

City of Ann Arbor

2024 Water Treatment Plant

Filter 18/20 Underdrain Improvements

Ann Arbor, Michigan

Issued for Bids and Construction July 25, 2024

Project Number: 231370
 ITB Number: 4752
 C2R2 Project Number: C2A-018



fishbeck.com 1515 Arboretum Drive,
 800.456.3824 Grand Rapids, Michigan



City of Ann Arbor
 Ann Arbor, Michigan
 2024 Water Treatment Plant
 Filter 18/20 Underdrain Improvements
 COVER SHEET

GENERAL

- G101 COVER SHEET
- G102 SITE LAYOUT

DEMOLITION

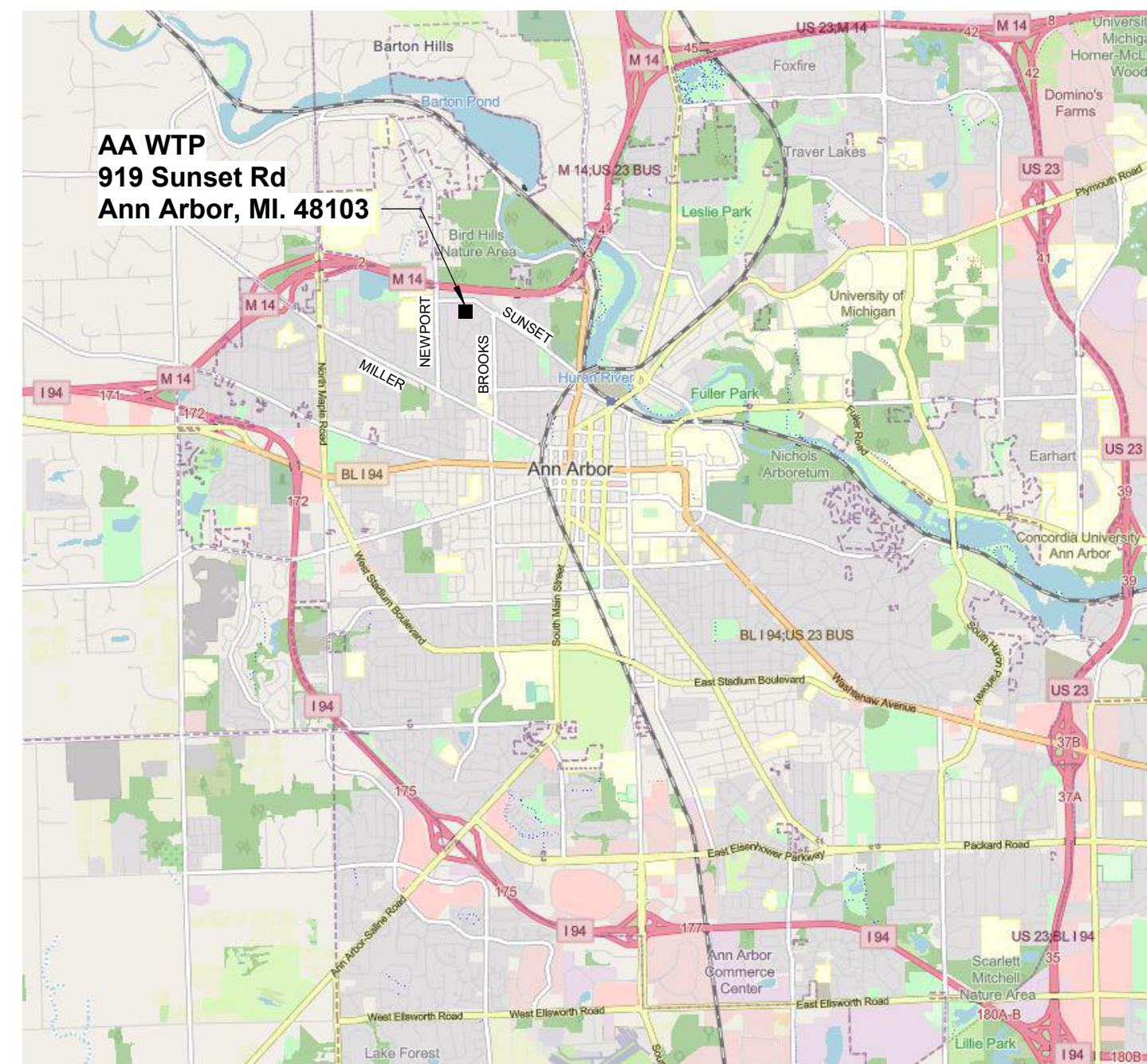
- D401 PROCESS PLANS AND SECTIONS
- D402 PROCESS PHOTOS

