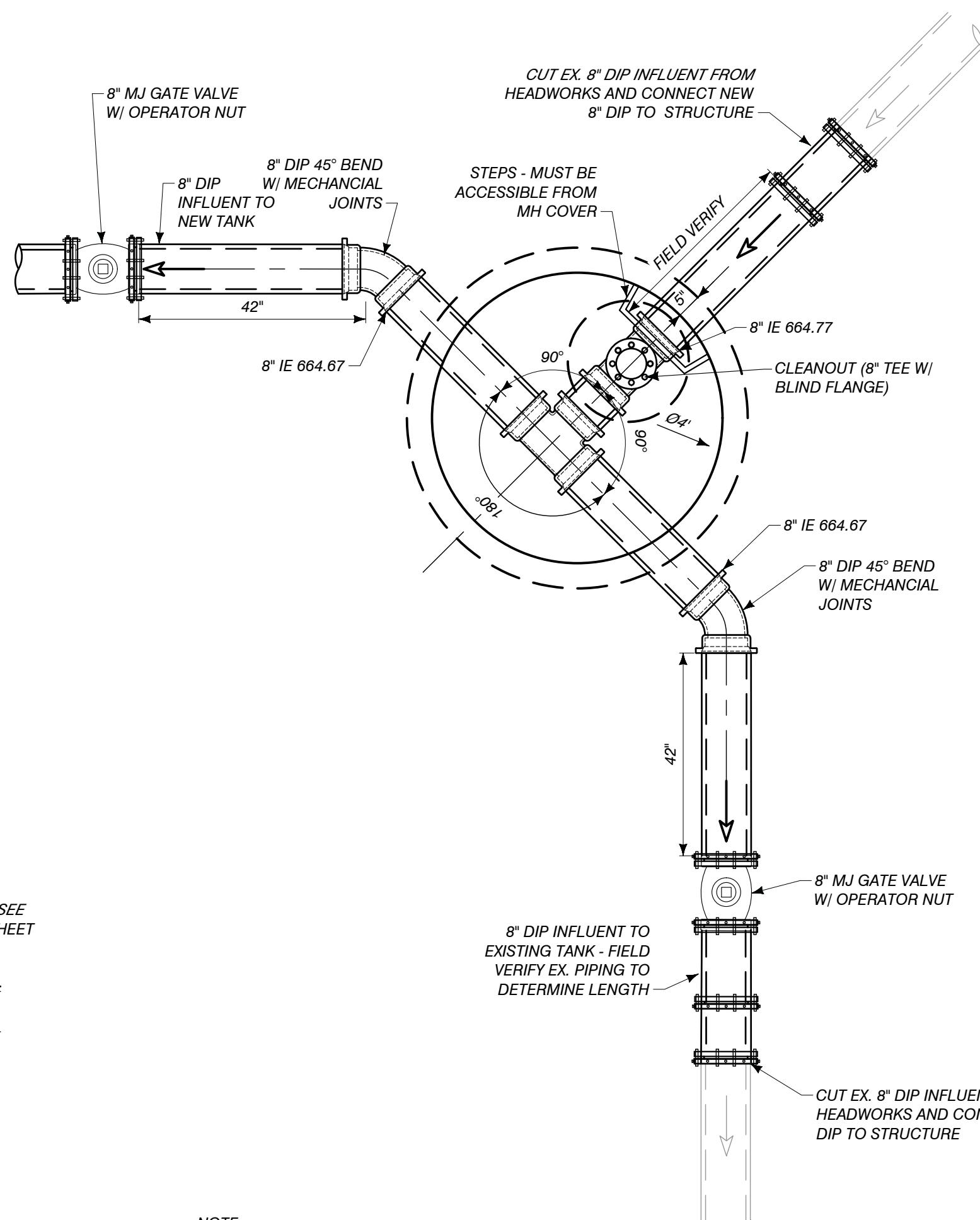
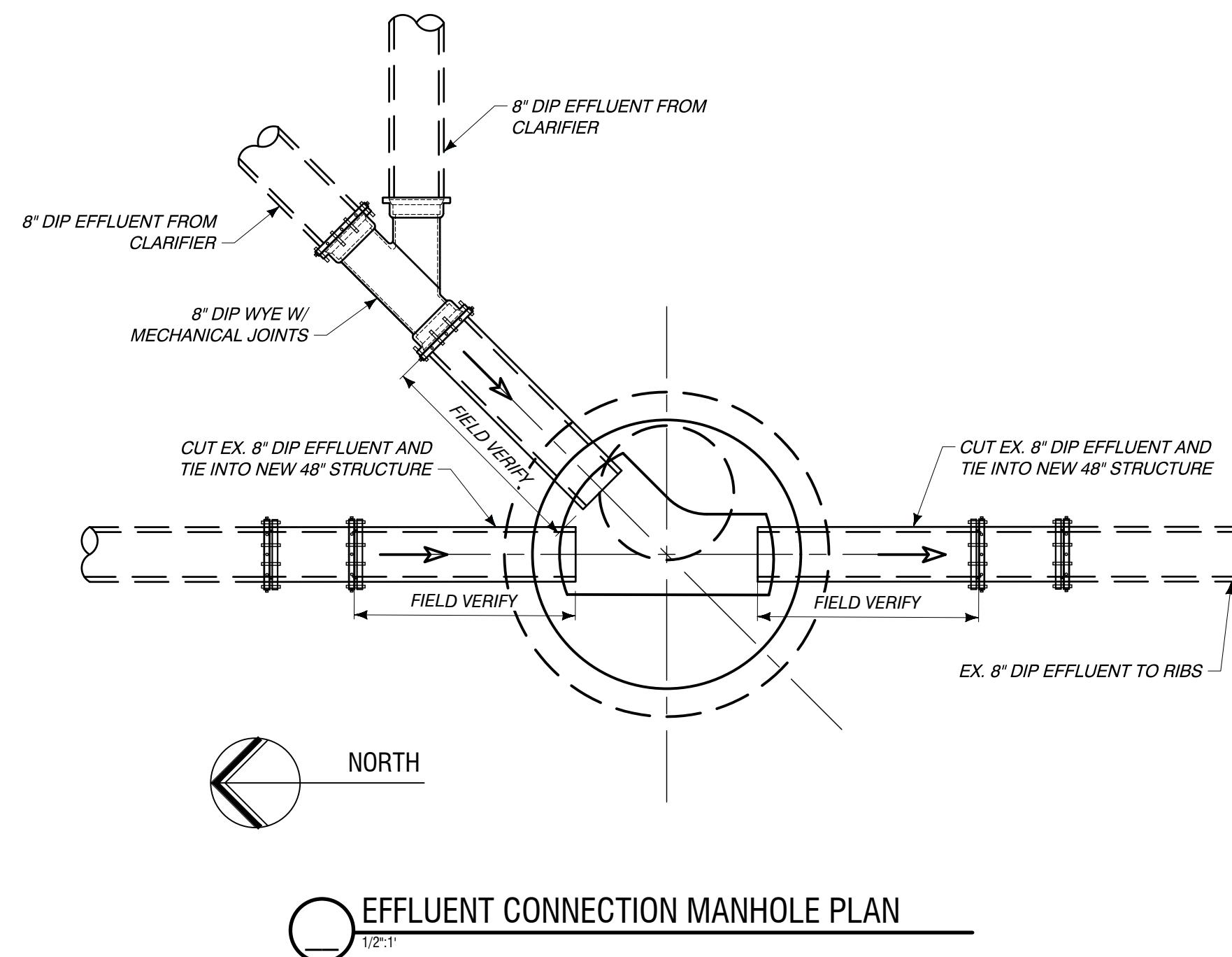
SANITARY CONSTRUCTION NOTES



EFFLUENT CONNECTION MANHOLE SECTION



FLOW CONTROL STRUCTURE SECTION



NOTE:
PIPING LAYOUT DEPICTS ORIENTATION AND PLAN LAYOUT,
CONTRACTOR TO FIELD VERIFY EXISTING 8" 45° ELBOW
LOCATION PRIOR TO CUTTING PIPE.

FLOW CONTROL STRUCTURE PLAN

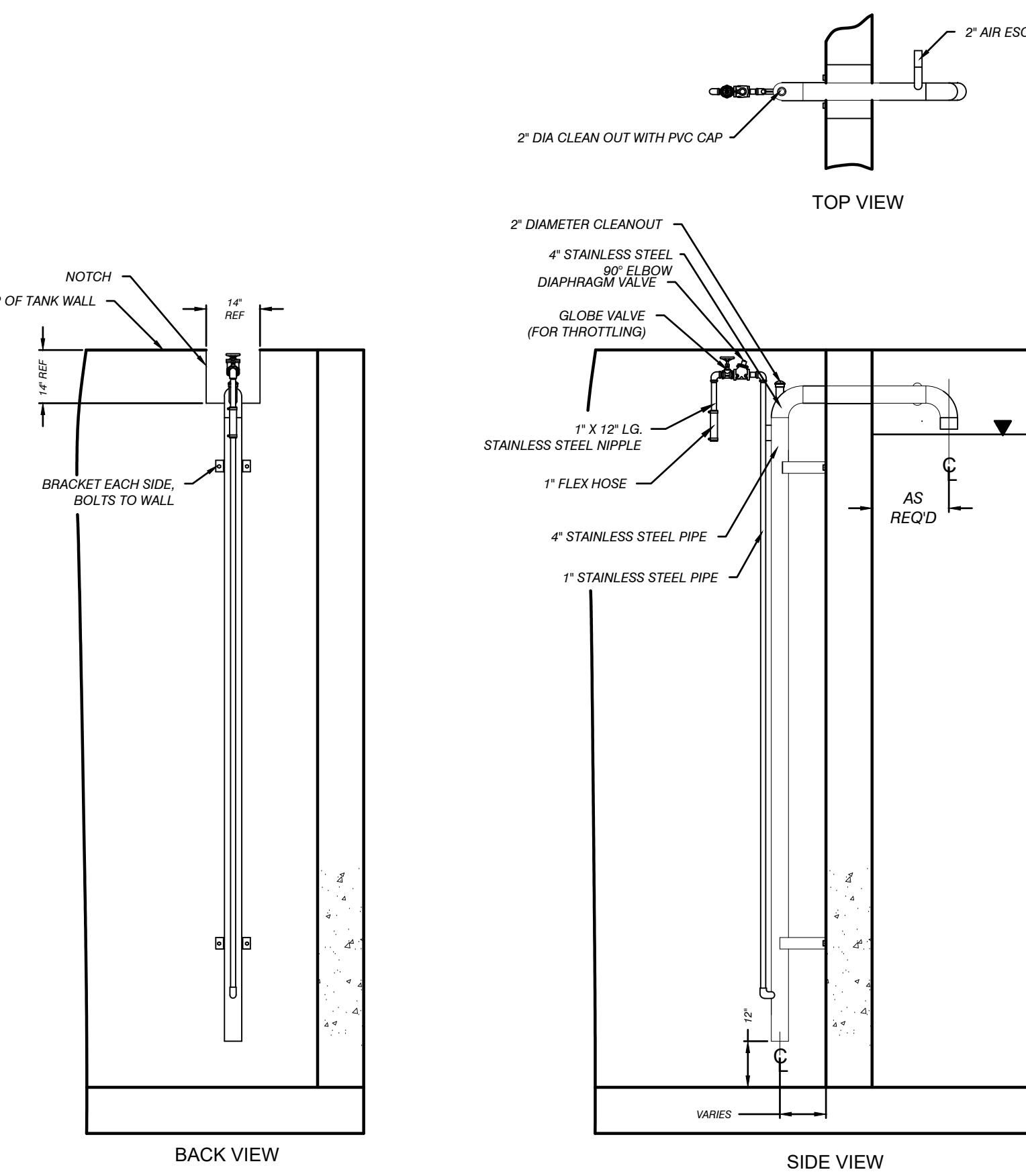
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460 BRADY RD.
INDIAN RIVER, MI 49749

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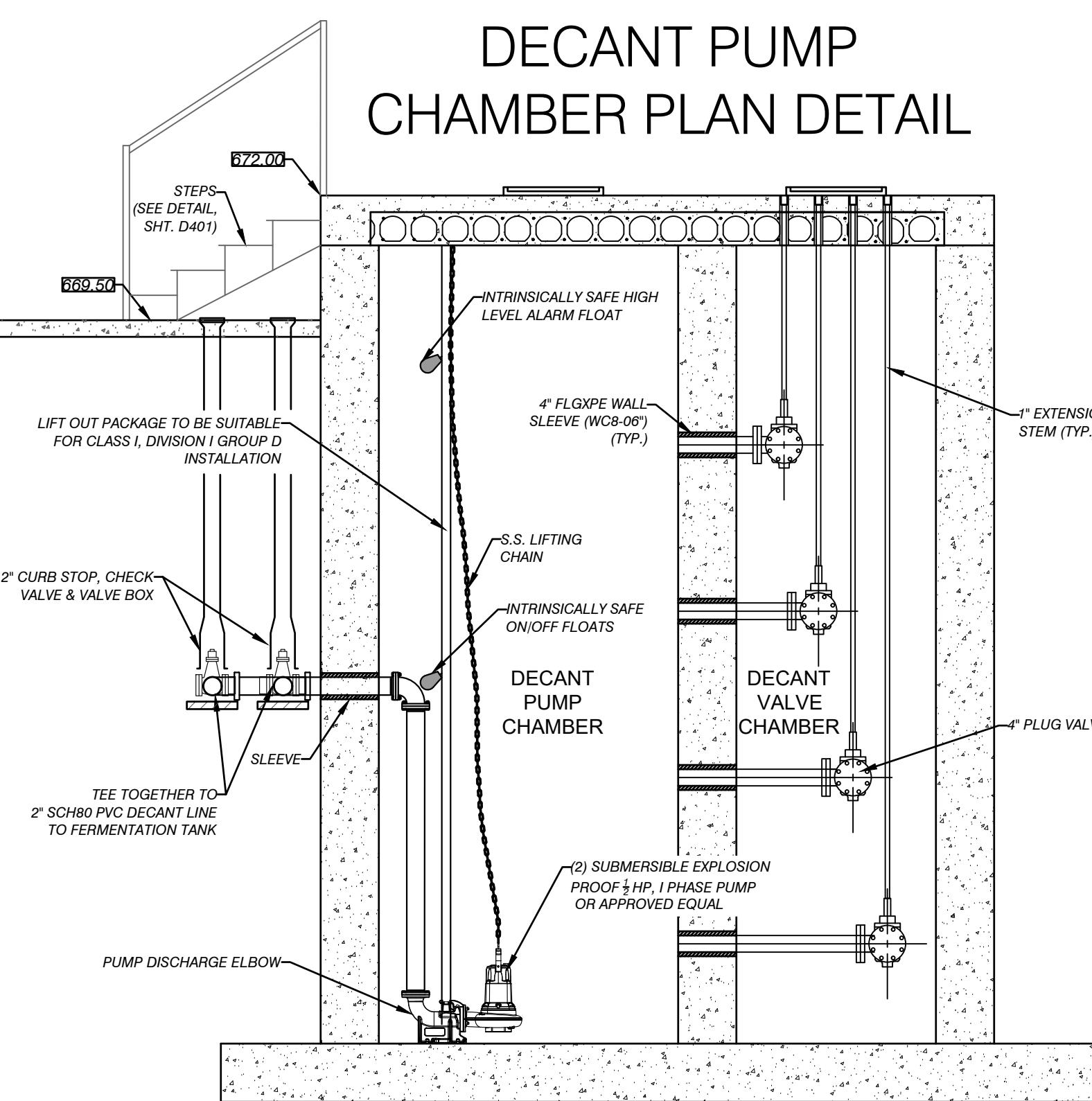
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(734) 537-0513
FAX:

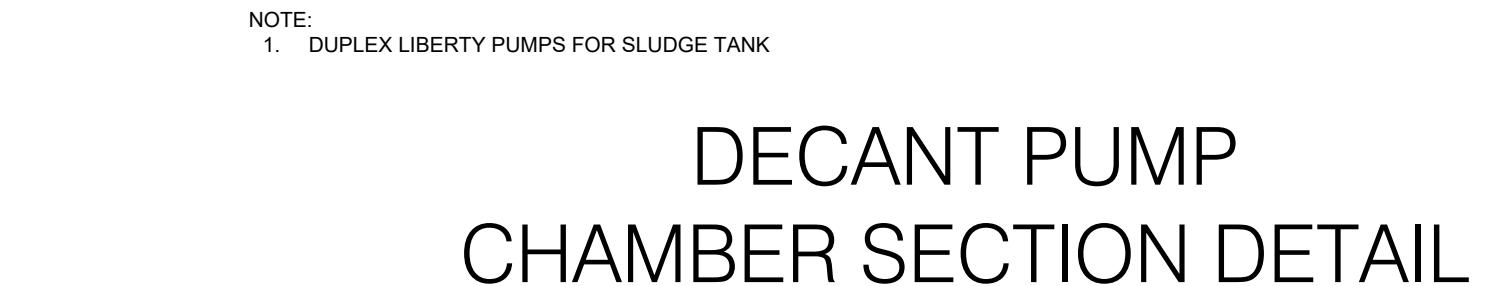


MODEL AL-400L
SOLIDS WASTING AIRLIFT
EQUIPMENT DETAIL

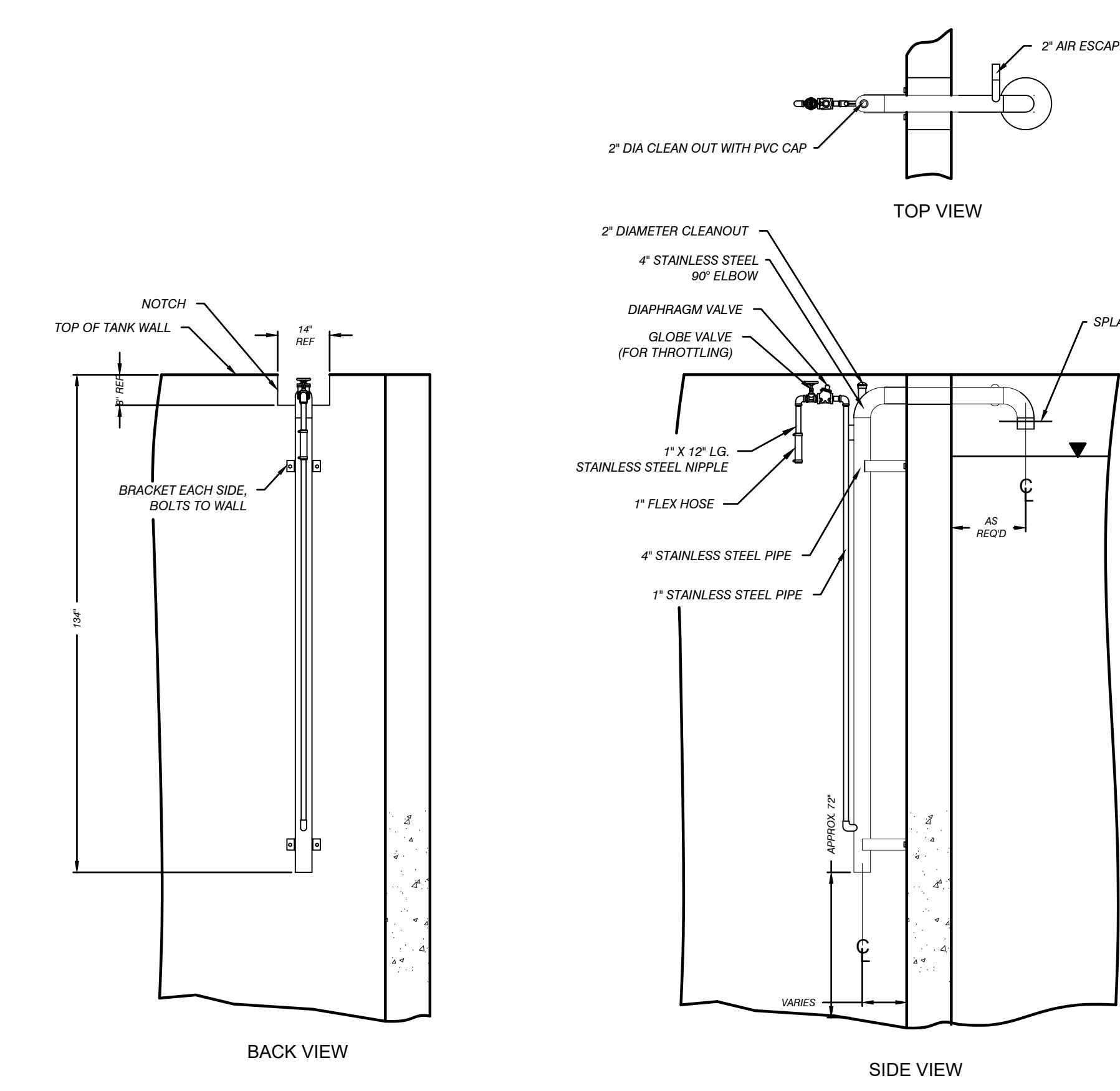


DECANT VALVE
CHAMBER DETAIL

DECANT PUMP
CHAMBER PLAN DETAIL

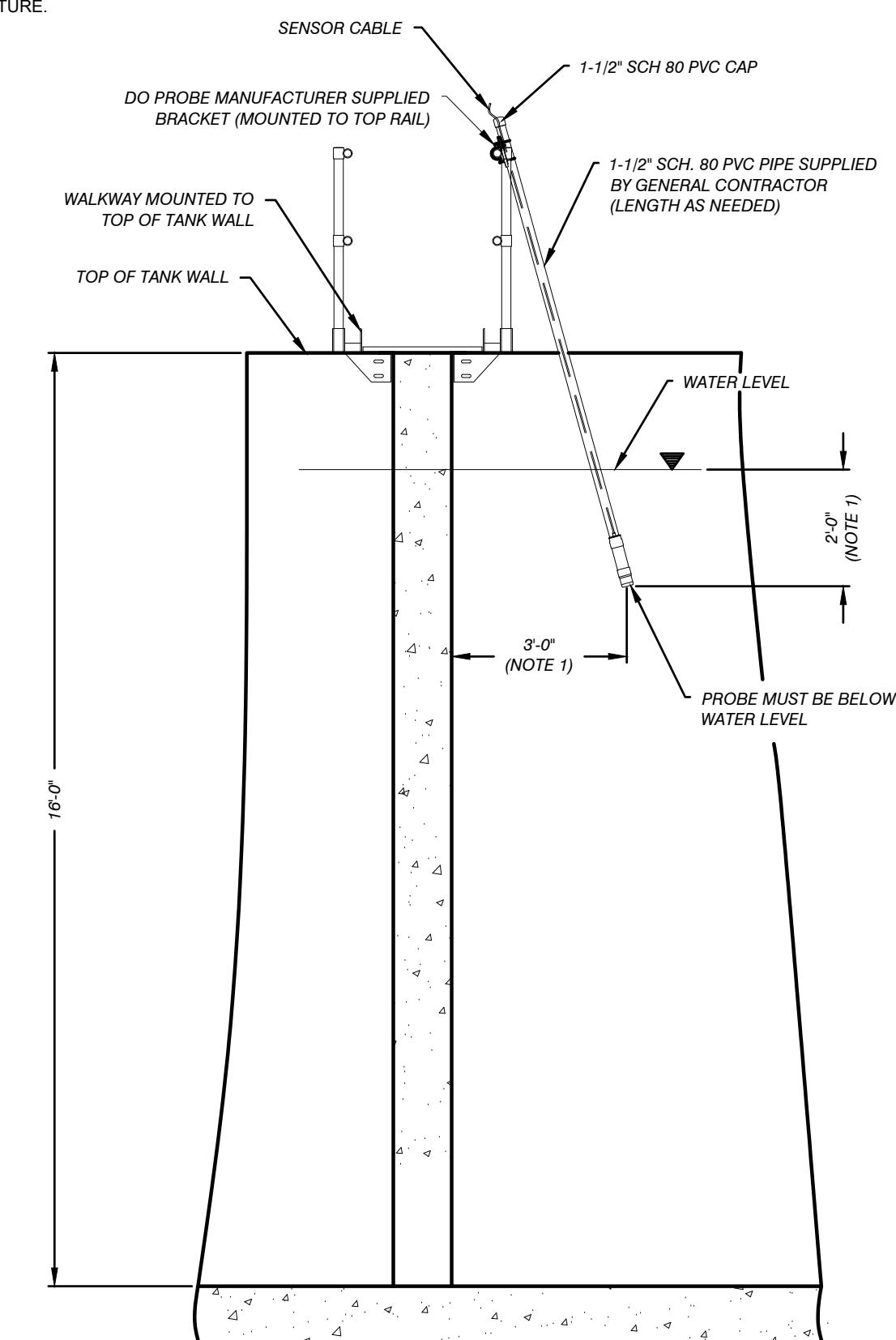


DECANT PUMP
CHAMBER SECTION DETAIL



MODEL AL-400
SOLIDS WASTING AIRLIFT
EQUIPMENT DETAIL

NOTE:
1) FOR BEST ACCURACY OXYGEN MEASUREMENTS
SHOULD BE TAKEN 2'-0" BELOW THE WATER SURFACE
AND 3'-0" AWAY FROM THE TANK WALL.
2) FOR ADDITIONAL INFORMATION REFER TO THE DO PROBE
MANUFACTURER'S LITERATURE.



D.O. PROBE
EQUIPMENT DETAIL

TUSCARORA TOWNSHIP
WWTP EXPANSION
460 BRYDY RD.
INDIAN RIVER, MI 49749

TUSCARORA TOWNSHIP
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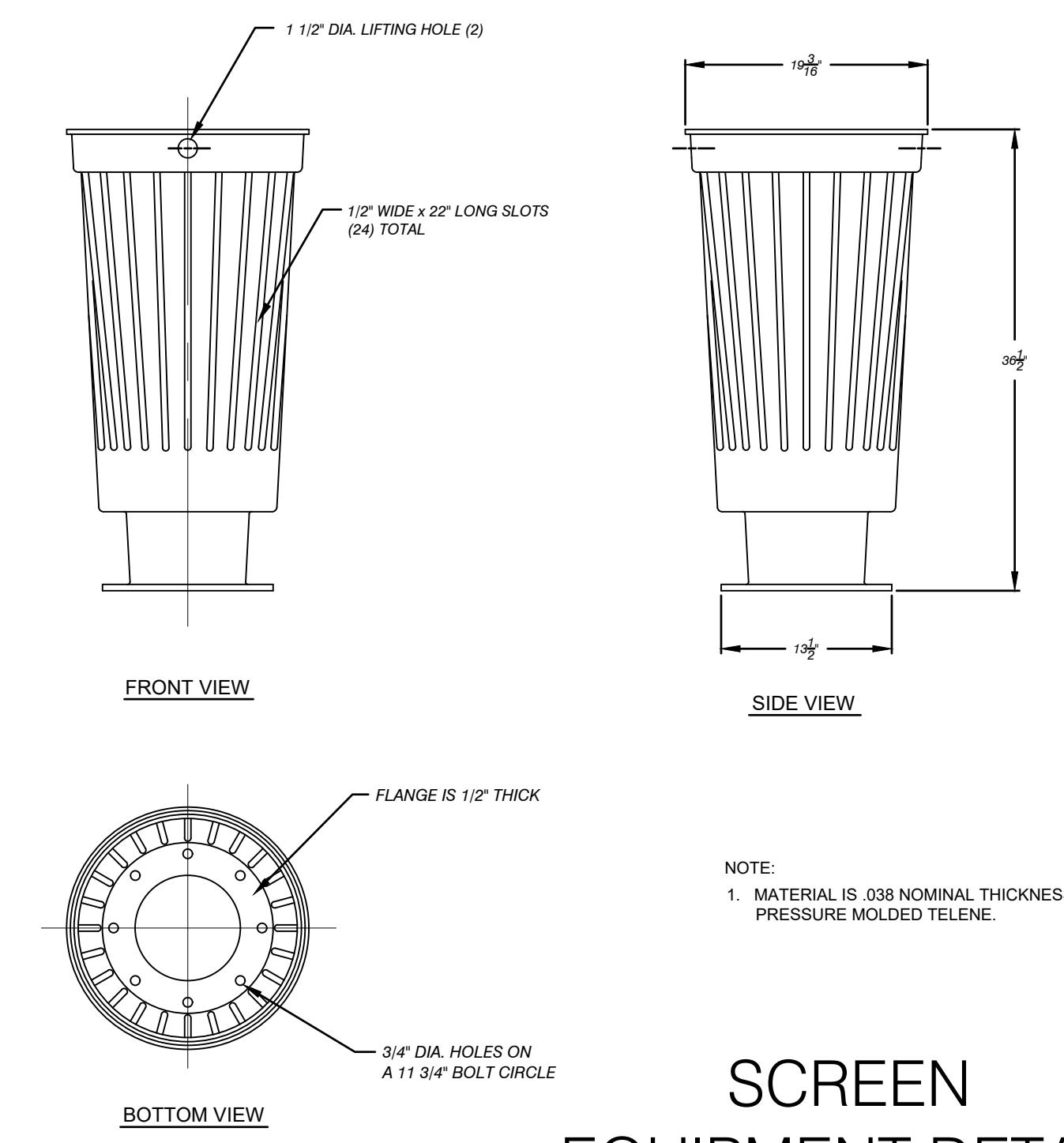
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DRAWN BY: AMI
DESIGNED BY: AMI
CHECKED BY: PEI

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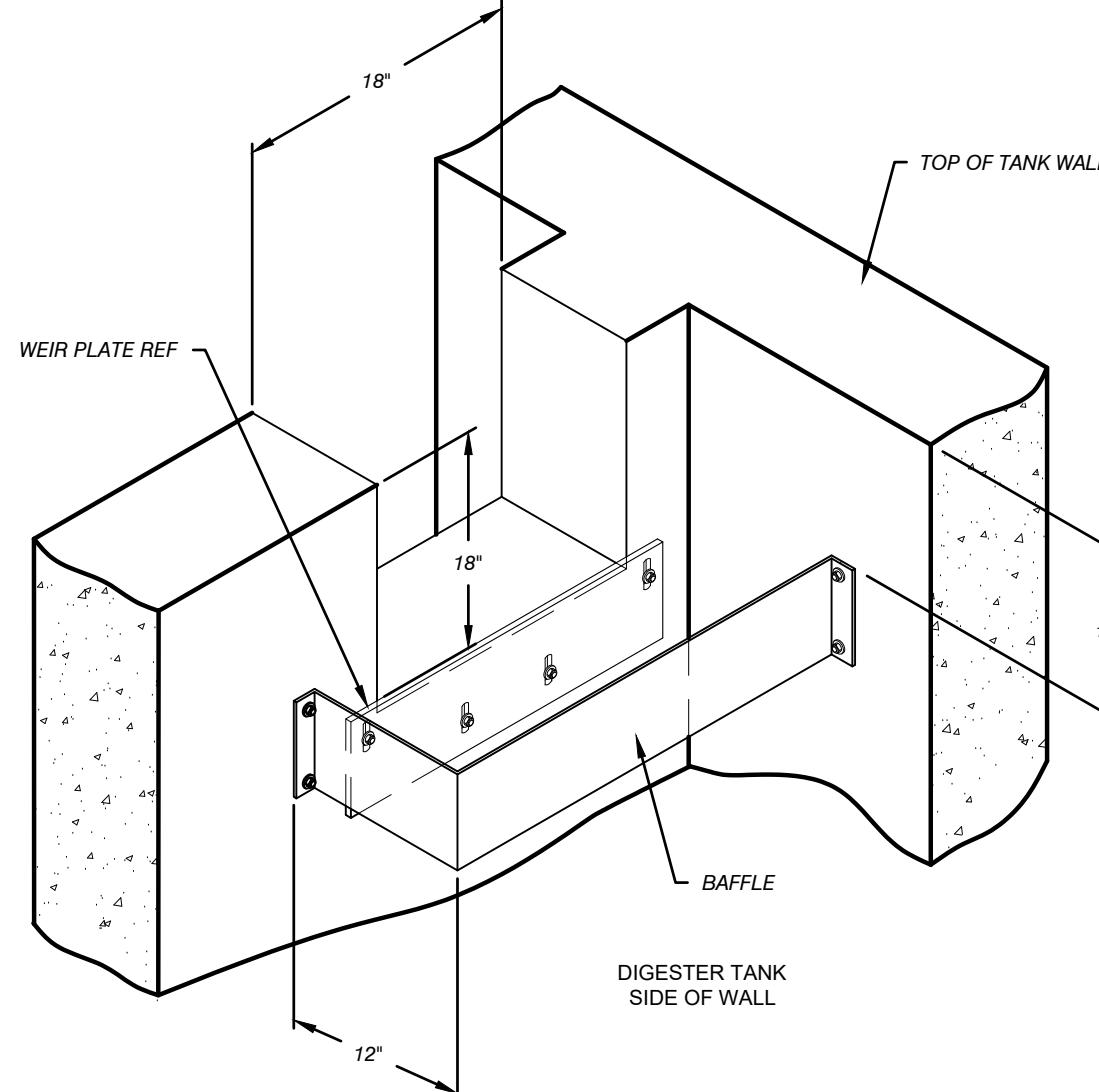
SHEET TITLE

EQUIPMENT
DETAIL 1

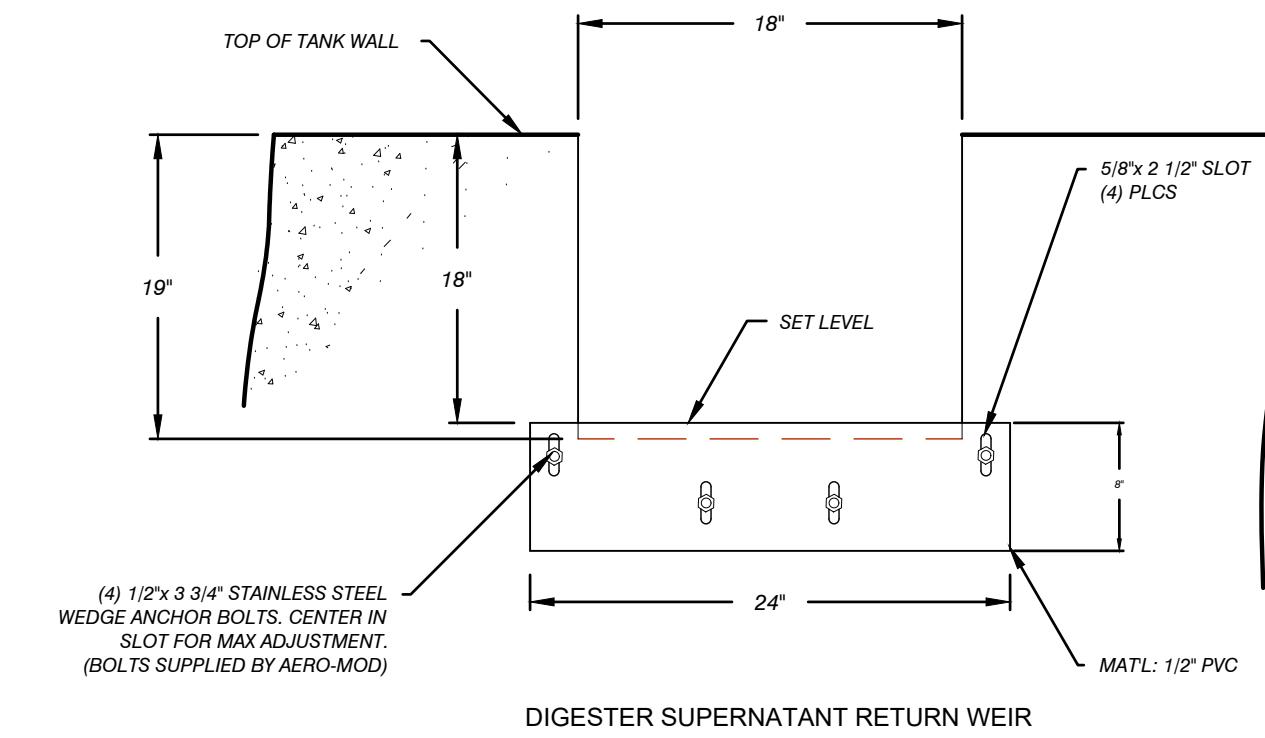
D403



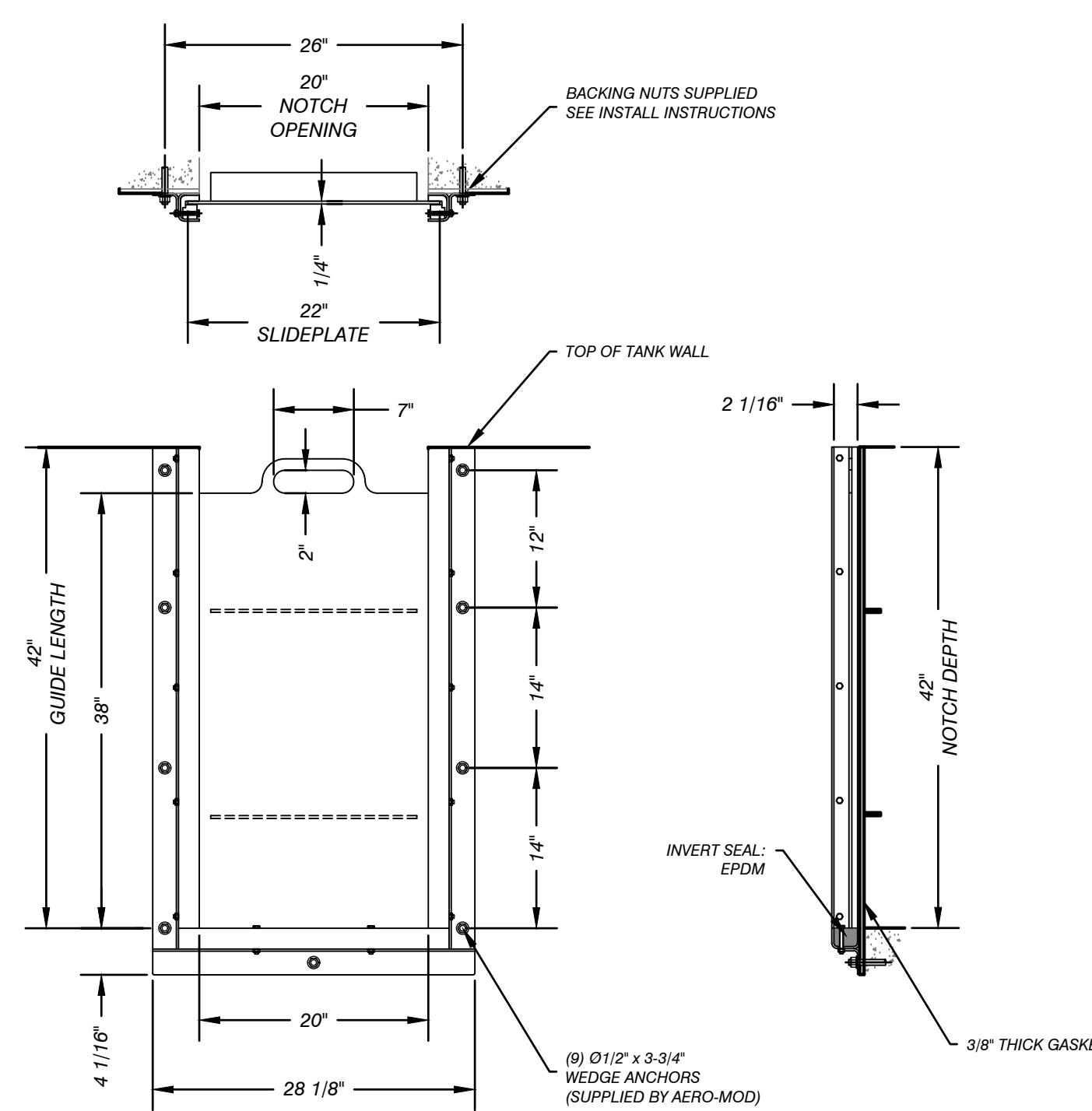
SCREEN EQUIPMENT DETAIL



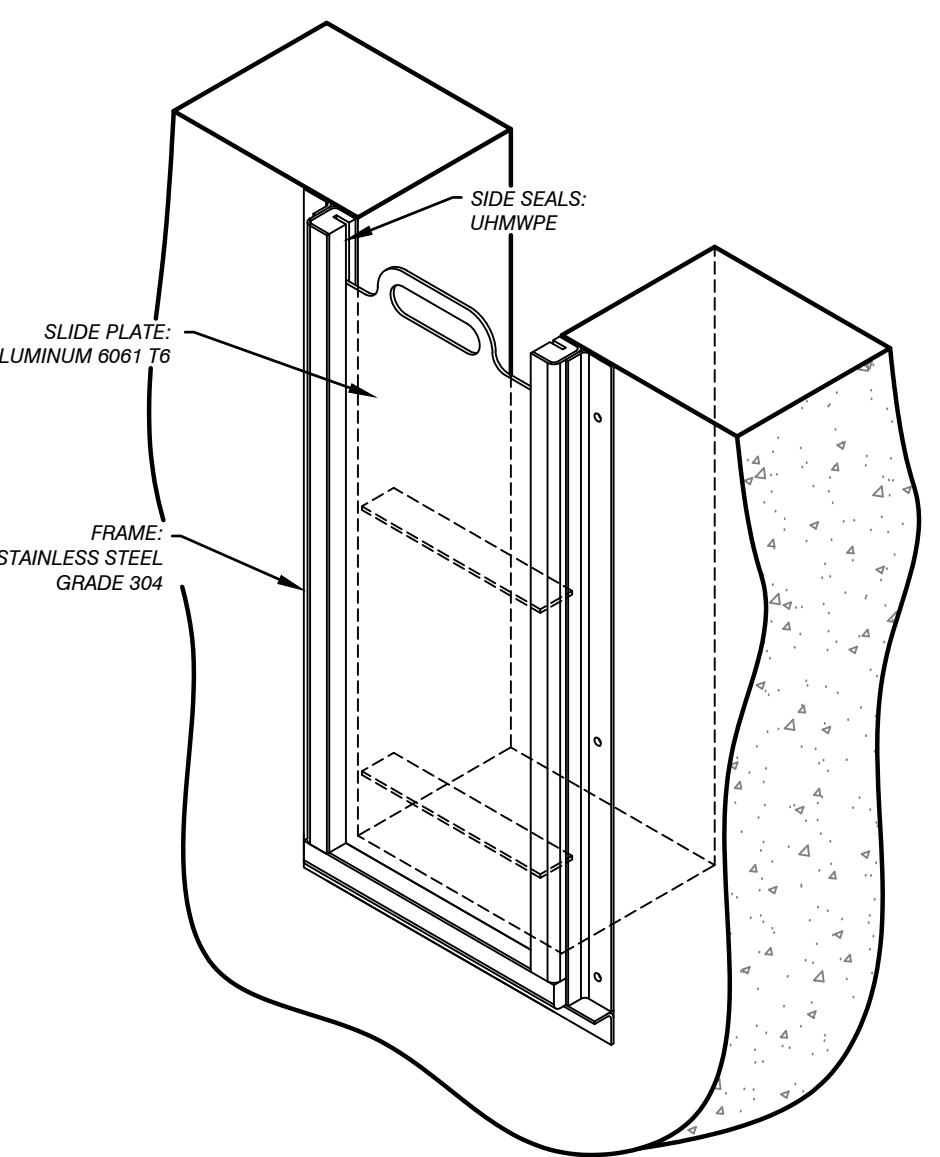
DIGESTER SUPERNATANT WEIR EQUIPMENT DETAIL



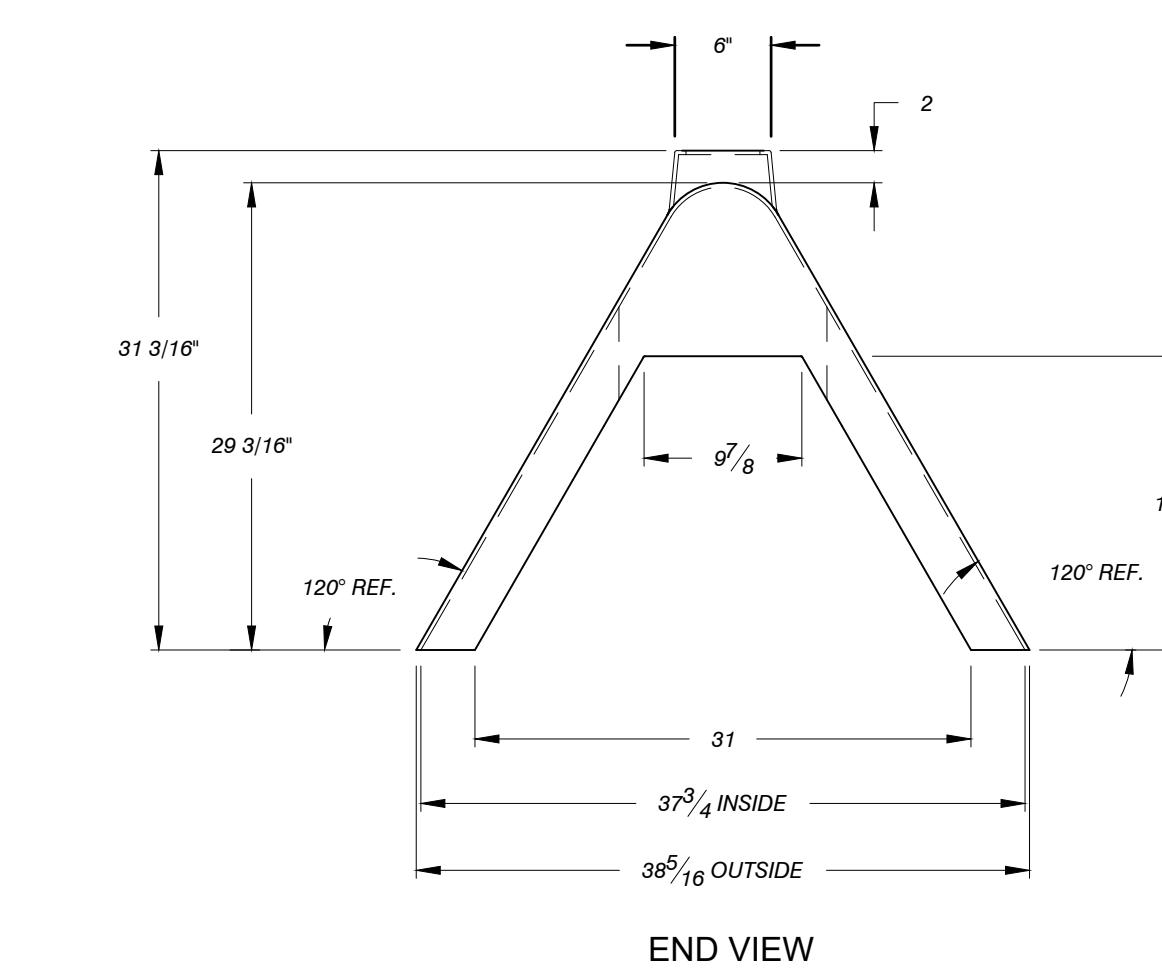
DIGESTER SUPERNATANT RETURN WEIR (INSTALL ON DIGESTER SIDE OF WALL)