PROCESS

- P001 GENERAL ABBREVIATIONS, SCHEDULE, AND DETAILS
- P101 HYDRAULIC PROFILE
- P201 FILTER PLANS
- P301 SECTIONS
- P401 PROJECT DETAILS
- P402 PROJECT DETAILS

GENERAL ABBREVIATIONS

ACM	ALUMINUM COMPOSITE MATERIAL	EF	EXHAUST FAN	IN	INCH/INCHES	NRC	NOISE REDUCTION COEFFICIENT	SGT	STRUCTURAL GLAZED TILE
AFF	ABOVE FINISHED FLOOR	EL	ELEVATION	INSUL	INSULATION	NTS	NOT TO SCALE	SIM	SIMILAR
AHU	AIR HANDLING UNIT	EJ	EXPANSION JOINT	LAV	LAVATORY	OC	ON CENTER	SP	SPACE/SPACING
AL	ALUMINUM	EQ	EQUAL	LED	LIGHT EMITTING DIODE	OD	OUTSIDE DIAMETER	SQ	SQUARE
ALT	ALTERNATE	EWC	ELECTRIC WATER COOLER	LLH	LONG LEG HORIZONTAL	OH	OVERHEAD	SS	STAINLESS STEEL
BF	BARRIER FREE	FD	FLOOR DRAIN	LLV	LONG LEG VERTICAL	OPP	OPPOSITE	STD	STANDARD
BRG	BEARING	FRT	FIRE RETARDANT TREATED	LP	LOW POINT	TAN	TANGENT	TYP	TYPICAL
CJ	CONTROL JOINT	FT	FOOT/FEET	MFR	MANUFACTURER	ORD	OVERFLOW ROOF DRAIN	UL	UNDERWRITER'S LABORATORY
CL	CENTERLINE	GA	GAUGE/GAGE	MAX	MAXIMUM	OS	OUTSIDE	UNO	UNLESS NOTED OTHERWISE
CW	CURTAINWALL	GALV	GALVANIZED	MEZZ	MEZZANINE	PERP	PERPENDICULAR	VTR	VENT THROUGH ROOF
CLG	CEILING	GC	GENERAL CONTRACTOR	MIN	MINIMUM	PL	PLATE	VERT	VERTICAL
CMU	CONCRETE MASONRY UNIT	HB	HOSE BIBB	MO	MASONRY OPENING	PSF	POUNDS PER SQUARE FOOT	W	WITH
CO	CLEANOUT	HP	HIGH POINT	MTD	MOUNTED	PVC	POLYVINYL CHLORIDE	WC	WATER CLOSET
CONC	CONCRETE	HORIZ	HORIZONTAL	N/A	NOT APPLICABLE	R	RADIUS	WH	WATER HEATER
CONST	CONSTRUCTION	HVAC	HEATING VENTILATING AIR CONDITIONING	NC	NOISE CRITERIA	REQD	REQUIRED	WO	WITHOUT
CONT	CONTINUOUS	ID	INSIDE DIAMETER	NIC	NOT IN CONTRACT	RD	ROOF DRAIN	WP	WEATHERPROOF
DIA	DIAMETER	IE	INVERT ELEVATION	NO	NUMBER	SCH	SCHEDULE	WT	WEIGHT
DN	DOWN	IMP	INSULATED METAL PANEL			SF	SQUARE FOOT		
DS	DOWNSPOUT								



LOCATION MAP
 SCALE: NOT TO SCALE

GRAPHIC SYMBOLS

SECTION CUT LINE ①	ELEVATION, SECTION, AND DETAIL DESIGNATION ①	ENLARGED DETAIL FRAME ①	SIGNAGE TAG ①
PLAN DESIGNATION ①	EXTERIOR ELEVATION TAG A	ELEVATION TARGET EL. 100'-0"	FINISH TAG 2
PLAN SCALE: 1/8" = 1'-0"	INTERIOR ELEVATION / PHOTO TAG A	SPOT ELEVATION EL. 100'-0"	BULLETIN IDENTIFICATION B1
LEVEL CALLOUT FIRST FLOOR 100'-0"	NORTH ARROW DESIGNATION NORTH	EXISTING GRID 000	ADDENDUM IDENTIFICATION A1
	ROOM NAME AND NUMBER Room name 101	NEW CONSTRUCTION GRID 000	SKETCH IDENTIFICATION S1
			BARRIER FREE LOCATION B1
			NEW CONSTRUCTION KEY NOTE 1
			DEMOLITION KEY NOTE 1

SEAL

REVISIONS

7/25/2024 BIDS AND CONSTRUCTION

Drawn By RS2
 Designer ANW
 Reviewer MTP
 Manager BP

Hard copy is intended to be 24"x36" when plotted. Scale(s) indicated and graphic quality may not be accurate for any other size.