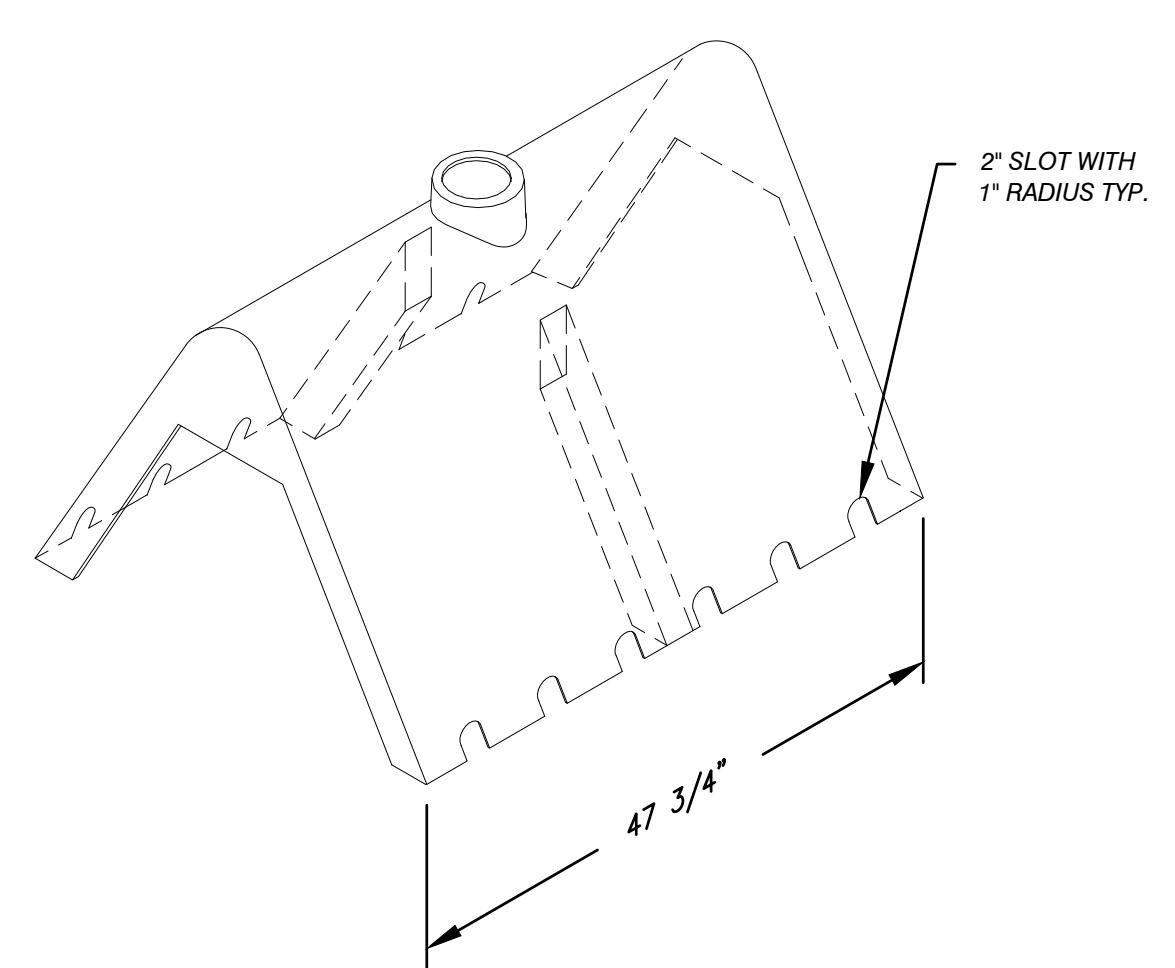
STOP GATE EQUIPMENT DETAIL



NOTE:
1. ALL EQUIPMENT INDICATED ON THIS SHEET PROVIDED BY AERO-MOD.
2. 1/4" RUBBER GASKET PROVIDED BY G.C.



SUCTION HOOD EQUIPMENT DETAIL

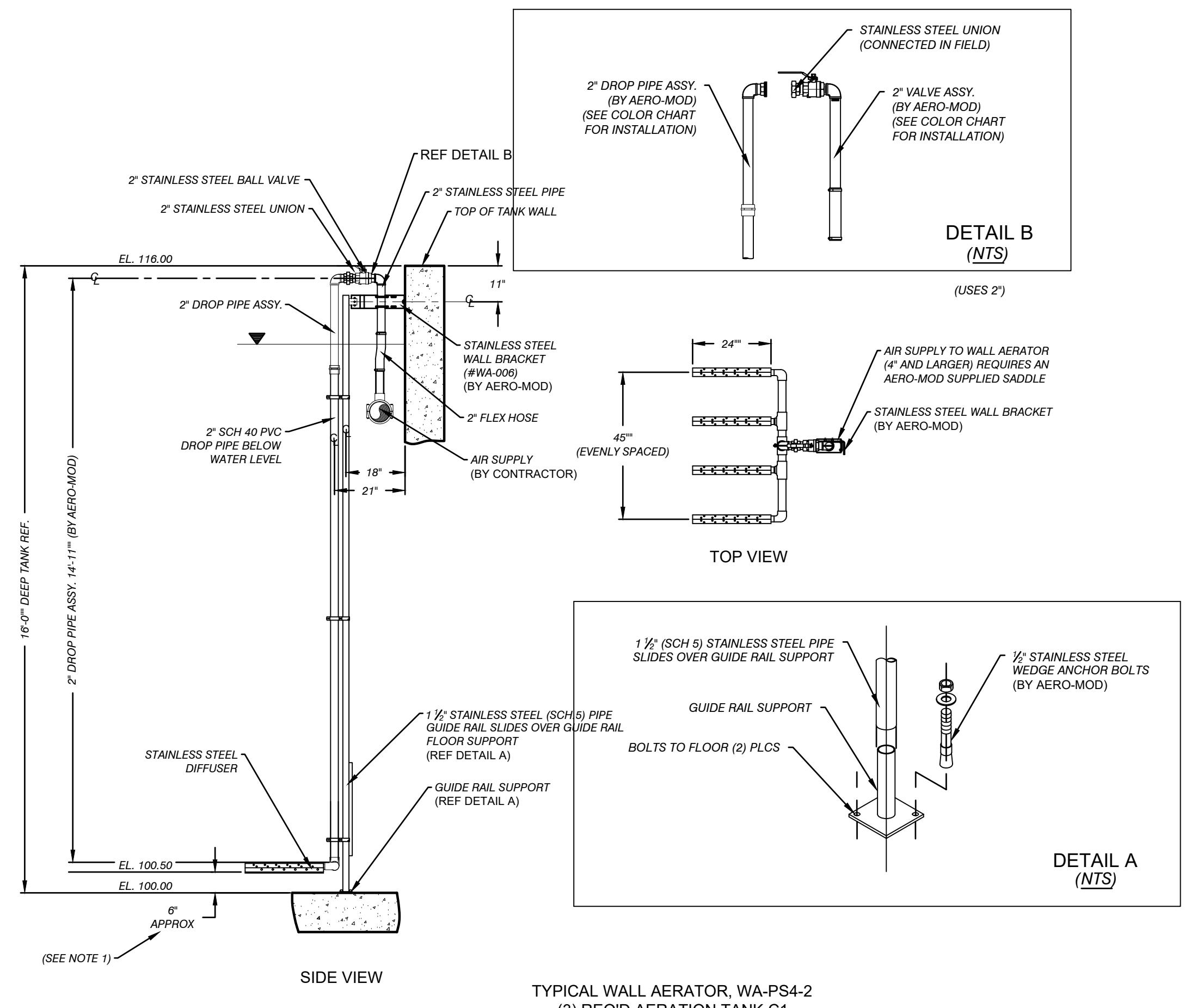


TYPICAL SUCTION HOOD



MARK	DATE	DESCRIPTION
0	7/28/23	PERMIT SUBMITAL
1	1/5/24	REVISED PER EGE REVIEW
2	1/26/24	BID ISSUE
3	1/31/24	ADDENDUM 1
		SEAL
		SHEET TITLE
		EQUIPMENT DETAIL 2
		D404
		SHEET 19 OF 31

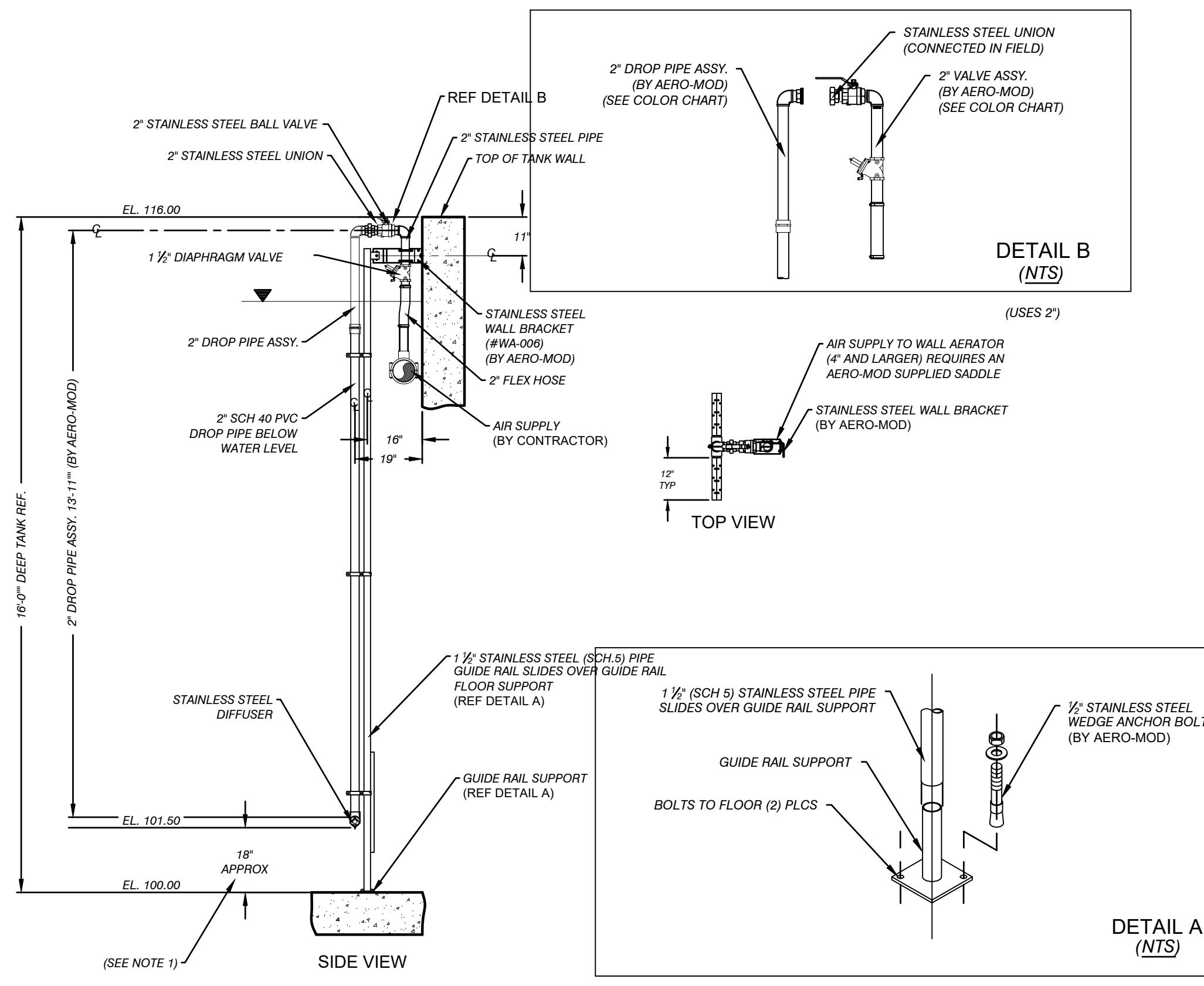
WALL AERATOR MODEL WA-PS4-2 EQUIPMENT DETAIL



TYPICAL WALL AERATOR, WA-PS4-2
(3) REQ'D AERATION TANK C1
(3) REQ'D AERATION TANK D1

NOTE:
1. DIFFUSER ELEVATIONS ARE CRITICAL
AND SHOULD BE SPECIFIED ON
ENGINEERS PLANS

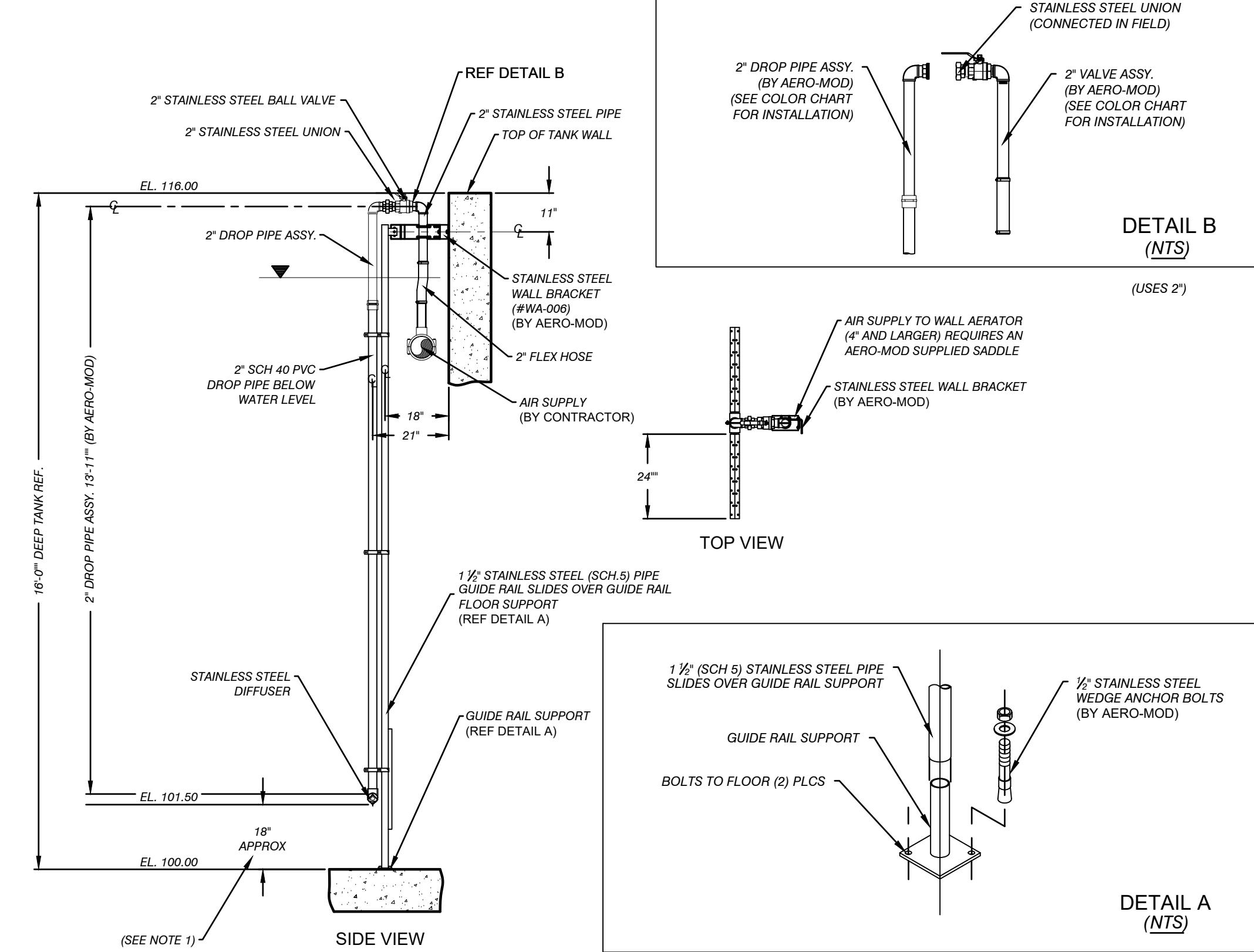
WALL AERATOR MODEL WAD-HSS2A-2 EQUIPMENT DETAIL



TYPICAL WALL AERATOR, WAD-HSS2A-2
(1) REQ'D ANAEROBIC SELECTOR TANK CD
(1) REQ'D FERMENTER TANK CD

NOTE:
1. DIFFUSER ELEVATIONS ARE CRITICAL
AND SHOULD BE SPECIFIED ON
ENGINEERS PLANS

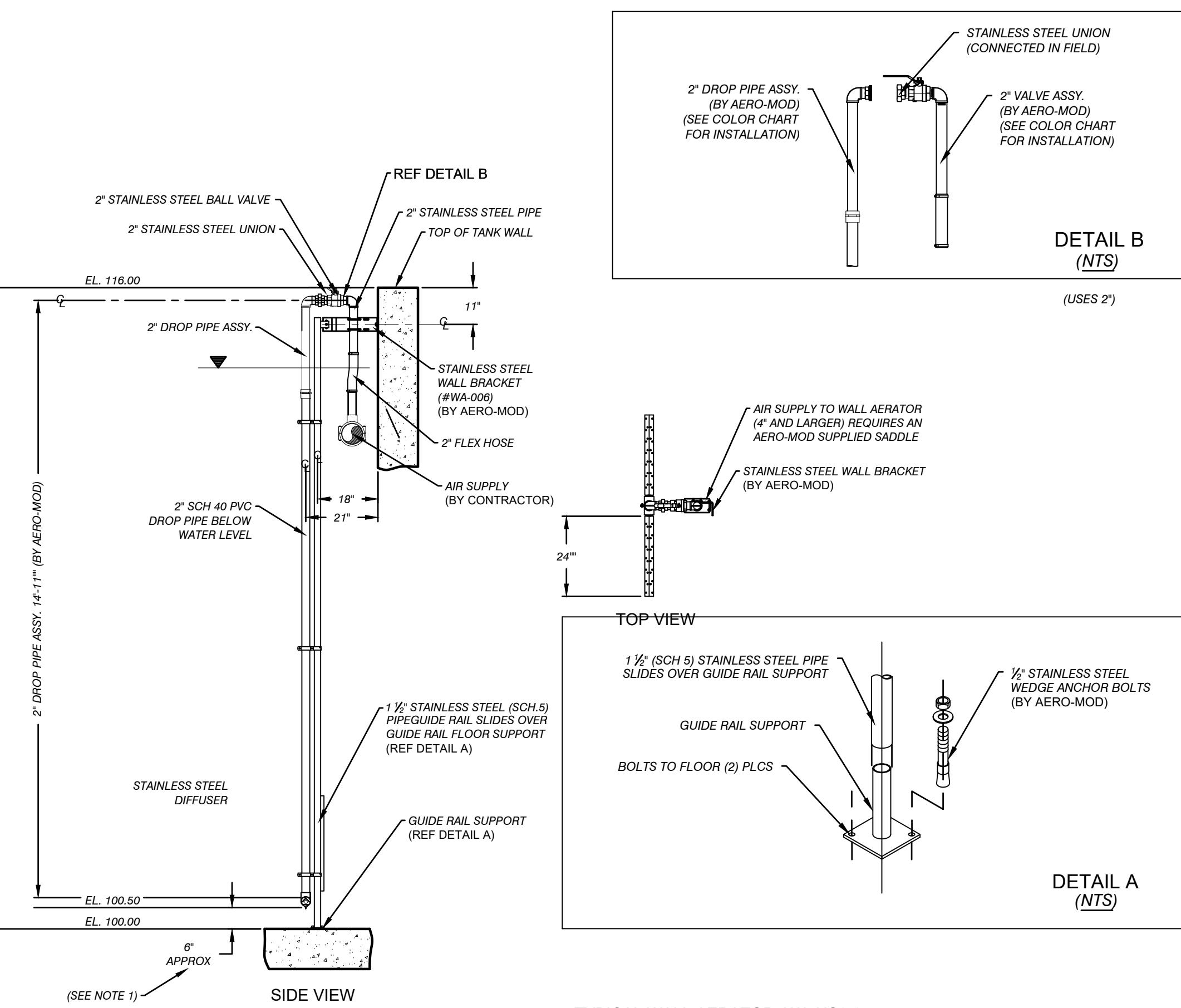
WALL AERATOR MODEL WAD-HS2-2 EQUIPMENT DETAIL



TYPICAL WALL AERATOR, WAD-HS2-2
(3) REQ'D DIGESTER TANK C
(3) REQ'D DIGESTER TANK D

NOTE:
1. DIFFUSER ELEVATIONS ARE CRITICAL
AND SHOULD BE SPECIFIED ON
ENGINEERS PLANS

WALL AERATOR MODEL WA-HS2-2 EQUIPMENT DETAIL



TYPICAL WALL AERATOR, WA-HS2-2
(5) REQ'D AERATION TANK C2
(5) REQ'D AERATION TANK D2

NOTE:
1. DIFFUSER ELEVATIONS ARE CRITICAL
AND SHOULD BE SPECIFIED ON
ENGINEERS PLANS

EQUIPMENT DETAIL 3

D405

SHEET 20 OF 31

Performance Engineers, Inc.

Civil / Structural Engineering
406 Petoskey Avenue
Charlevoix, Michigan 49720
www.performanceeng.com

Phone: (231) 547-2121
Fax: (231) 547-0084

Phone: (781) 537-4995
(781) 537-0802

Aero - Mod, Inc.
7021 U.S. Highway 24
Nashua, New Hampshire 03062

EGL
Approved
P4100462
Issued On: 02/06/2024
Expires On: 02/06/2024

REF NO	DIA.	A	B	DESCRIPTION
12	2"	174"	1/2"	CONDUIT LINE
13	2"	174"	35"	CONDUIT LINE
32	2"	174"	1/2"	CONDUIT LINE
LINK SEAL INSERT LOCATION CHART				
REF NO	INSERT DIA.	A	B	DESCRIPTION
1	12" FOR 8" PIPE	50"	4"	DISTRIBUTOR LINE
2	12" FOR 8" PIPE	50"	7'-6"	DISTRIBUTOR LINE
3	12" FOR 8" PIPE	50"	4"	DISTRIBUTOR LINE
4	6" FOR 4" PIPE	118"	1"	AIR LINE
5	12" FOR 8" PIPE	50"	4"	DISTRIBUTOR LINE
6	12" FOR 8" PIPE	50"	7'-6"	DISTRIBUTOR LINE
7	12" FOR 8" PIPE	50"	4"	DISTRIBUTOR LINE
8	6" FOR 4" PIPE	118"	1"	AIR LINE
9	6" FOR 4" PIPE	118"	1"	AIR LINE
10	6" FOR 4" PIPE	109"	1"	AIR LINE
11	6" FOR 4" PIPE	109"	1"	AIR LINE
14	6" FOR 4" PIPE	109"	1"	AIR LINE
15	6" FOR 4" PIPE	109"	1"	AIR LINE
19	6" FOR 4" PIPE	118"	1"	AIR LINE
20	6" FOR 4" PIPE	118"	46"	AIR LINE
26	12" FOR 8" PIPE	162"	7"	RAS LINE
27	12" FOR 8" PIPE	162"	7"	RAS LINE
28	12" FOR 8" PIPE	162"	48"	RAS LINE
29	12" FOR 8" PIPE	162"	48"	RAS LINE
30	5" FOR 3" PIPE	19"	16"	SURGE PUMP DISCHARGE
31	5" FOR 3" PIPE	19"	16"	SURGE PUMP DISCHARGE

OTHER PENETRATIONS LOCATION CHART				
REF NO	DIA.	A	B	DESCRIPTION
16	12" FOR 8" PIPE	80"	6 1/2"	EFFLUENT LINE
17	12" FOR 8" PIPE	80"	6 1/2"	EFFLUENT LINE
18	12" FOR 8" PIPE	96"	45"	INFLUENT LINE
21	4" FOR 2" PIPE	80"	36"	SLUDGE DECANT FORCEMAIN
22	4" FOR 2" PIPE	22"	4"	DECANT LINE
23	4" FOR 2" PIPE	62"	14"	DECANT LINE
24	4" FOR 2" PIPE	102"	24"	DECANT LINE
25	4" FOR 2" PIPE	142"	34"	DECANT LINE

The diagram illustrates a large, vertical cylindrical tank structure. The main body of the tank is a wide, rounded rectangle. A narrower, rectangular section extends from the top of the main body, sloping upwards and outwards. A diagonal line runs from the top of this sloping section down to its base. The word 'EXISTING' is written vertically along the left side of the main body, and 'TANKAGE' is written vertically along the right side of the main body. The entire structure is enclosed within a thick black border.

SIDE-LIN SURGE TA

NOTCH FOR SUPPORT
RETURN WELD
19" DEEP, 6" AWAY FROM
INTERIOR WALL WITH
INTERIOR TANKS WITH A
SUPPORT DEPTH OF
3'-4" WIDTH

Architectural Drawing (Bottom): This drawing shows a top-down view of the wastewater treatment plant. It includes various tanks: Aeration Tank C2 (2nd Stage), Aeration Tank C1 (1st Stage), Aeration Tank D1 (1st Stage), Aeration Tank D2 (2nd Stage), Clarifier Tank C, Clarifier Tank D, Anaerobic Selector Tank CD, and Fermenter Tank CD. The drawing is labeled with dimensions such as 54'-6", 52'-2", 14'-6", 11'-0", 13'-0", 30'-0", 16'-0", and 58'-0". Specific features like walkways, notches for equipment, and reference points (REF, TYP.) are indicated.

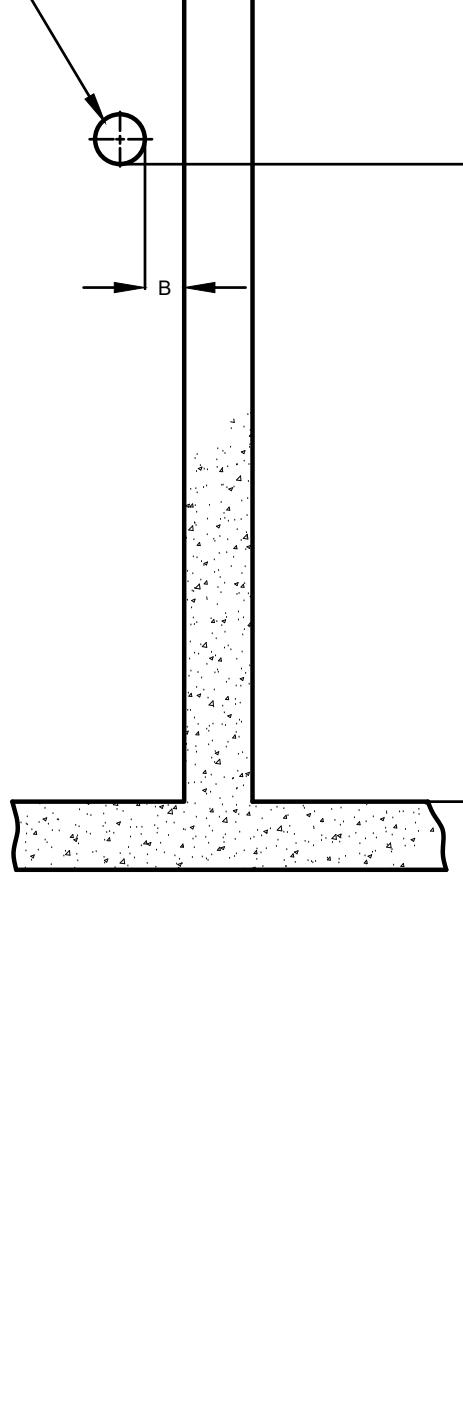
Technical Drawing 3 (Top Left): A cross-section of a typical PVC insert. It shows a vertical pipe section with horizontal couplings. Labels include: "PVC COUPLING, SIZE AS REQUIRED (SEE CHART FOR DIAMETER)", "'O' RING WATER STOPS SILICONE SEALED TO EXTERIOR COUPLING", and "AS REQ'D".

Technical Drawing 4 (Top Right): A cross-section of a typical link seal sleeve. It shows a U-shaped seal within a concrete structure. Labels include: "ANCHOR COLLAR/ HOLLOW WATER SEAL", "LINK SEAL SLEEVE, SIZE AS REQUIRED (SEE CHART FOR DIAMETER)", and "AS REQ'D".

CROSS SECTION OF TYPICAL PVC INSERT

CROSS SECTION OF TYPICAL LINK SEAL SLEEVE

5



Performance Engineers, Inc.

Civil / Structural Engineering
406 Petoskey Avenue
Charlevoix, Michigan 49720
www.performanceeng.com

CONSULTANTS

TUSCARORA TOWNSHIP
WWTP EXPANSION

4649 BRUDY RD.
INDIAN RIVER, MI 49749

OWNER
TUSCARORA TOWNSHIP
CHEBOYGAN COUNTY, MICHIGAN

Aero - Mod, Inc.
7927 U.S. Highway 24
Manhattan, Kansas 66502
PHONE: (785) 537-4985
FAX: (785) 537-0813

PROJECT NO: 23-6036

CAD DWG FILE: D406_6036_NOTCH.DWG

DRAWN BY: AMI

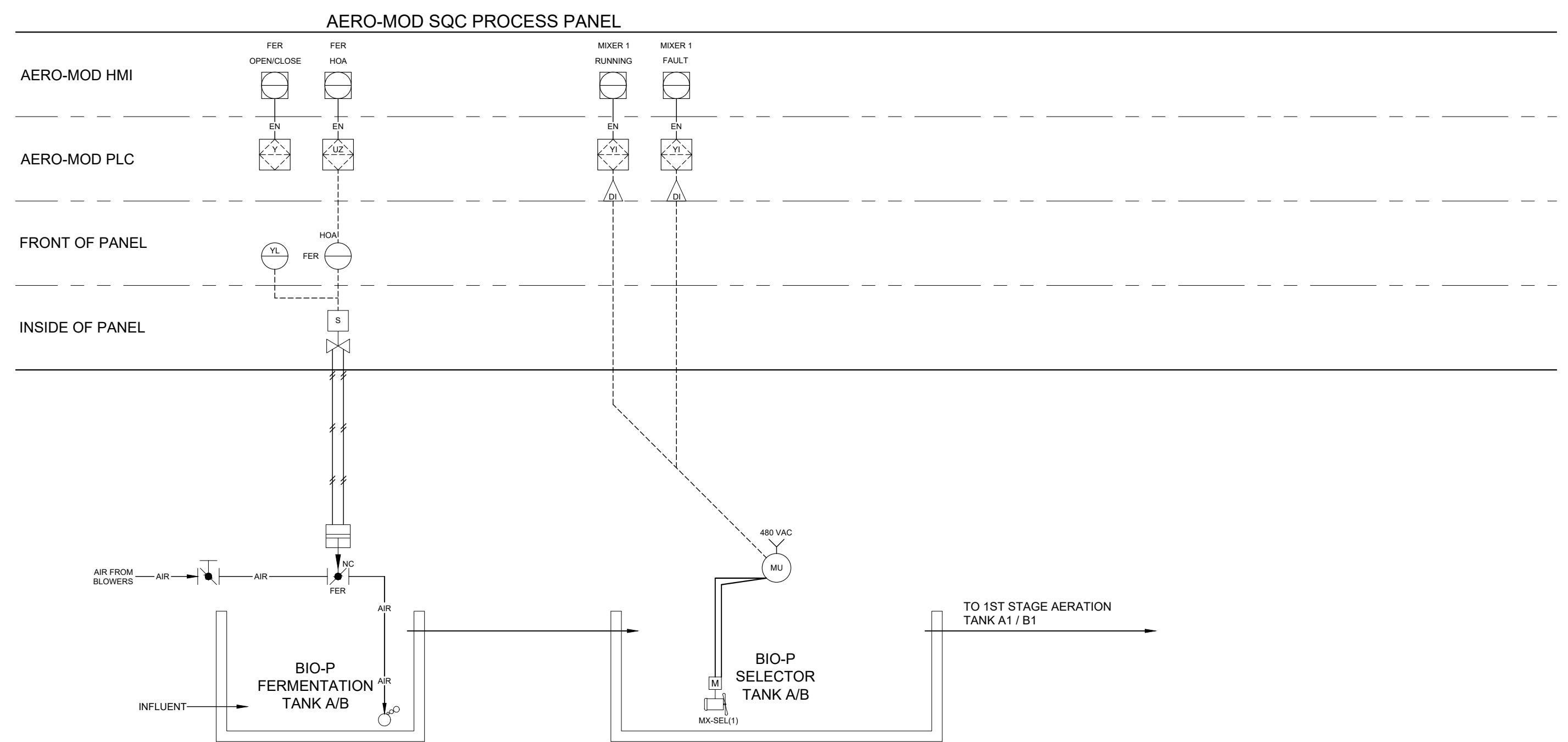
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CHECKED BY: PEI

SEAL

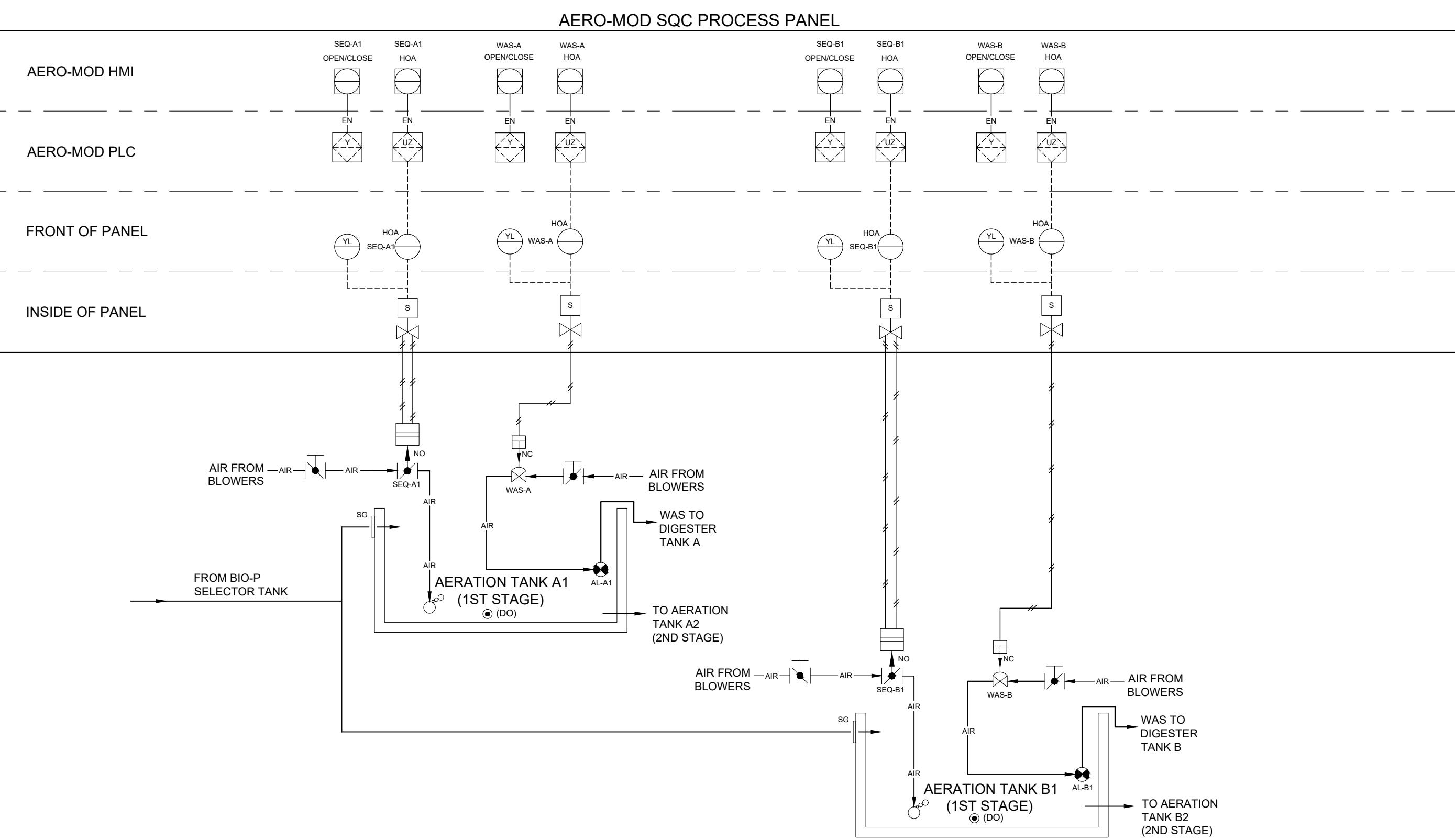
Sheet Title
TANK DETAIL - NOTCH
& INSERT PLACEMENT

D406



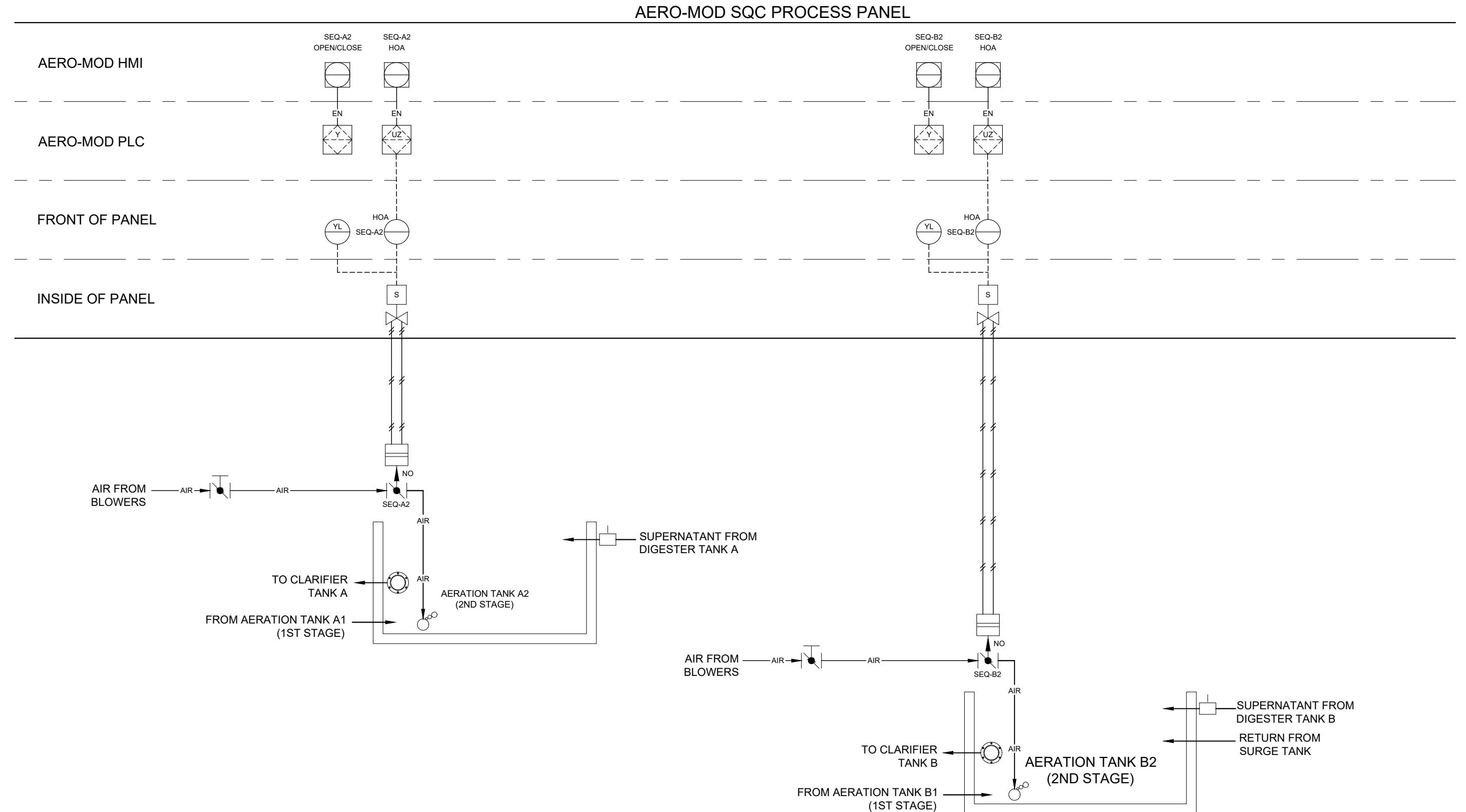
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NOT TO SCALE