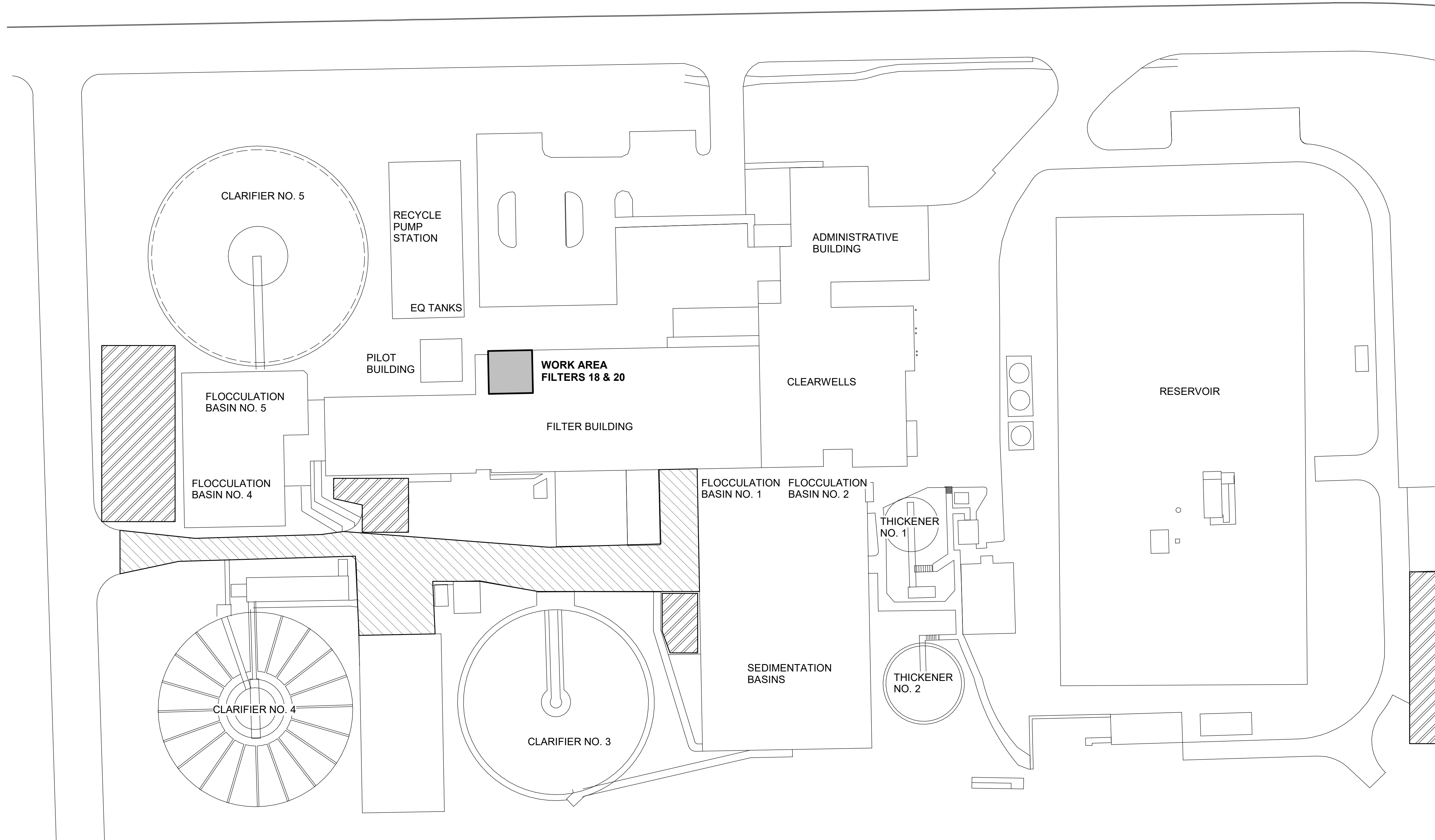
PROJECT NO.
231370

SHEET NO.

G101

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PLOT INFO: 7/18/2024 8:10:37 AM Autodesk Docs://231370/2022_PR_General_231370.rvt



SYMBOLS LEGEND

- AREA NOT TO BE BLOCKED
- AREAS ALLOWED FOR EQUIPMENT STAGING

NORTH
 WTP
SITE LAYOUT
 SCALE: NOT TO SCALE

City of Ann Arbor
 Ann Arbor, Michigan
2024 Water Treatment Plant
Filter 18/20 Underdrain Improvements
 SITE LAYOUT