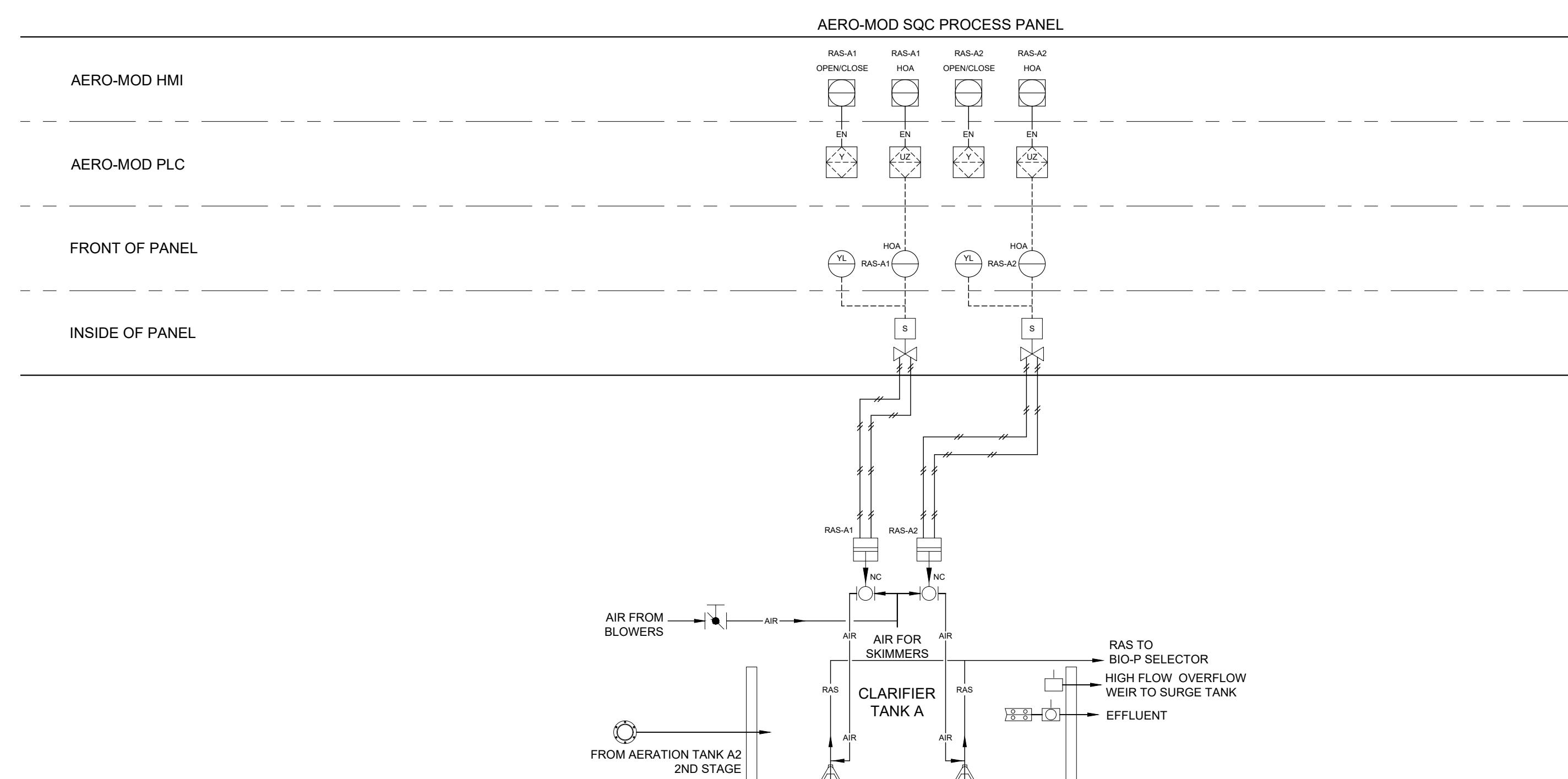
P & ID 2 EXISTING AERATION TANK A & B

NOT TO SCALE



P & ID 3 EXISTING SECONDARY AERATION TANK A & B

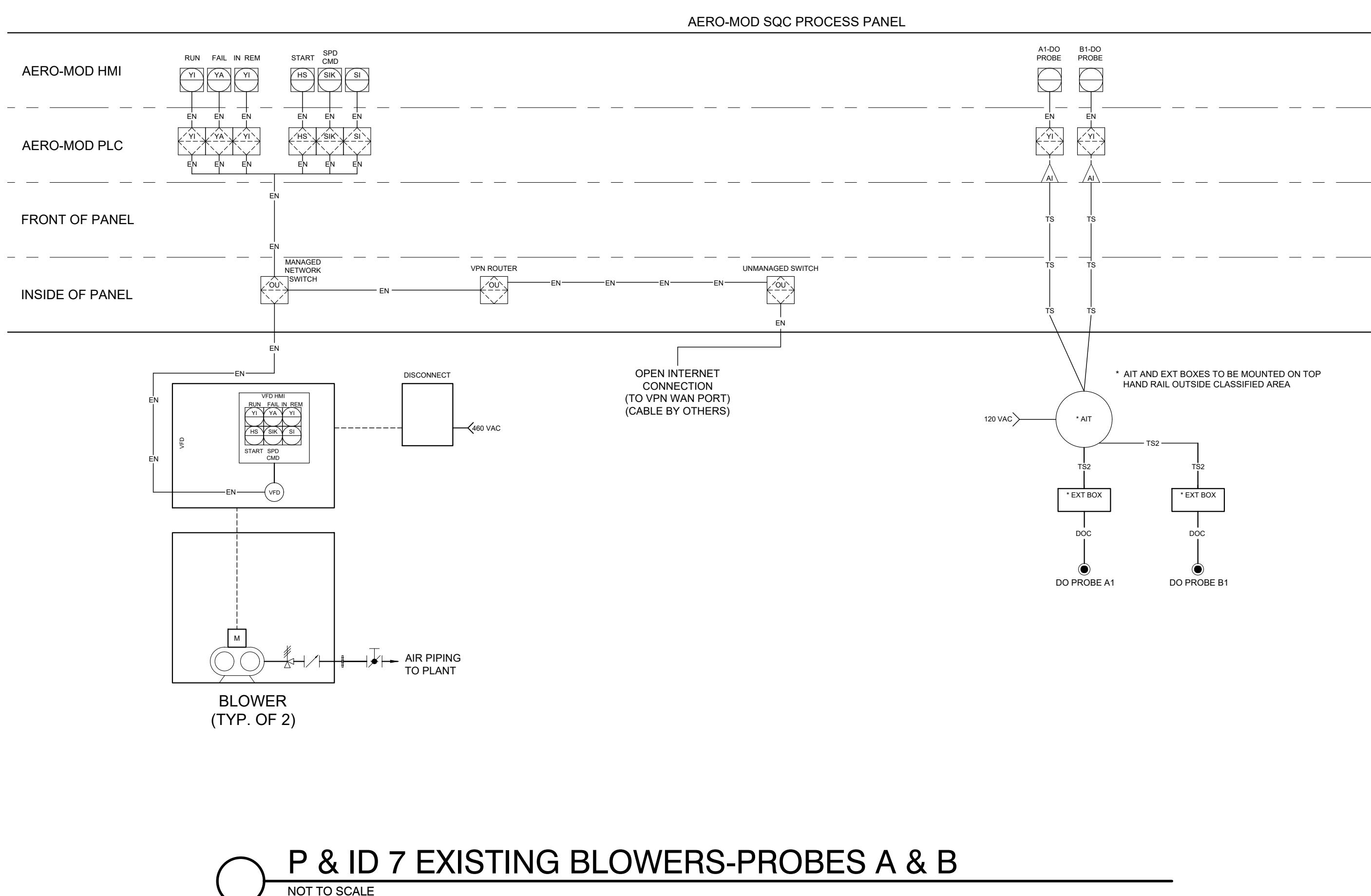
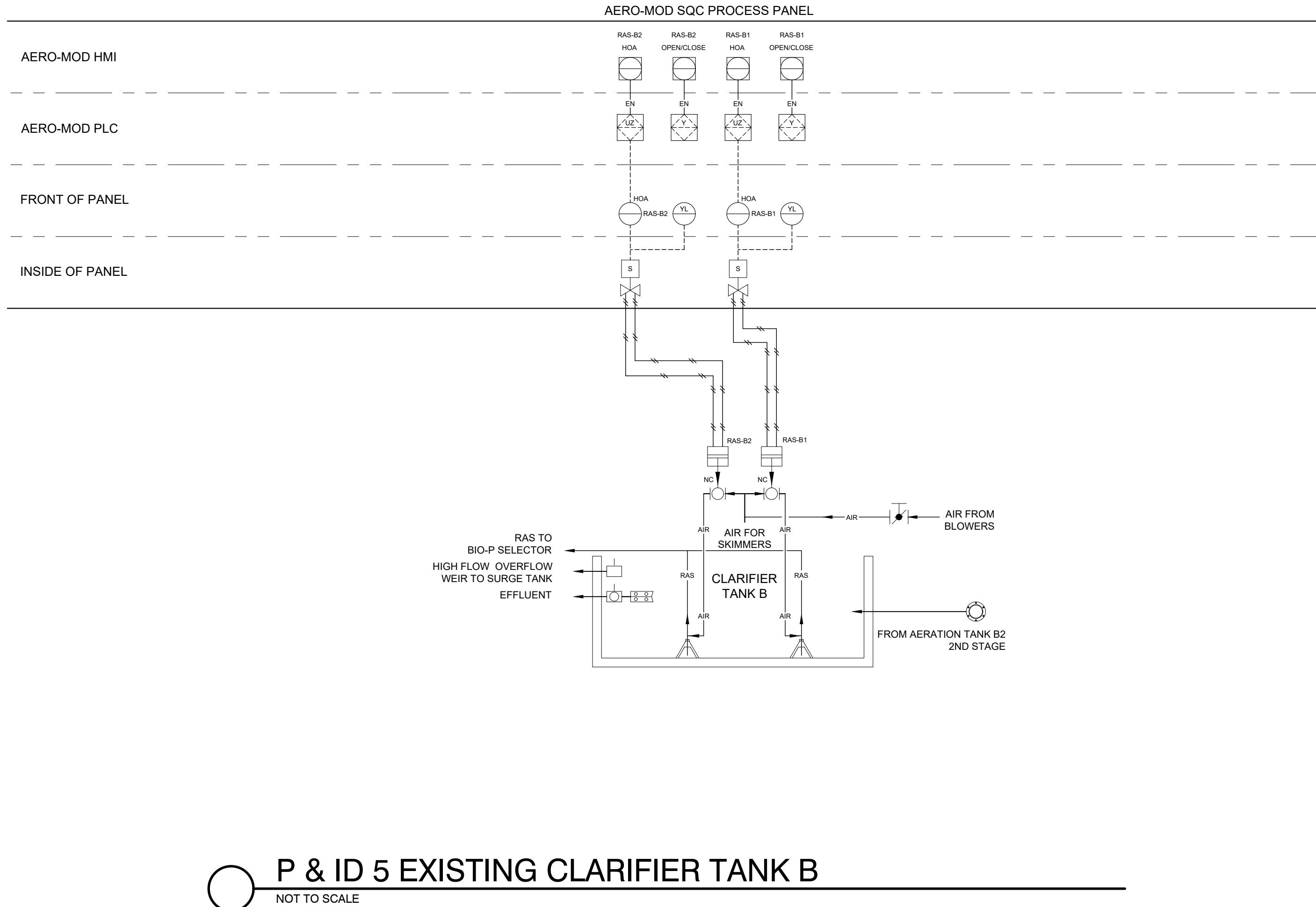
NOT TO SCALE



P & ID 4 EXISTING CLARIFIER TANK A

NOT TO SCALE

MARK	DATE	DESCRIPTION
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2	1/26/24	BID ISSUE
3	1/31/24	ADDENDUM 1
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		DESIGNED BY: AMI
		CHECKED BY: AEN
		SHEET TITLE
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		1-4
		D501
		Sheet 24 of 31



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PROJECT NO: 23-6036
CAD DWG FILE: 6036PLANT.DWG
DRAWN BY: PEI
DESIGNED BY: AMI
CHECKED BY: AEN

SEAL

SHEET TITLE

P & ID

5-8

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P410046C
Approved
Issued On: 02/06/2024
Expires On: 02/06/2024

RIGHT: PERFORMANCE ENGINEERS, INC. 2023

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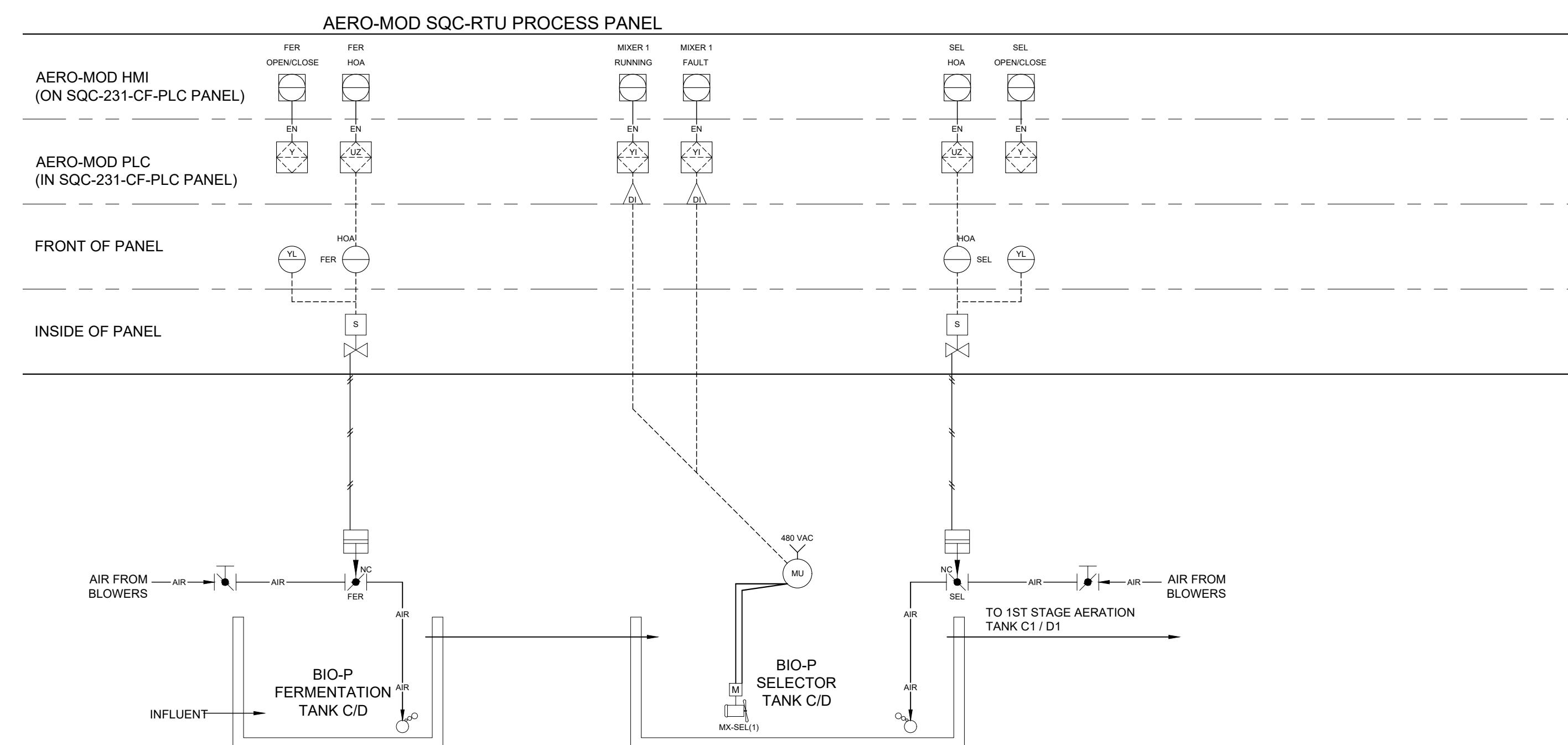
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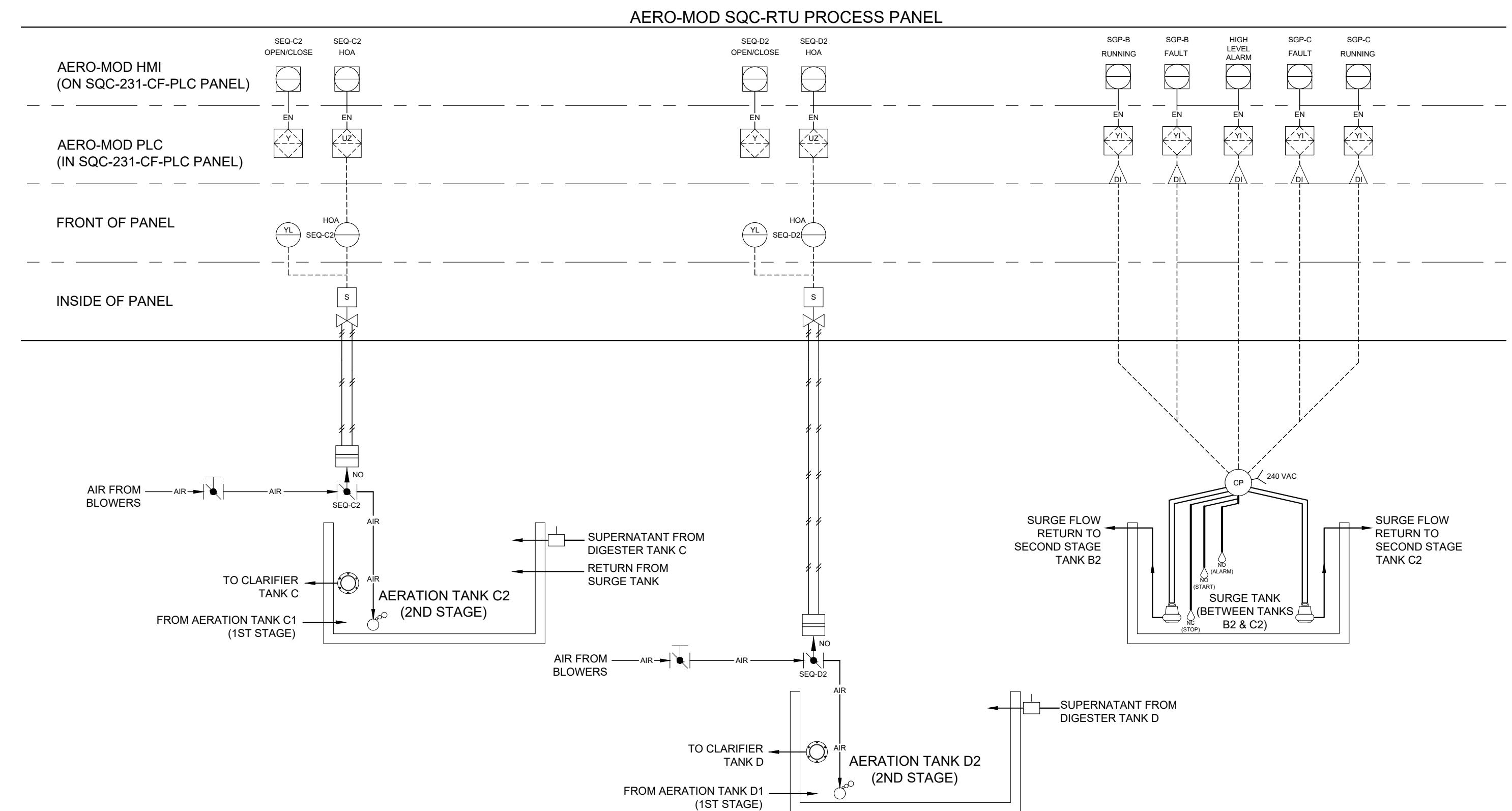
RIGHT: PERFORMANCE ENGINEERS, INC. 2023

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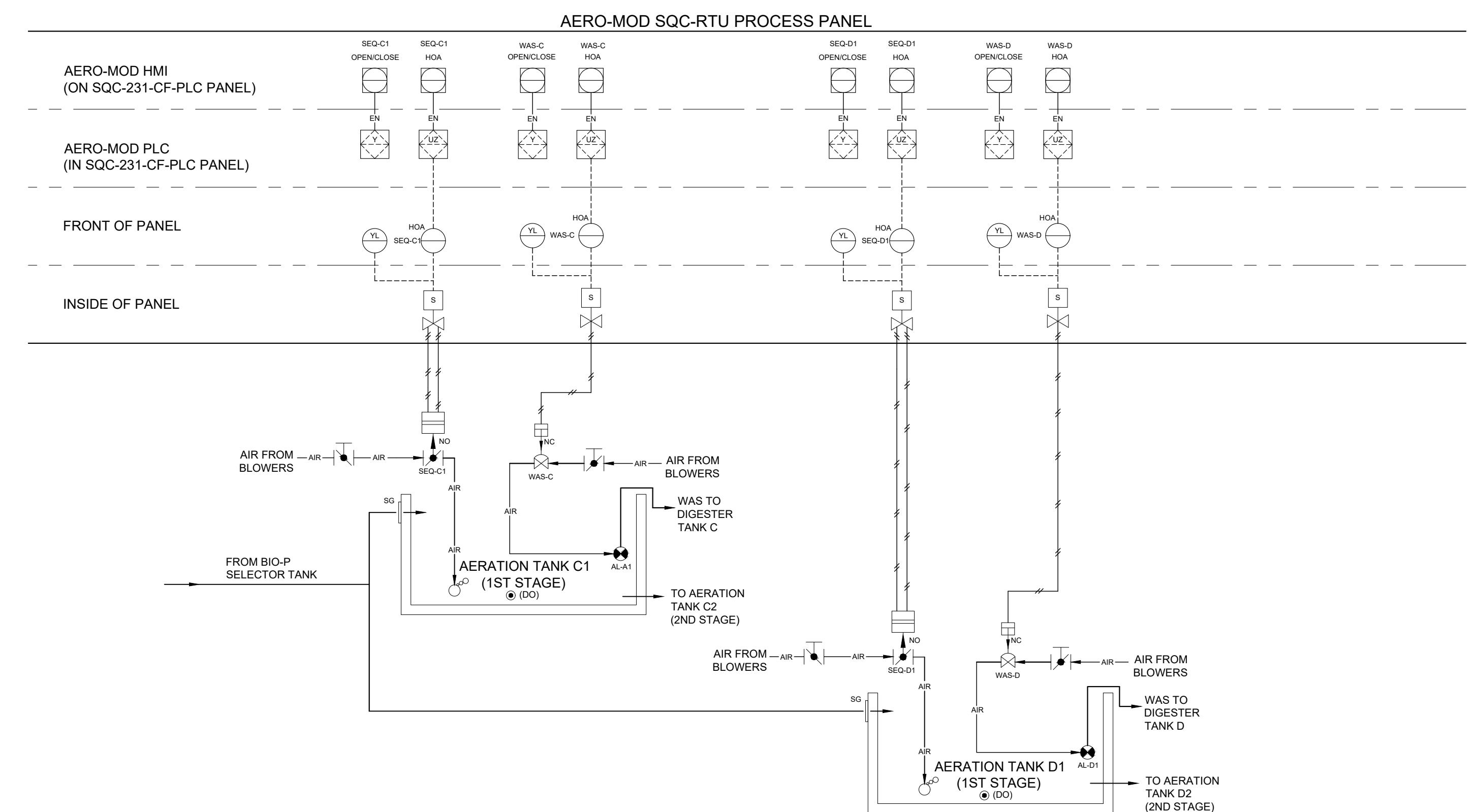
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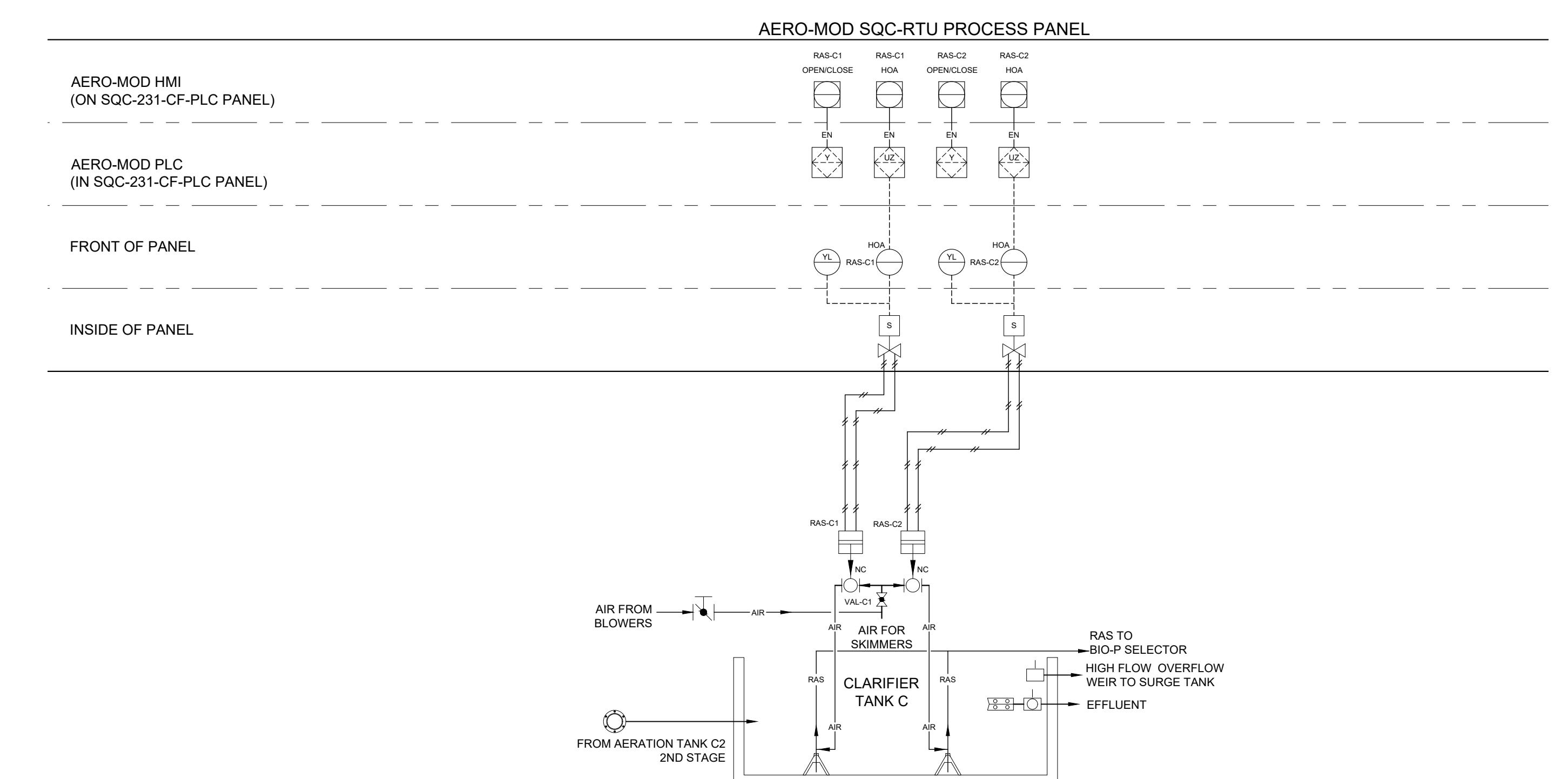
P & ID 9 PROPOSED FERMENTATION-SELECTOR TANK C & D
NOT TO SCALE