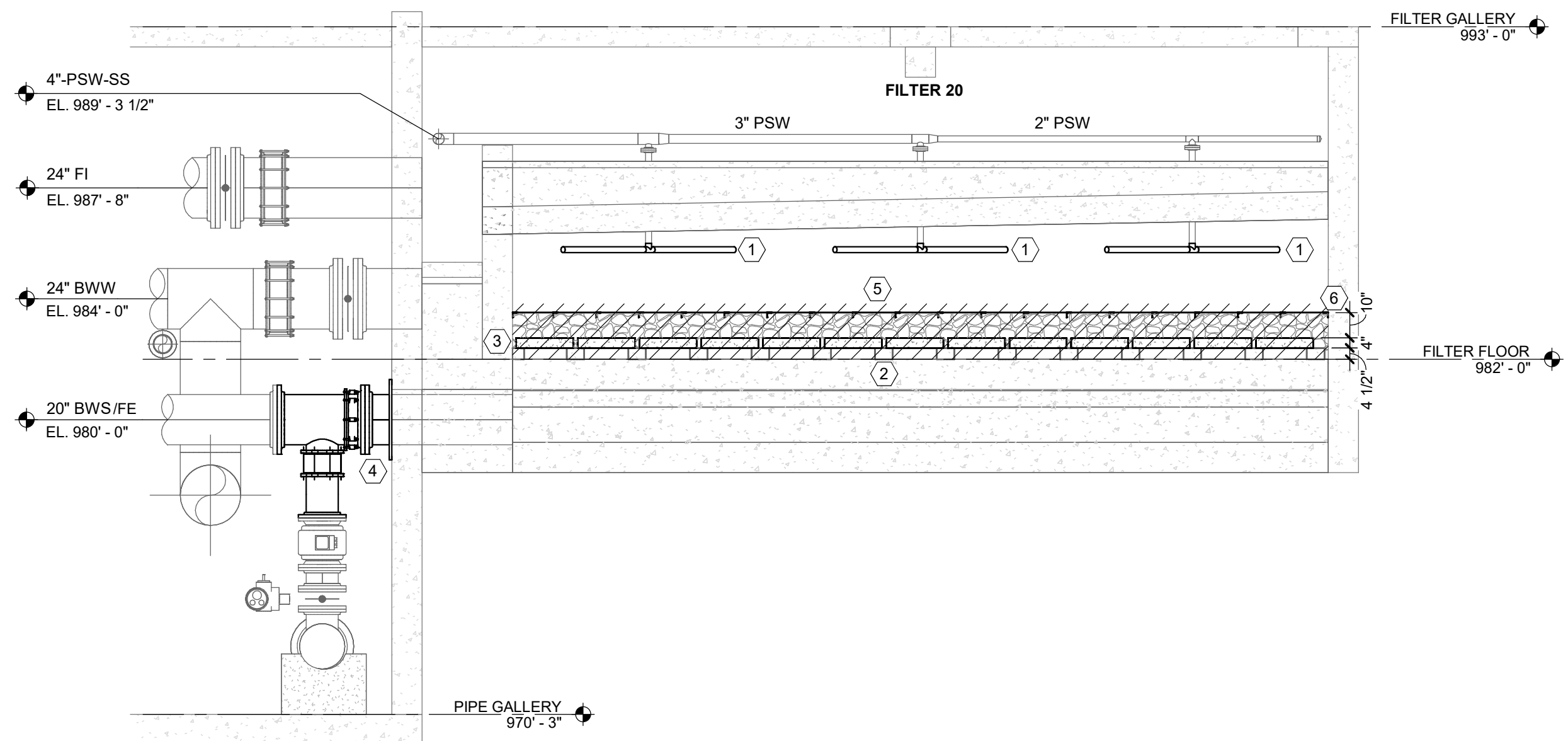
REVISIONS

7/25/2024 BIDS AND CONSTRUCTION	
Drawn By	RS2
Designer	ANW
Reviewer	MTP
Manager	BP