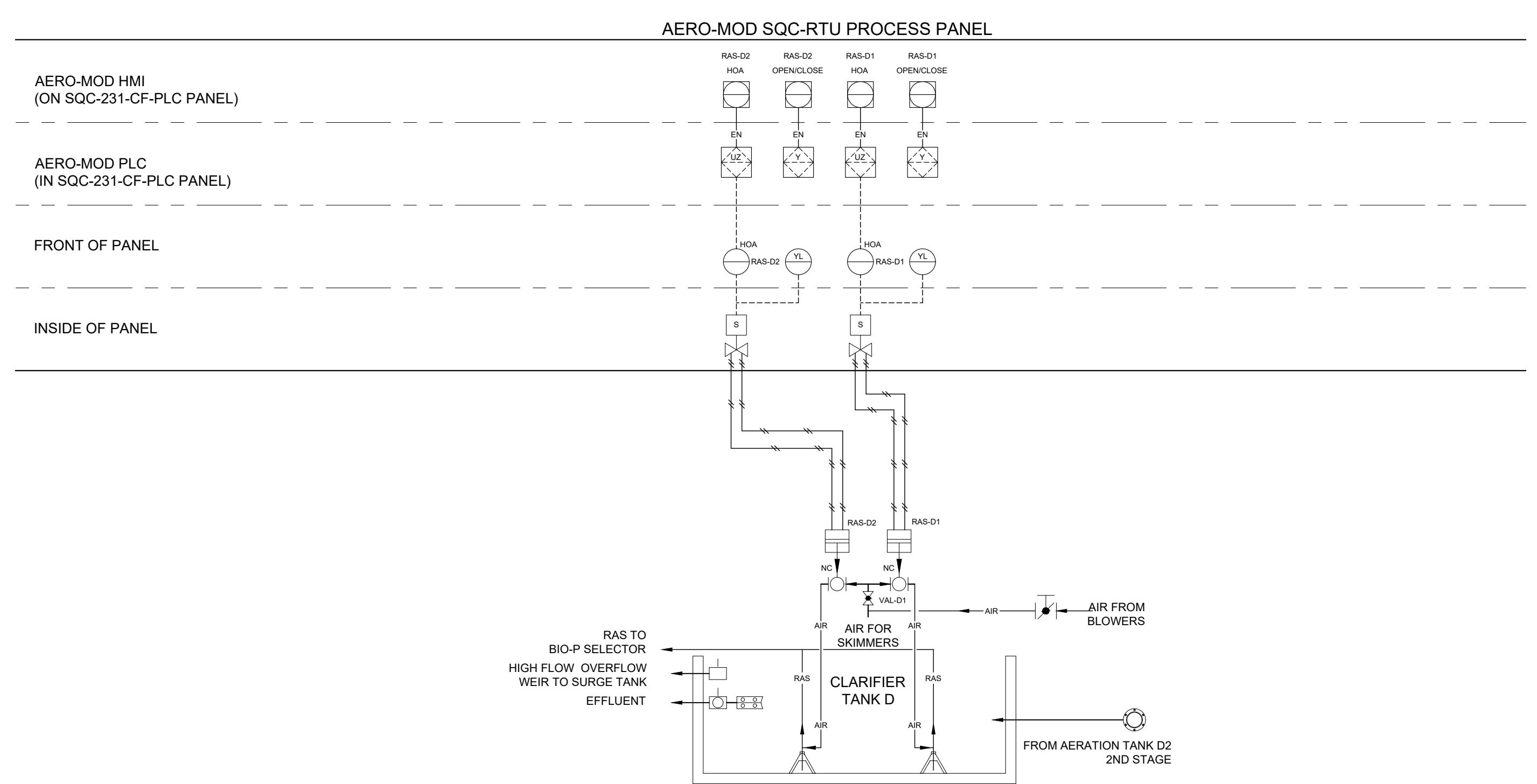
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NOT TO SCALE



P & ID 10 PROPOSED AERATION TANK C & D
NOT TO SCALE

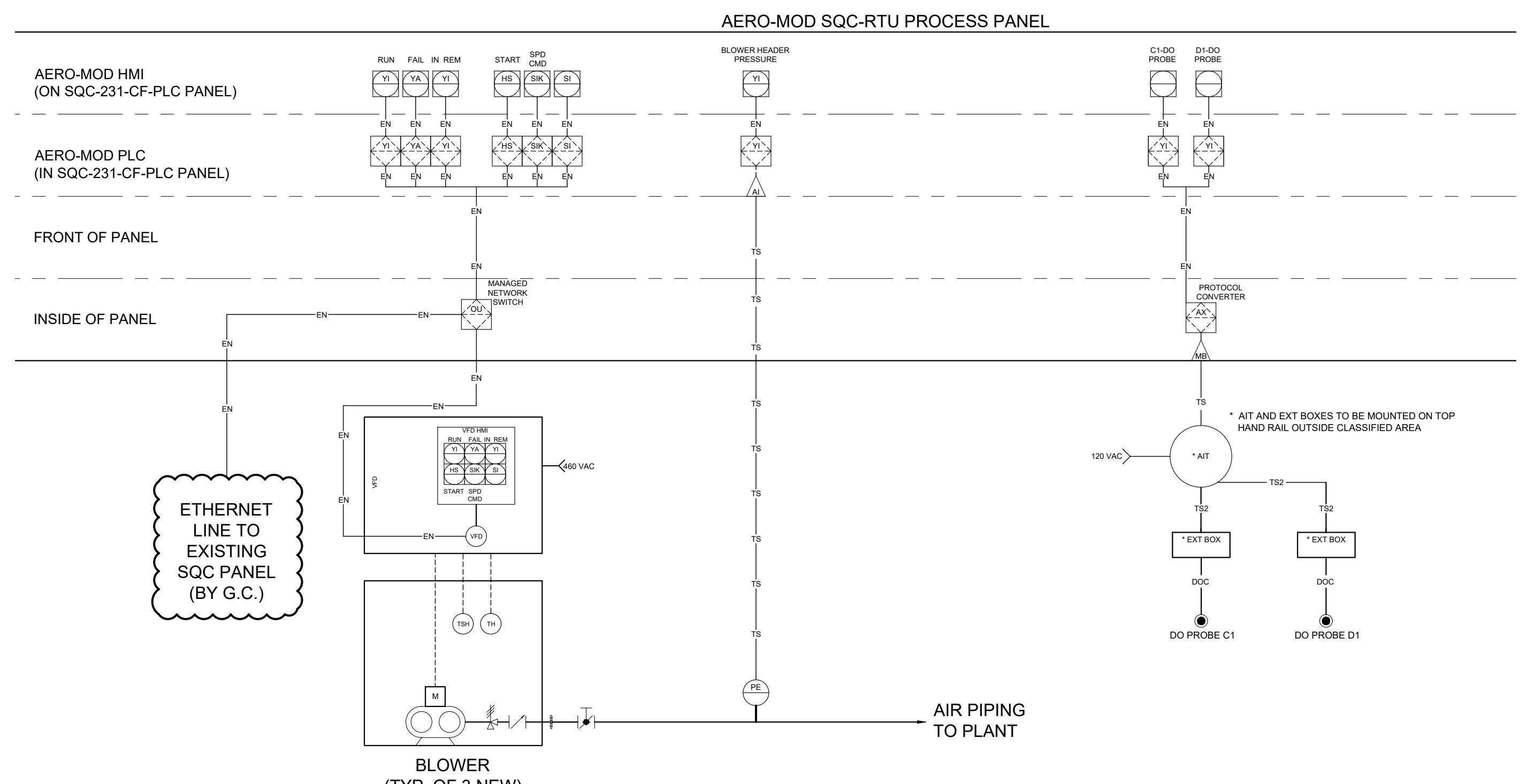


P & ID 12 PROPOSED CLARIFIER TANK C



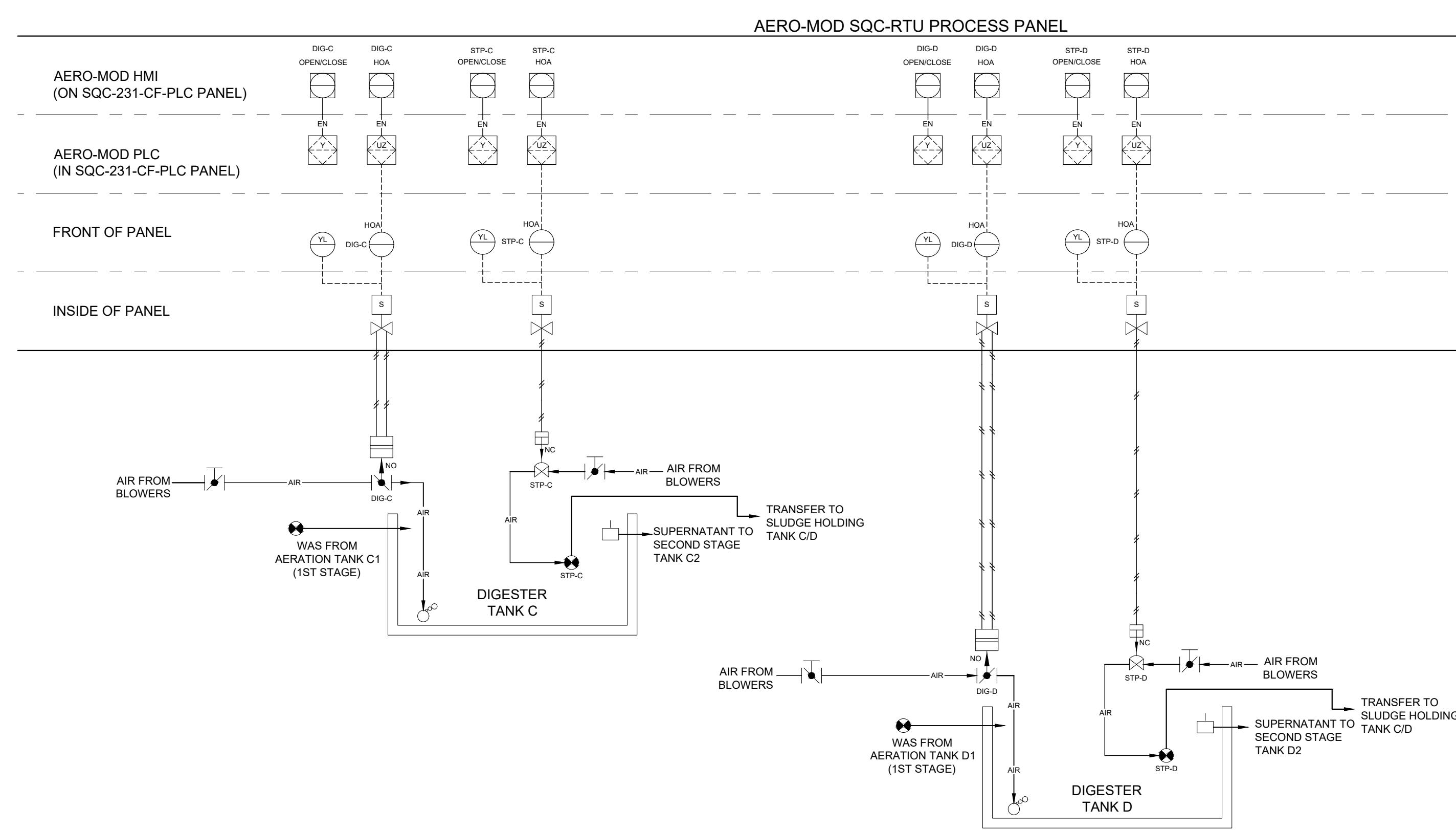
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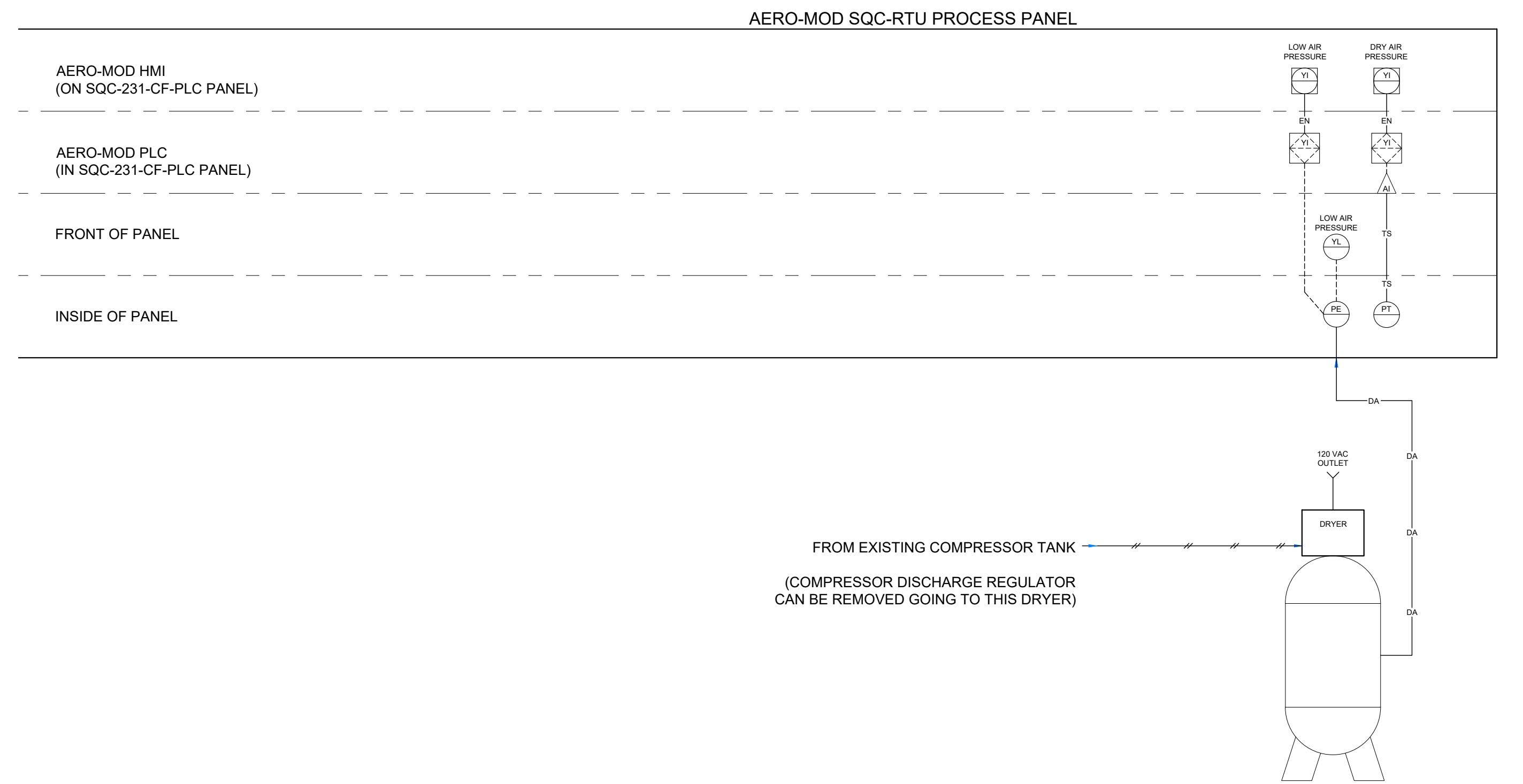
P & ID 15 PROPOSED BLOWERS-PROBES C & D

NOT TO SCALE



P & ID 14 PROPOSED DIGESTER TANK C & D

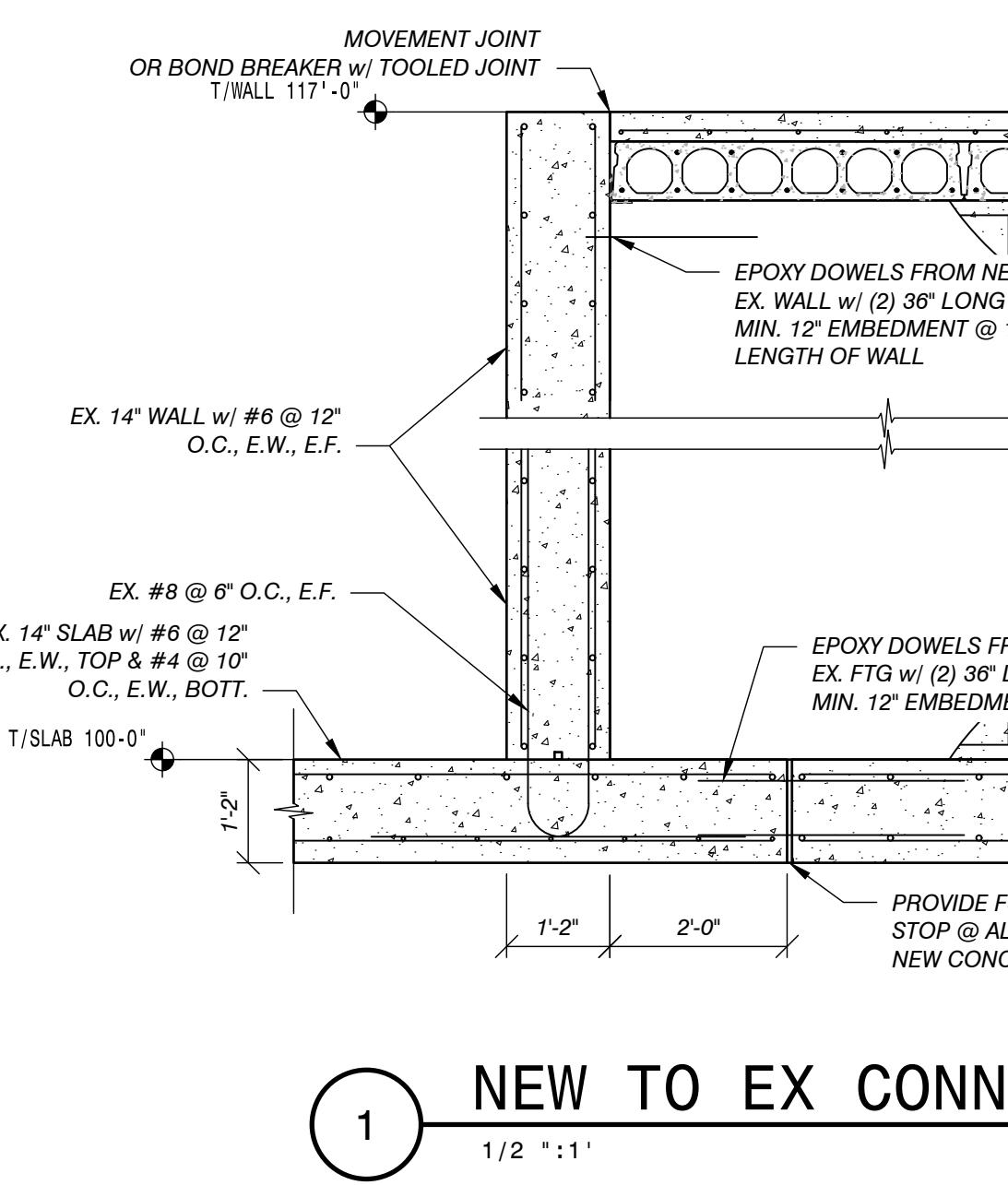
NOT TO SCALE



P & ID 16 PROPOSED PNEUMATIC SYSTEM

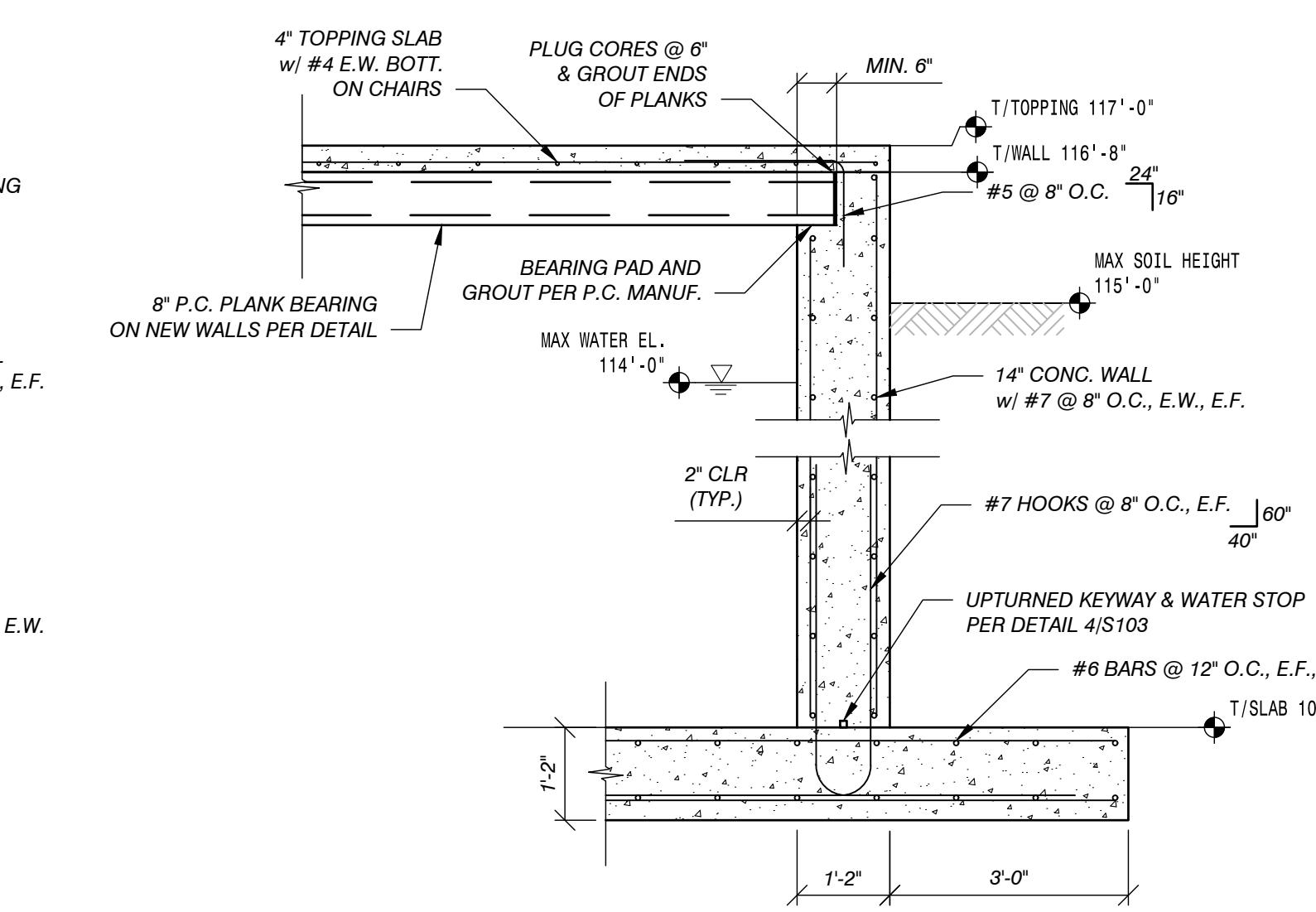
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1	1/5/24	REVISED PER EGLE REVIEW
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3	1/31/24	ADDENDUM 1
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PROJECT NO:	23-6036	
CAD DWG FILE:	6036PLANT.DWG	
DRAWN BY:	PEI	
DESIGNED BY:	AMI	
CHECKED BY:	AEN	
SHEET TITLE	P & ID	
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D504		
SHEET	27	OF 31
EGLE P4100462 Approved Issued On: 02/06/2024 Expires On: 02/06/2024		



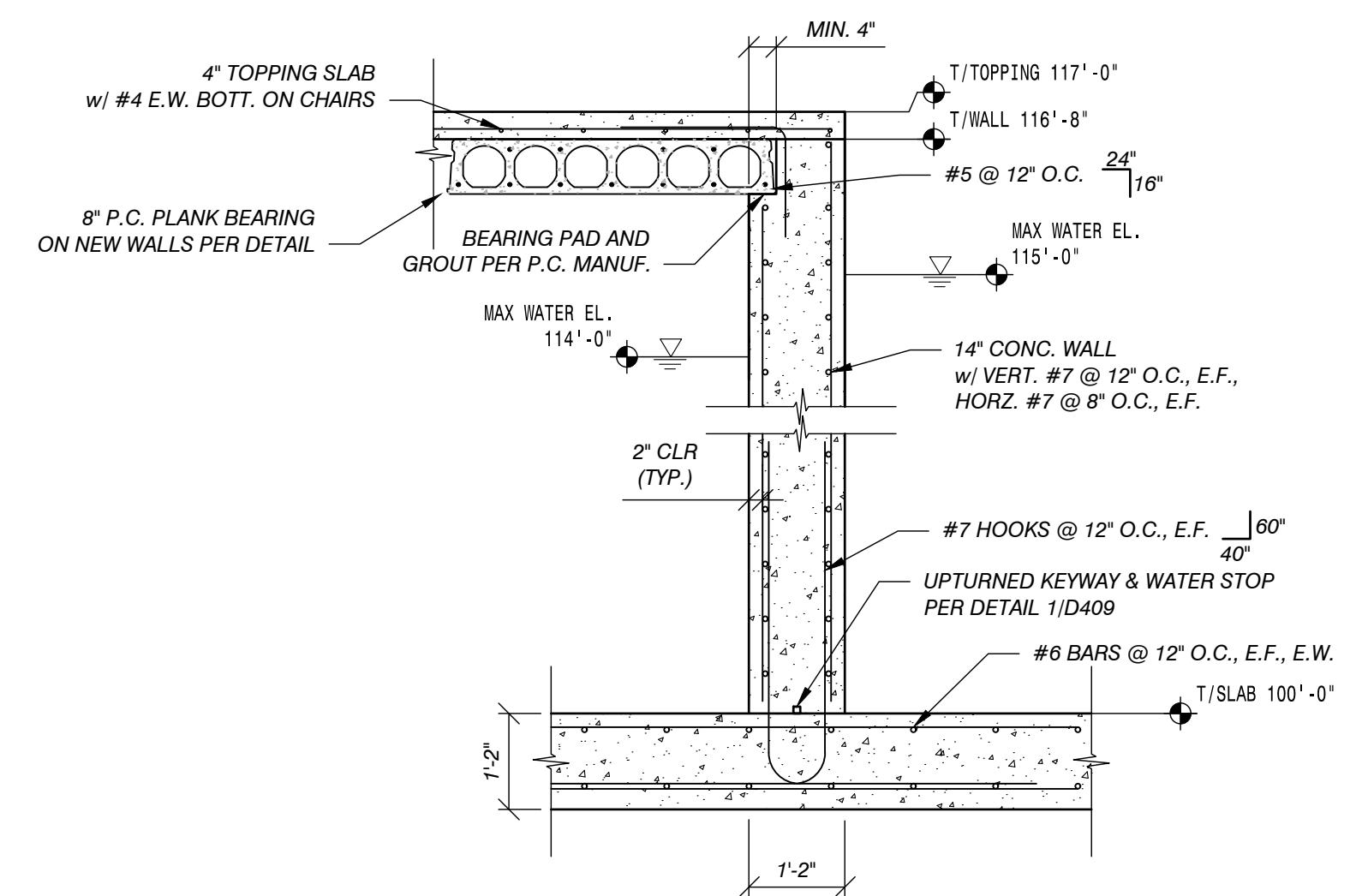
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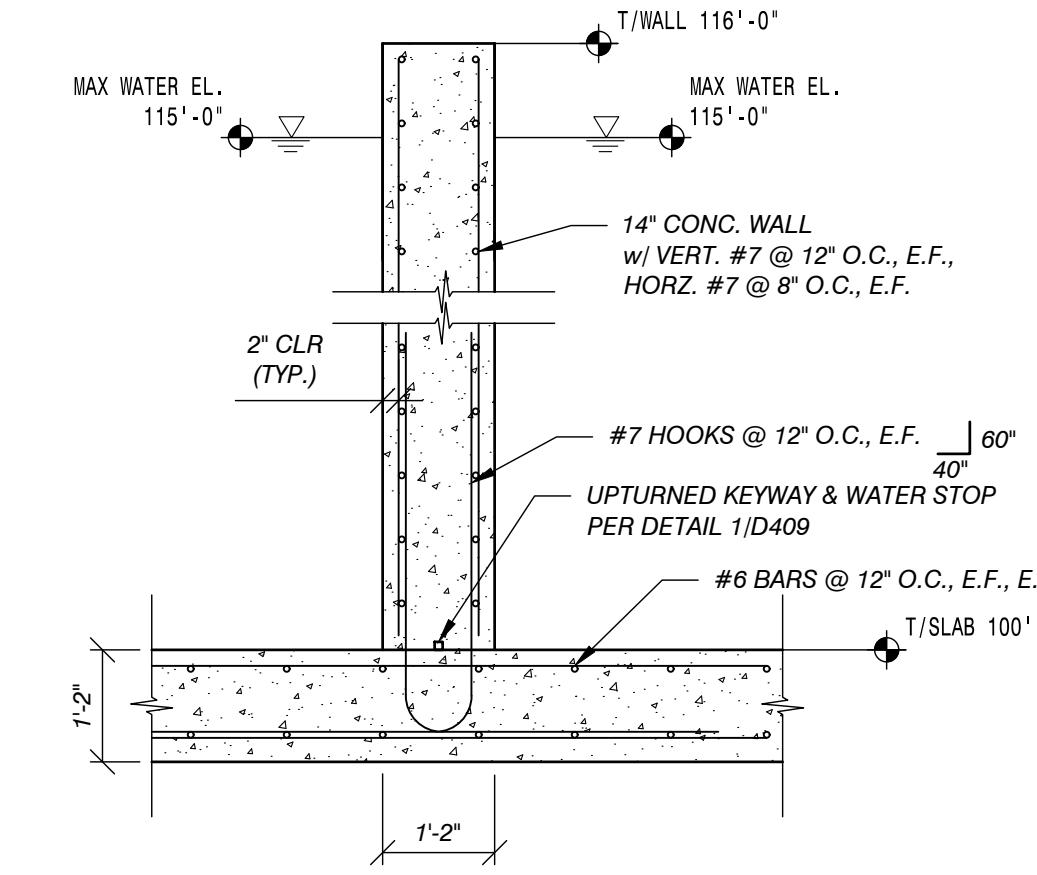
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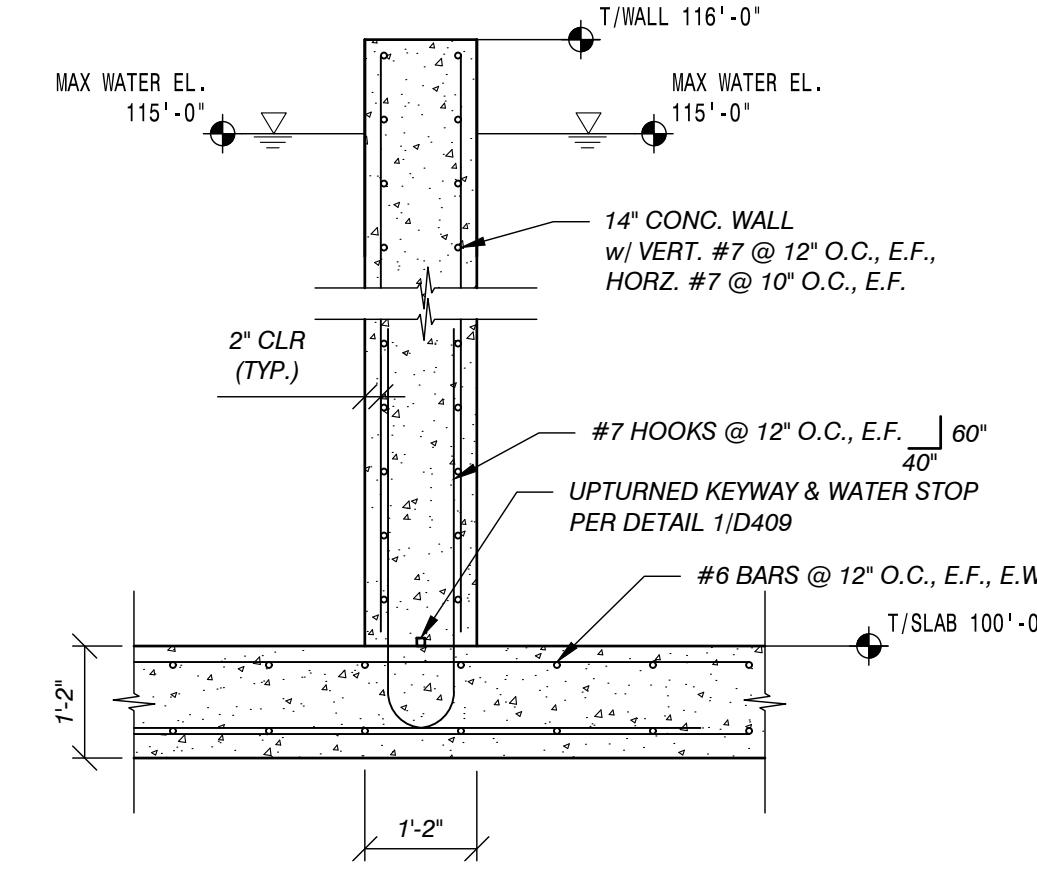
3 WALL SECTION

E



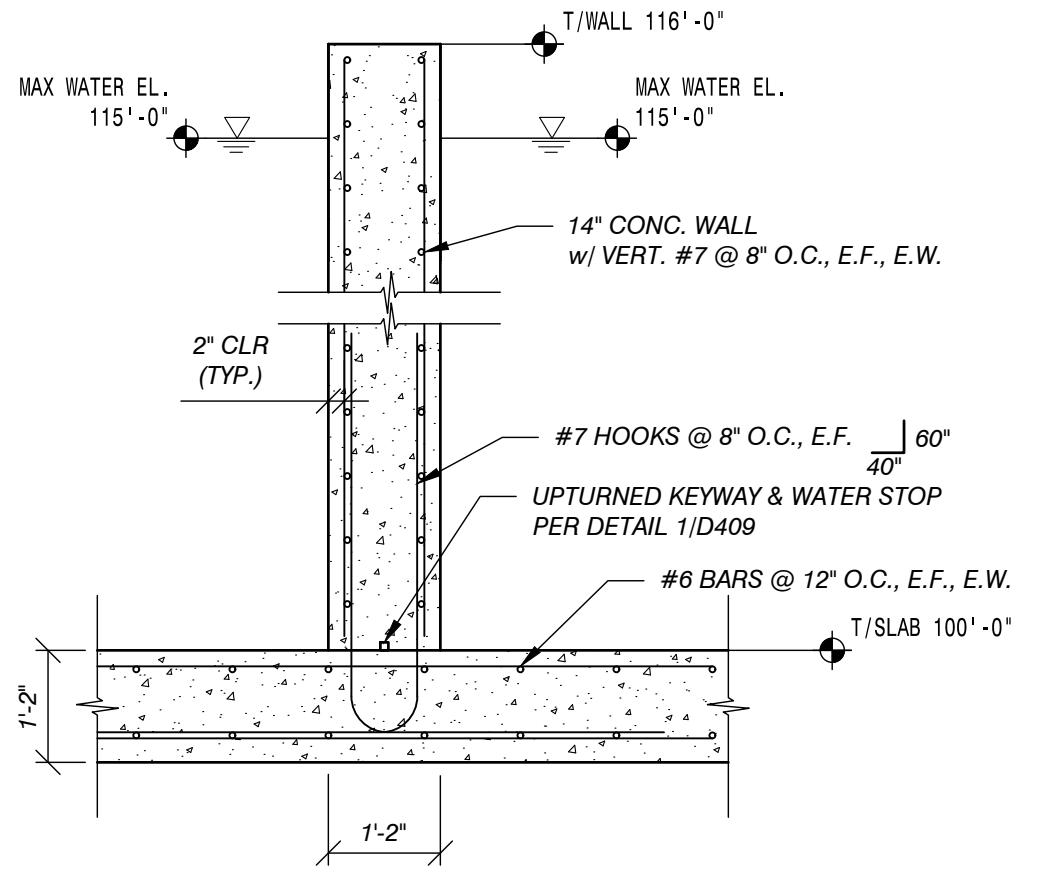
4 WALL SECTION

F



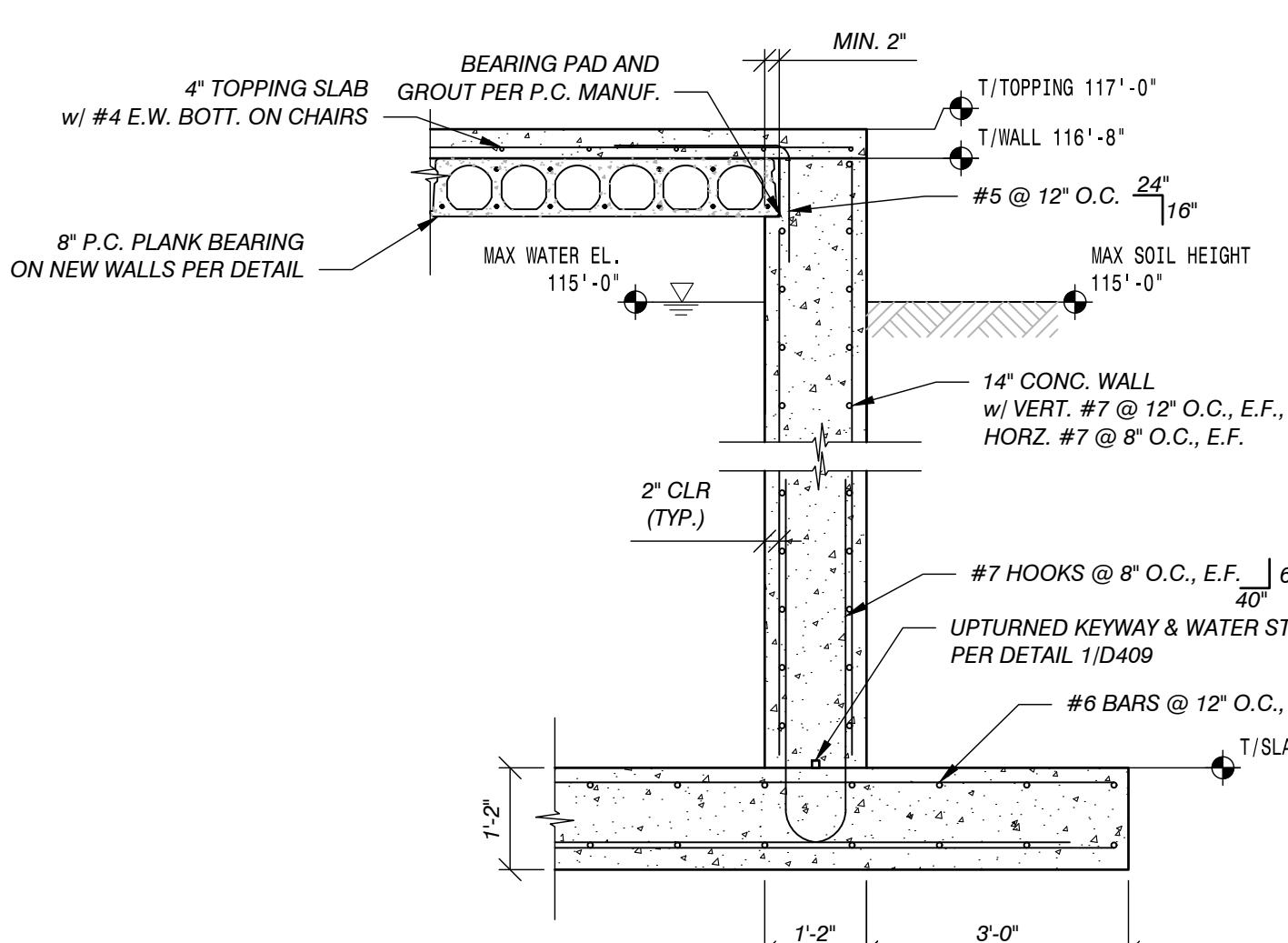
5 WALL SECTION

G



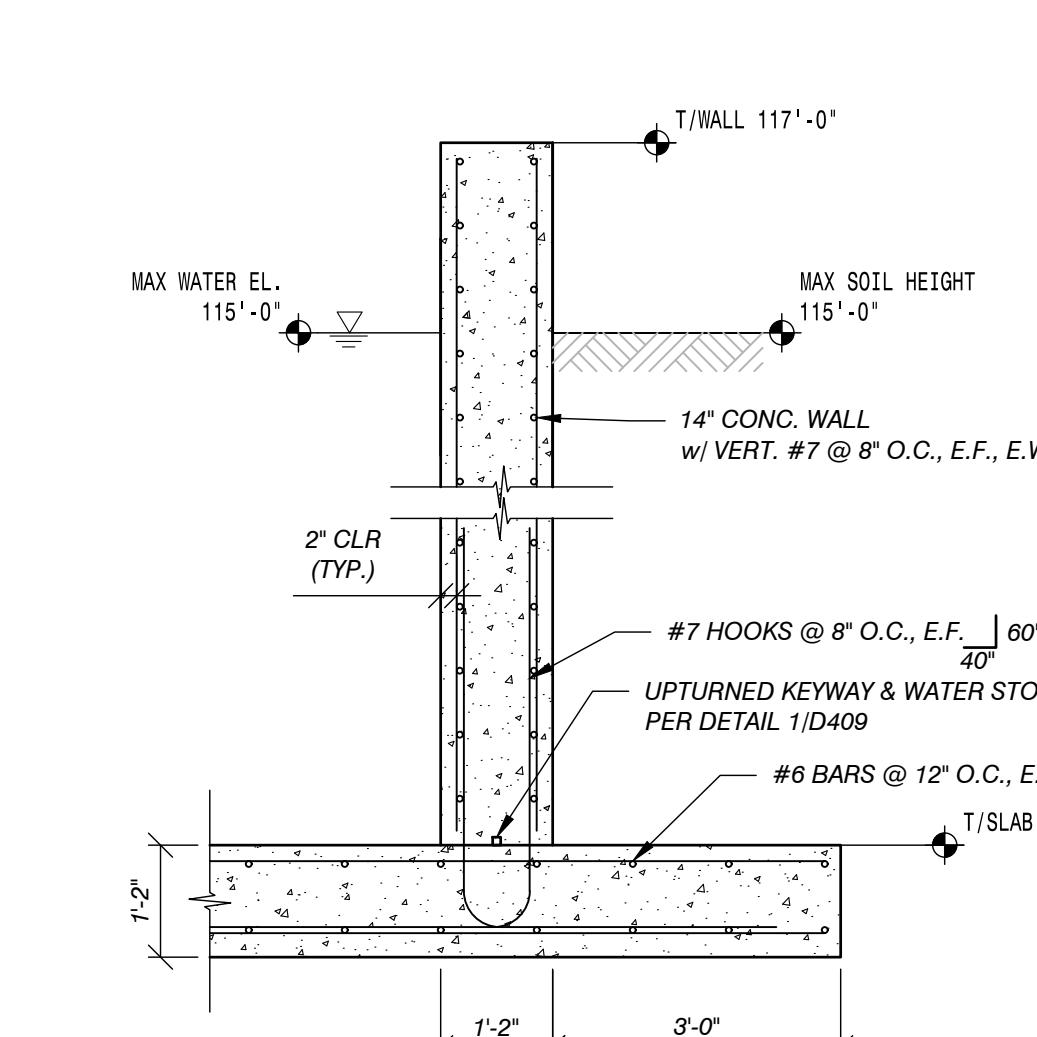
6 WALL SECTION

H



7 WALL SECTION

I



8 WALL SECTION

MARK	DATE	DESCRIPTION	PROJECT
0	7/28/23	PERMIT SUBMITAL	23-6036
1	1/5/24	REVISED PERMIT REVIEW	6036 Structural
2	1/26/24	BID ISSUE	
3	1/31/24	ADDENDUM 1	

PROJECT NO: 23-6036
CAD DWG FILE: 6036 Structural
DRAWN BY: PEI
DESIGNED BY: PEI
CHECKED BY: PEI

SEAL

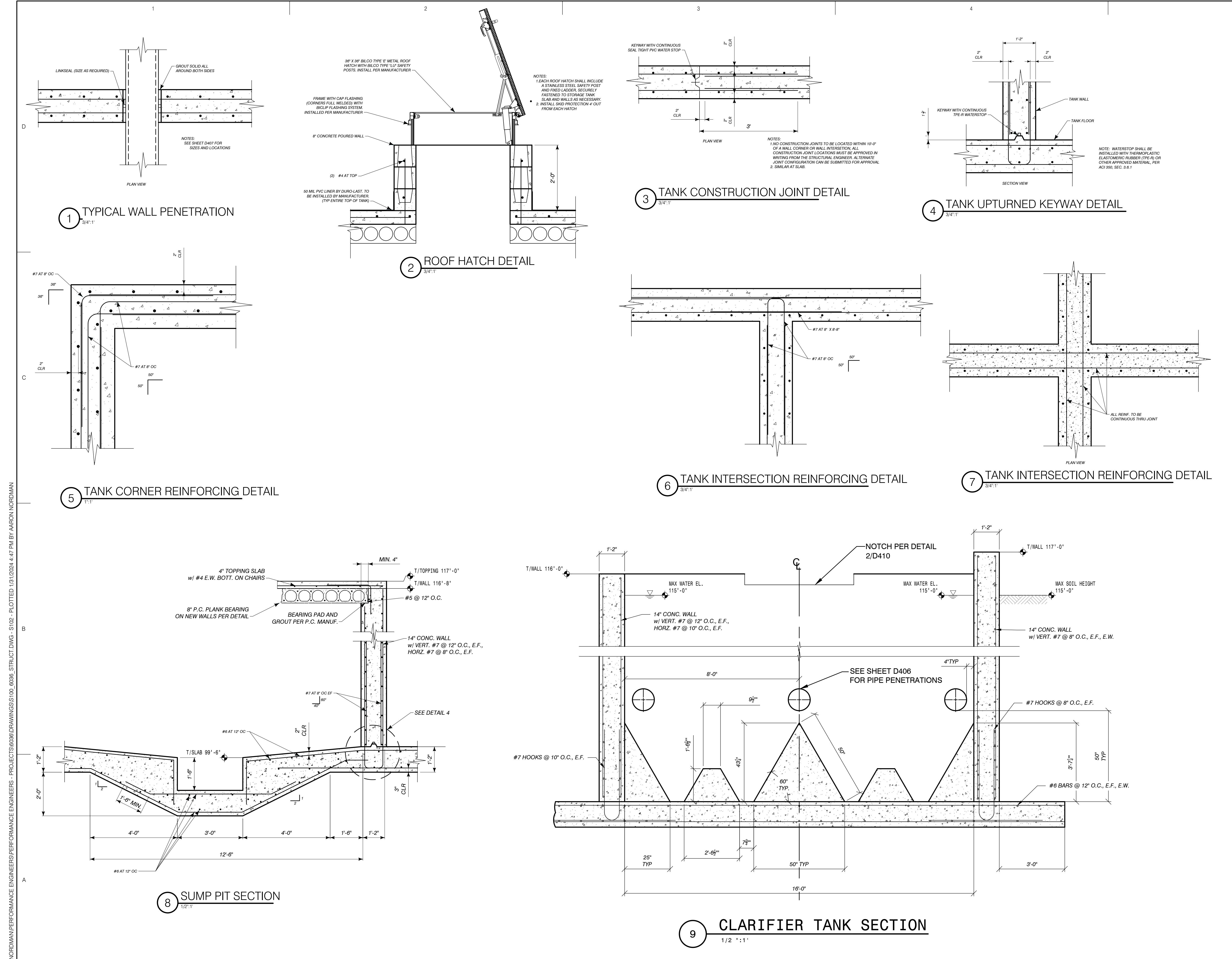
SHEET TITLE

STRUCTURAL
DETAILS

S101

SHEET 29 OF 31

EGLE
Approved
Issued On: 02/06/2024
Expires On: 02/06/2024



MARK	DATE	DESCRIPTION	PROJECT
0	7/28/23	PERMIT SUBMITAL	
1	1/5/24	REVISED PERMIT REVIEW	
2	1/26/24	BID ISSUE	
3	1/31/24	ADDENDUM 1	