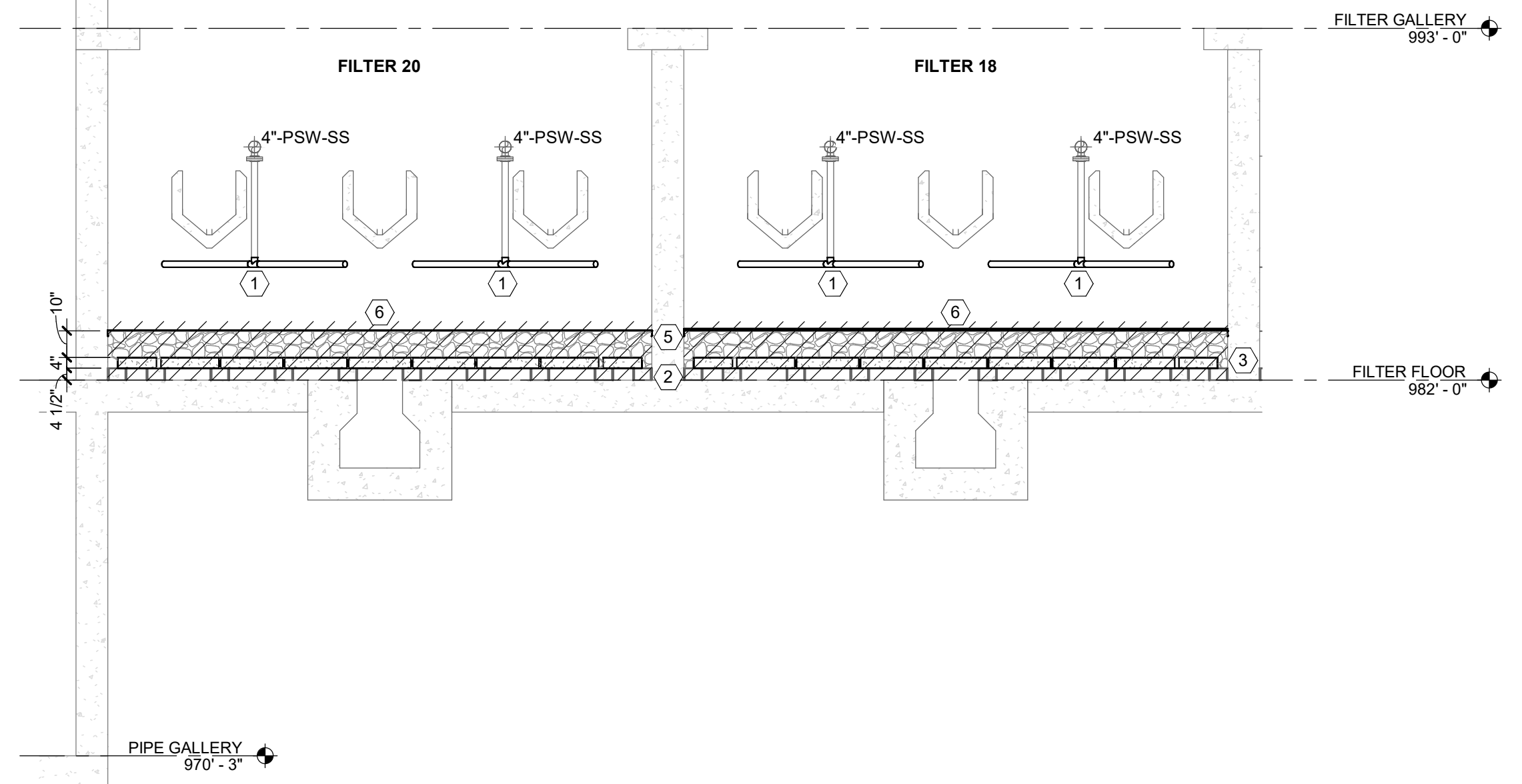
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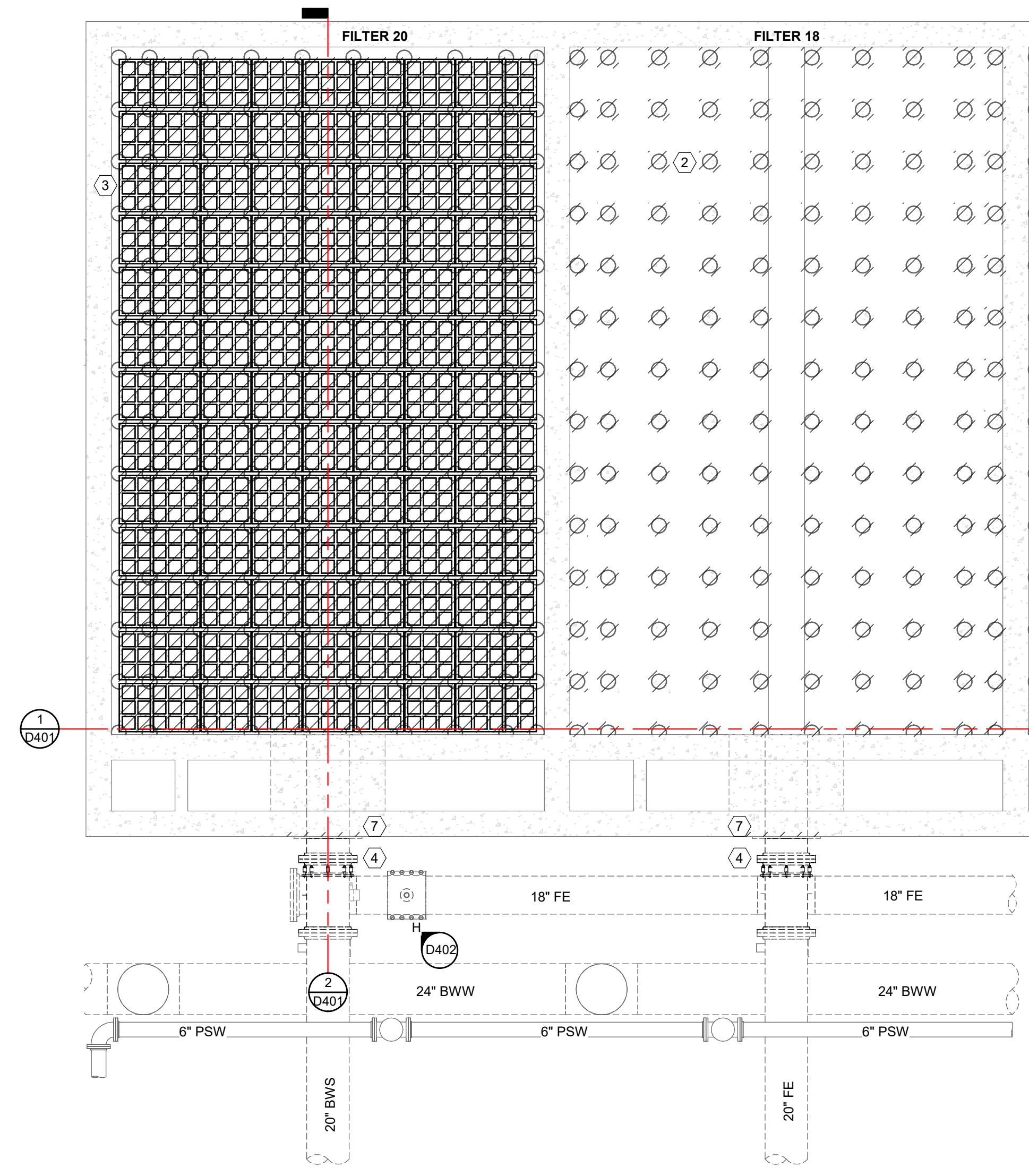
G102



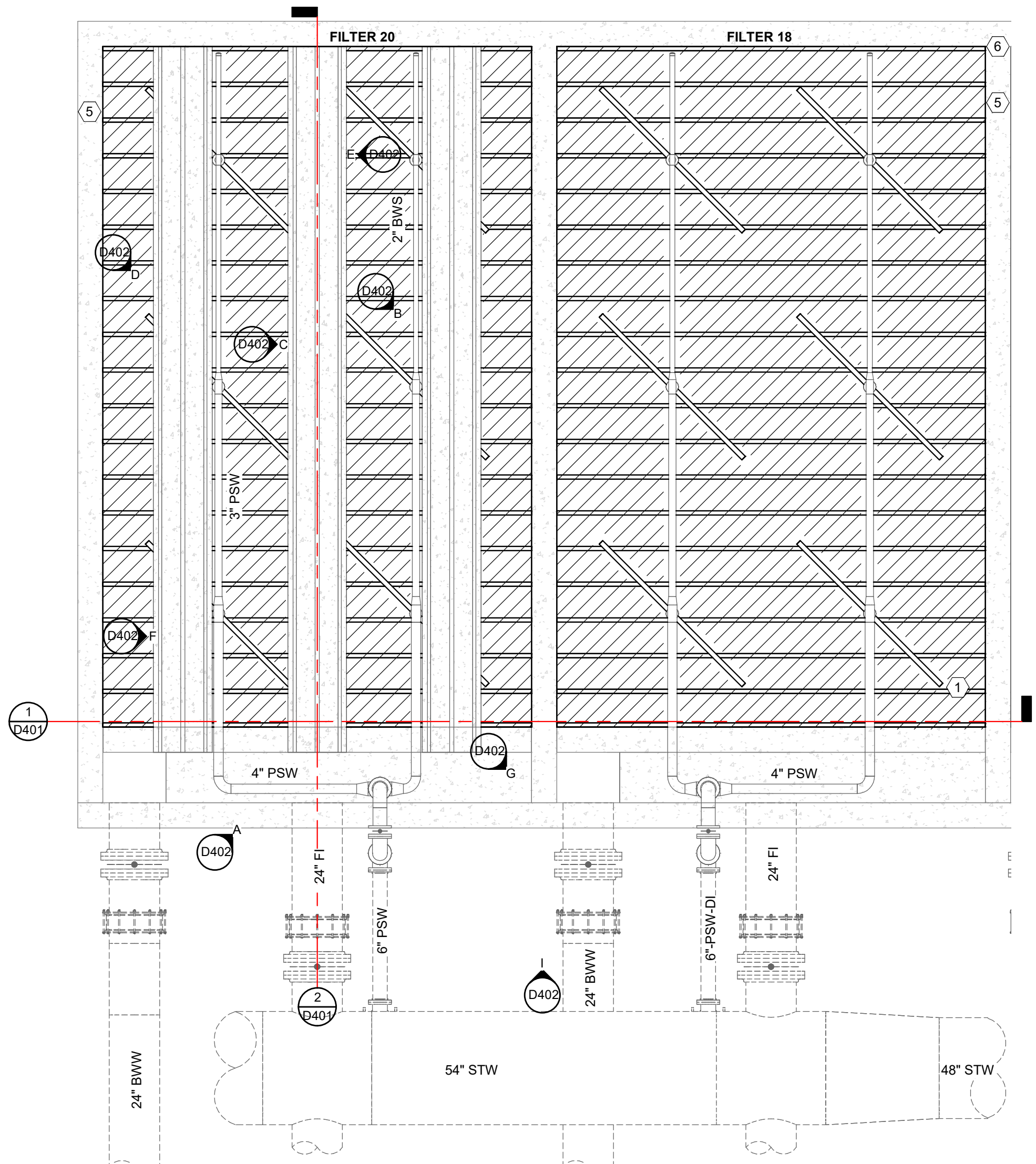
SECTION 2
SCALE: 1/4" = 1'-0"