PROJECT NO:	23-6036
CAD DWG FILE:	6036 Structural
DRAWN BY:	PEI
DESIGNED BY:	PEI
CHECKED BY:	PEI

SEAL

SHEET TITLE	
STRUCTURAL DETAILS	
S102	

ELECTRICAL SYMBOL LEGEND					
SYMBOL	DESCRIPTION	MOUNTING HEIGHT (TO CEILING OR AS NOTED)	SYMBOL	DESCRIPTION	MOUNTING HEIGHT (TO CEILING OR AS NOTED)
()	HOMERUN	---	□	SURFACE OR PENDENT MOUNTED LIGHT FIXTURE	AS NOTED
()	WIRE & CONDUIT	---	□	WALL SCONCE	---
()	LOW VOLTAGE WIRE AND/OR CONDUIT ATTACHED TO SYMBOL INDICATES CONDUIT STUBBED INTO SPACE ABOVE CEILING	---	□	RECESSED FLUORESCENT FIXTURE	GRID OR CEILING
()	CONDUIT DOWN	---	□	SURFACE MTD FLUORESCENT FIXTURE	SURFACE
—	CONDUIT UP	---	□	“e” = INDICATES EMERGENCY EGRESS LIGHTING	---
\$	SINGLE POLE SWITCH	±18° AFF	—	INDUSTRIAL OR STRIP FLUORESCENT FIXTURE	AS NOTED
\$	WALL MOUNTED OCCUPANCY SENSOR SWITCH	±18° AFF	—	EXIT SIGN - CEILING MOUNTED (SHADING INDICATES DIRECTION OF EGRESS)	CEILING MOUNTED
\$	DUPLEX RECEPTACLE	±18° AFF TO TOP	—	DUAL SIGN - CEILING MOUNTED (SHADING INDICATES FACE OF SIGN, ARROWS DIRECTION OF EGRESS)	BACK MOUNTED CENTERED ABOVE DOOR
\$	DUPLEX RECEPTACLE FOR MONITOR	AS SHOWN ON A/V DWGS	□	LTC RELAY PACK FOR OCCUPANCY SENSOR SYSTEM	ABOVE CEILING
\$	TWO DUPLEX RECEPTACLES IN DOUBLE GANG JB	±18° AFF TO TOP	□	EMERGENCY LTC RELAY UL 924, BODINE OR EQUAL)	ABOVE CEILING
\$	COUNTERTOP RECEPTACLE	±18° AFF TO TOP	—	—	—
\$	SINGLE RECEPTACLE AS NOTED	±18° AFF TO TOP	—	—	—
\$	SPLIT-WIRED RECEPTACLE	±18° AFF TO TOP	—	—	—
\$	RECESSED FLOOR DUPLEX RECEPTACLE	FLUSH IN FLOOR	—	—	—
\$	RECESSED FLOOR TWO DUPLEX RECEPTACLES	FLUSH IN FLOOR	—	—	—
\$	JUNCTION BOX	AS NOTED	—	—	—
\$	208/120V, 3PH OR 120/240V, 1PH PANEL	AS NOTED	—	—	—
\$	SPECIAL SYSTEM PANEL	AS NOTED	—	—	—
\$	NON-FUSIBLE DISCONNECT SWITCH, 60-60A	---	—	—	—
\$	NON-FUSIBLE DISCONNECT SWITCH, 60-60A FUSE	---	—	—	—
\$	COMBINATION STARTER/FUSED DISC. SWITCH, 30/20-30A SWITCH, 20A FUSE	---	—	—	—
\$	VARIABLE FREQUENCY DRIVE W/DISCONNECT (VFD)	---	—	—	—
\$	THREE (3) PHASE MOTOR	---	—	—	—
\$	RECESSED LIGHT FIXTURE	CEILING	—	—	—
\$	RECESSED DIRECTIONAL LIGHT FIXTURE (WALL WASH)	CEILING	—	—	—
\$	WALL MOUNTED LIGHT FIXTURE	AS NOTED	—	—	—

ELECTRICAL SYMBOL LEGEND

LIGHTING FIXTURE SCHEDULE										
TYPE	DESCRIPTION	FINISH/MATERIAL	SIZE	VOLTAGE	LAMPS [1]	MANUFACTURER'S CATALOG NUMBER	BALLAST	APPROVED EQUALS	COMMENTS	
A	INDUSTRIAL FLUORESCENT WRAPAROUND	WHITE	4"	120V	(3) F32T8SP35	DAYBRITE #HW-W-332-120-EB10R	□	COOPER, HUBBELL, LITHONIA	—	
AE	INDUSTRIAL FLUORESCENT WRAPAROUND WITH UNIT EMERG. BALLAST	WHITE	4"	120V	(3) F32T8SP35	DAYBRITE #HW-W-332-120-ESW	□	COOPER, HUBBELL, LITHONIA	—	
B	INDUSTRIAL FLUORESCENT WET LOCATION	WHITE/FIBERGLASS	4"	120V	(2) F32T8SP35	DAYBRITE #V2H-W-A-E-232-120-EB10R	□	COOPER, HUBBELL, LITHONIA	—	
BE	INDUSTRIAL FLUORESCENT WET LOCATION WITH UNIT EMERG. BALLAST	WHITE/FIBERGLASS	4"	120V	(2) F32T8SP35	DAYBRITE #V2H-W-A-E-232-120-ESW	□	COOPER, HUBBELL, LITHONIA	—	
C	HAZARDOUS FLUORESCENT	STAINLESS STEEL	4"	120V	(2) F32T8SP35	GUTH #AC577-82-120-EB-AMB-SH	□	COOPER, HUBBELL, LITHONIA	—	
CE	HAZARDOUS FLUORESCENT WITH UNIT EMERG. BALLAST	STAINLESS STEEL	4"	120V	(2) F32T8SP35	GUTH #AC577-82-120-EB(E5W)-AMB-SH	□	COOPER, HUBBELL, LITHONIA	—	
D	UNDERCABINET LIGHT	WHITE	4"	120V	(1) F32T8SP35	DAYBRITE #8-UC-132-W-120-EB10R	□	COOPER, HUBBELL, LITHONIA	—	
E	WALL MTD EXTERIOR HID	BRONZE/ALUM	X	277V	(1) 100W METAL HALIDE HID	DAYBRITE #NTW-100-M-U-SC2-UP	□	COOPER, HUBBELL, LITHONIA	—	
F	WALL MTD EXTERIOR FLUORESCENT	BRONZE/ALUM	X	120V	(1) 42W COMPACT FLUORESCENT	DAYBRITE #NTW-42C-C-U-FNT-UP-B4CF1/E	□	COOPER, HUBBELL, LITHONIA	—	
G	WALL MTD EXTERIOR INCAN VAPORTIGHT	ALUM	X	120V	(1) 60W RED A19 INCAN	COOPER WITH CAST GUARD	□	HUBBELL, LITHONIA	—	
X1	EXIT SIGN (SINGLE FACE AC ONLY)	BLACK WITH RED LENS	13"X8"	120V	LED	SURE-LITES #CCX-8-1-R-BK-7	—	—	—	
SL1	POLE MOUNTED HID SITE LIGHTING - 25' POLE	BRONZE/ALUM	480V	(1) 400W HPS PULSE START HID	GARDO #H19-1-3-400PSMH-QUAD-BRP	—	—	25' SRS POLE W/ 3' BASE - GARDO #SRS-25-4-D1-BRP	—	
SL2	POLE MOUNTED HID SITE LIGHTING - 30' POLE	BRONZE/ALUM	480V	(1) 400W HPS PULSE START HID	GARDO #H19-1-3-400PSMH-QUAD-BRP	—	—	30' SRS POLE W/ 3' BASE - GARDO #SRS-30-4-D1-BRP	—	

SCHEDULE NOTES:

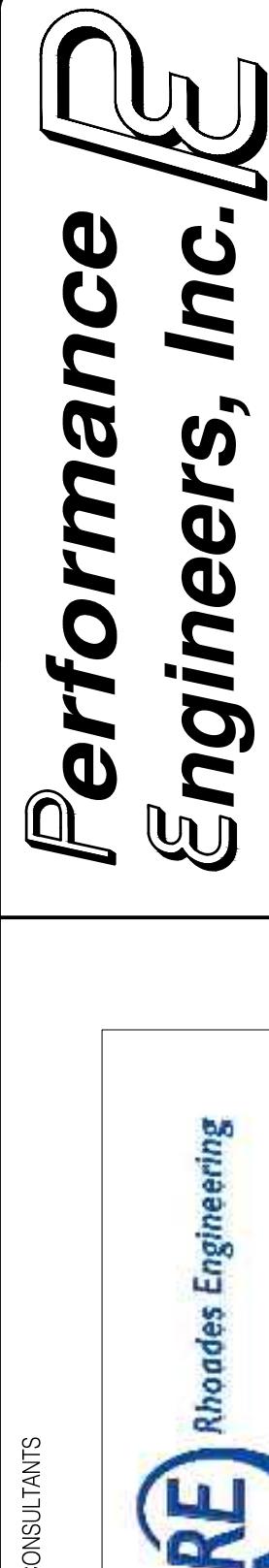
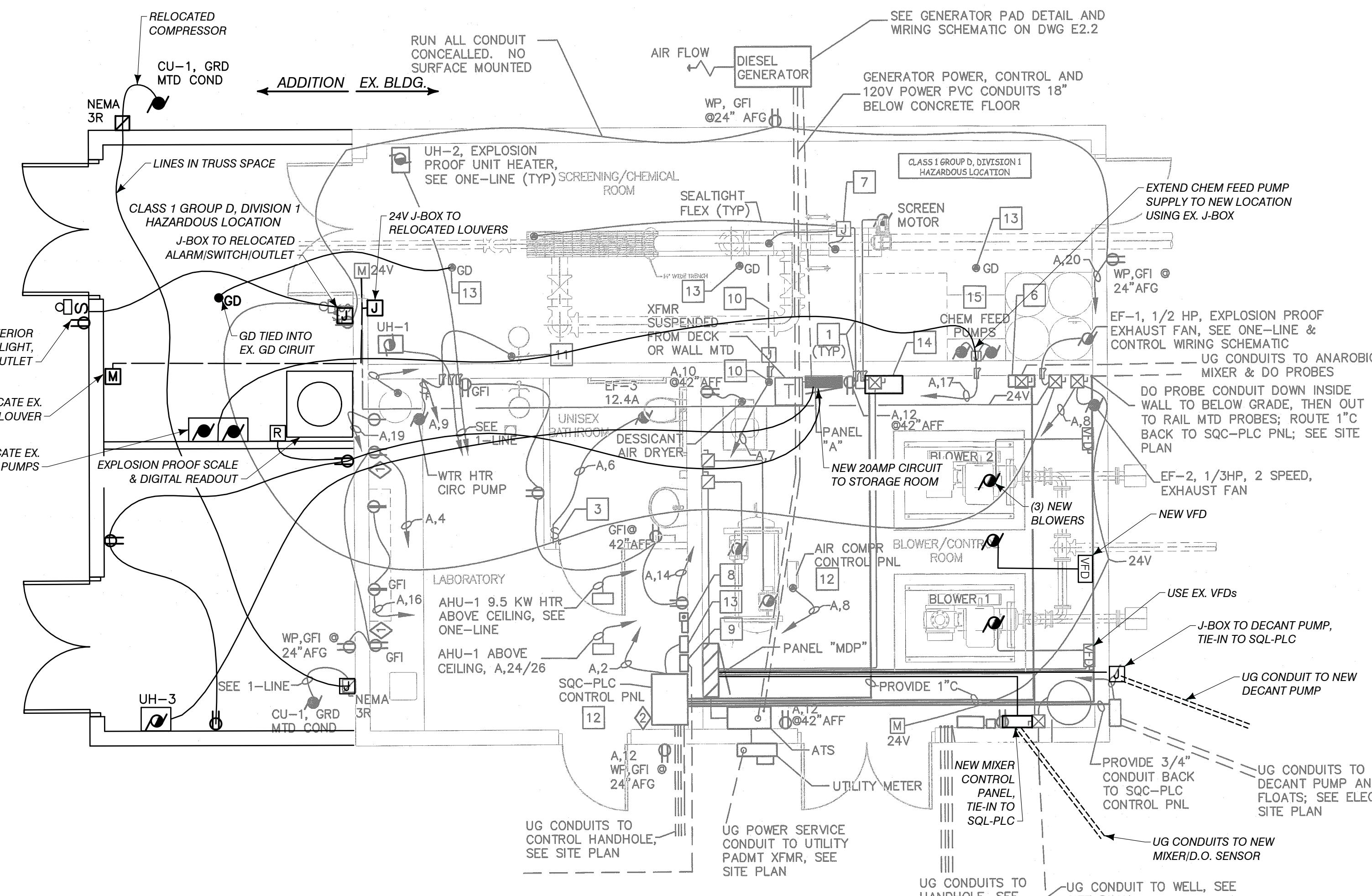
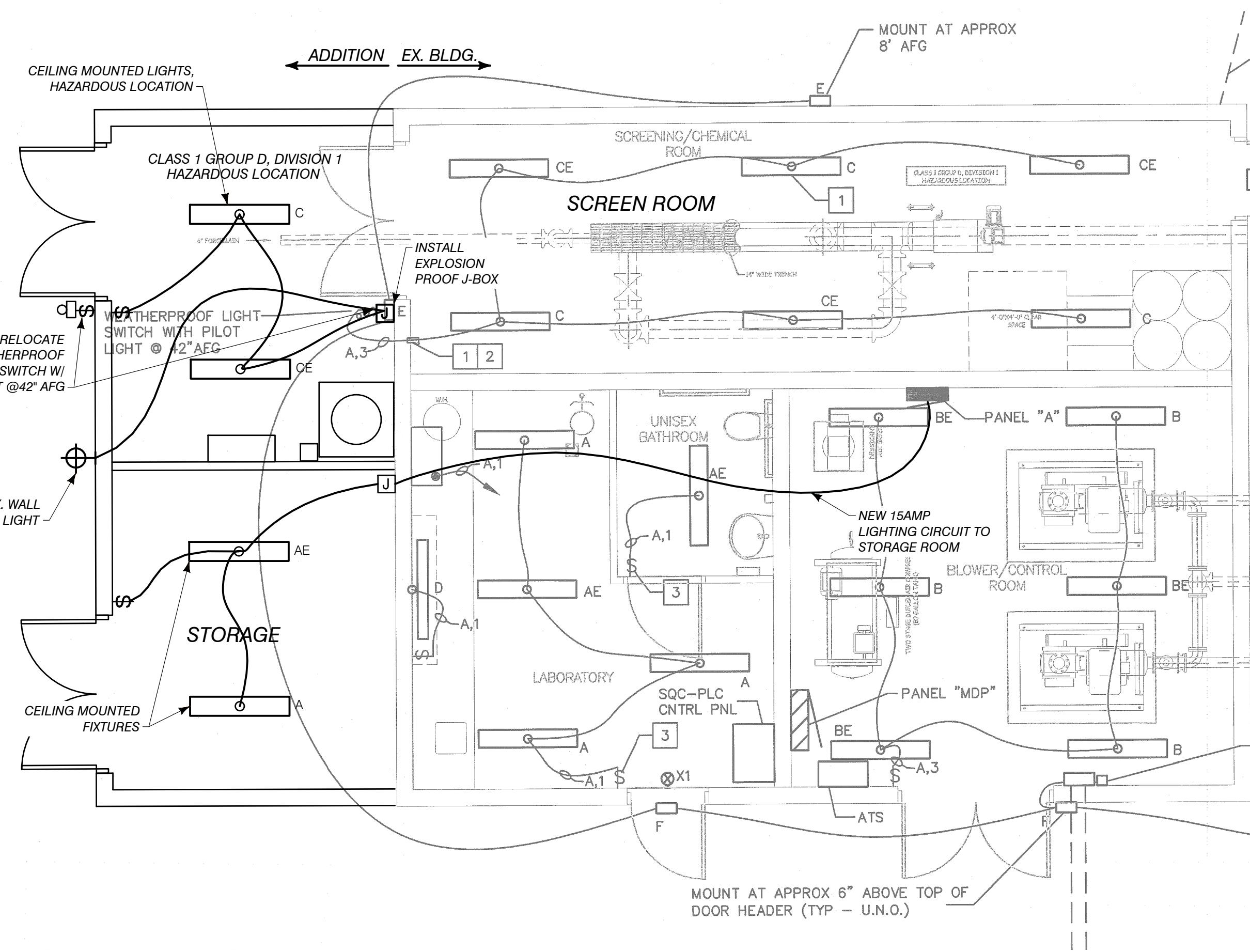
- 1. LAMP SPECIFICATION IS BASED ON GE. APPROVED EQUALS ACCEPTABLE BY SYLVANIA AND PHILLIPS.
- 2. PROVIDE ELECTRONIC PROGRAMMED START BALLAST WITH 10% OR LESS THD. W/ .88 BALLAST FACTOR.
- 3. PROVIDE ELECTRONIC EMERG BATTERY BALLAST FOR 1100-1400 LUMEN OUTPUT, WET LOCATION.
- 4. PROVIDE ELECTRONIC EMERG BATTERY BALLAST FOR 1100-1400 LUMEN OUTPUT, DRY LOCATION.
- 5. PER CATALOG DESIGNATION.
- 6. INTEGRAL COLD TEMP EMERGENCY BALLAST

EQUIPMENT NOTES:

1. ONE ADDITIONAL GAS DETECTION SENSOR SHALL BE INSTALLED IN THE NEW CHEMICAL STORAGE ROOM, TIED INTO THE EXISTING GAS DETECTORS AND ASSOCIATED ALARM SYSTEM. HAZARDOUS GAS DETECTOR SHALL BE SURFACE MOUNTED TO CEILING.
2. THE EXISTING SCREEN ROOM EXHAUST FAN IS INTERLOCKED WITH THE DAMPER LOUVERS, WITH A DELAY TO OPEN THE LOUVERS PRIOR TO FAN BEING ENGAGED AND DELAY TO CLOSE AFTER FAN IS OFF. RELOCATION OF THE EXISTING LOUVER (GREENHECK MODEL ESD-403) SHALL BE OF SAME OPERATION.
3. THE EXISTING EXHAUST FAN IS AN EXPLOSION PROOF, ½ HP, THREE PHASE FAN RATED AT 2,000 CFM AT 4" STATIC PRESSURE (GREENHECK MODEL CWB-161-5). THIS WILL RESULT IN A ROOM AIR EXCHANGE OF 2.5 MINUTES OR 24 EXCHANGES PER HOUR WITH THE ADDITION. HOWEVER, THE EXHAUST FAN IS NOT MEANT TO DECLASSIFY THE AREA FROM A DIVISION 1 TO A DIVISION 2 HAZARDOUS LOCATION. THE ENTIRE SPACE SHALL REMAIN CLASS 1, DIVISION 1.
4. THE EXISTING CHEMICAL FEED PUMPS ARE TO BE RELOCATED, ALONG WITH THE SPLASH GUARD, INTO THE NEW CHEMICAL STORAGE AREA. THE CONTRACTOR SHALL ROUTE NEW CONDUIT AND SUPPLY 1/2-INCH TUBING BACK TO THE INJECTION POINT. CONDUIT WITHIN THE SCREEN ROOM SHALL BE PVC COATED RIGID CONDUIT, SECURED TO THE WALL WITH STAINLESS HANGERS.

ELECTRICAL PLAN NOTES:

1. THIS SHEET APPLIES TO THE HEADWORKS BUILDING MODIFICATIONS. ADDITIONAL INFORMATION RELATED TO THE AEROMOD EQUIPMENT IS PROVIDED ELSEWHERE.
2. INTEGRATION OF THE NEW AEROMOD EQUIPMENT INTO THE EXISTING ELECTRICAL SUPPLY AND SCADA SYSTEM IS INTENDED. WHERE INFORMATION IS MISSING OR DISCREPANCIES EXISTING, CONSULT ENGINEER FOR CLARIFICATION.
3. BASE DRAWING IS SCANNED FROM ORIGINAL BUILDING CONSTRUCTION PLAN BY GOURDIE-FRASER & NEXT ENGINEERING DESIGN, 2012.
4. RELOCATION OF EXISTING EQUIPMENT IS INTENDED TO THE GREATEST EXTENT FEASIBLE.
5. THE CONSTRUCTION SHALL COMPLY WITH NFPA 820, STANDARD FOR FIRE PROTECTION IN WASTEWATER TREATMENT AND COLLECTION FACILITIES, 2024 AND THE NEC.
6. THE SCREEN ROOM AND INTERCONNECTED ADDITION SPACE FOR CHEMICAL STORAGE ARE CLASSIFIED AS CLASS 1, GROUP D, DIVISION 1 HAZARDOUS LOCATIONS, PER NFPA 820.
7. ALL EQUIPMENT WITHIN THE SCREEN ROOM AND CHEMICAL STORAGE SPACE SHALL BE EXPLOSION PROOF, WITH WALL PENETRATIONS AND CONDUITS PROPERLY SEALED, PER NFPA 820.
8. THE WORK REQUIRED HERE SHALL BE PERFORMED WHILE THE SCREEN ROOM IS IN ACTIVE USE. AS SUCH, THE CONTRACTOR SHALL TAKE APPROPRIATE MEASURES TO PROTECT THE HEALTH AND SAFETY OF WORKERS, INCLUDING BUT NOT LIMITED TO, PROVIDING PORTABLE HAZARDOUS ATMOSPHERIC MONITORING EQUIPMENT DURING ALL CONSTRUCTION ACTIVITIES.



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OWNER
TUSCARORA TOWNSHIP
CHEBON COUNTY
INDIAN RIVER, MICHIGAN

HEADWORKS BUILDING
ELECTRICAL

E601

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