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

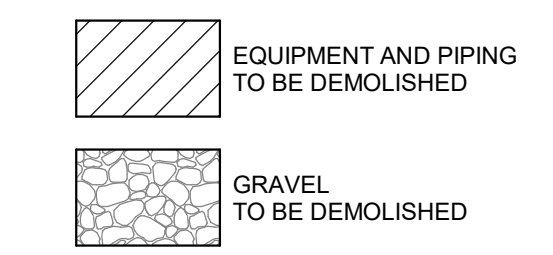


**PROCESS - FILTER FLOOR
FILTER 18 AND 20
DEMOLITION PLAN**
SCALE: 1/4" = 1'-0"



**PROCESS - FILTER GALLERY
FILTER 18 AND 20
DEMOLITION PLAN**
SCALE: 1/4" = 1'-0"

SYMBOLS LEGEND



PROCESS DEMOLITION NOTES

1. REMOVE ALL PORTIONS OF WORK IDENTIFIED BY CROSS HATCHING UNLESS NOTED OTHERWISE.
2. DEMOLITION NOTES AND PLANS DO NOT FULLY REPRESENT ALL DEMOLITION WORK REQUIRED TO INSTALL NEW WORK IN ACCORDANCE WITH CONTRACT DOCUMENTS. BUT ARE INTENDED TO SERVE AS GENERAL DEMOLITION GUIDELINES.
3. GRAPHICAL REPRESENTATION OF EXISTING SYSTEMS WERE OBTAINED FROM PREVIOUS CONSTRUCTION AND/OR RECORD DRAWINGS MAY NOT FULLY REPRESENT EXISTING CONDITIONS AND IS FOR REFERENCE ONLY. CONTRACTOR TO FIELD VERIFY EXISTING CONDITIONS TO DETERMINE EXTENT OF WORK.
4. COORDINATE PHASING AND SEQUENCING OF DEMOLITION IN ACCORDANCE WITH PLANS AND SPECIFICATIONS AND WITH OTHER CONTRACTORS IN ORDER TO MAINTAIN CONTINUING OPERATIONS FOR OWNER. ALSO, TO MAINTAIN BUILDING SECURITY AND WEATHER TIGHTNESS.
5. COORDINATE ITEMS, IF ANY TO BE TURNED OVER TO THE OWNER PRIOR TO BEGINNING DEMOLITION. CONTRACTOR TO REMOVE, PROTECT AND RELOCATE ITEMS TO BE TURNED OVER TO THE OWNER.

NOTES

1. FILTER 18 AND FILTER 20 WALKWAY HIDDEN FROM FILTER GALLERY PLAN FOR CLARITY OF BACKWASH TROUGHS AND SURFACE WASH ARMS.
2. FILTER 18 BACKWASH TROUGHS HIDDEN FROM FILTER GALLERY PLAN FOR CLARITY OF SURFACE WASH ARMS.
3. FILTER 18 UNDERDRAIN MODULES HIDDEN FROM FILTER FLOOR PLAN FOR CLARITY OF CONCRETE SUPPORT COLUMNS.

DEMOLITION KEY NOTES

1. REMOVE, SERVICE, AND REINSTALL SURFACE WASH ARMS. TYPICAL OF 6 PER FILTER. TYPICAL OF FILTER 18 AND FILTER 20.
2. DEMOLISH CONCRETE SUPPORT COLUMNS (7' D X 4.5' H) ON FILTER FLOOR. TYPICAL OF FILTER 18 AND FILTER 20.
3. DEMOLISH UNDERDRAIN MODULES, INCLUDING CONCRETE BLOCKS AND CERAMIC SPHERES. TYPICAL OF FILTER 18 AND FILTER 20.
4. REMOVE, PAINT, AND REINSTALL FW/BWS PIPE, STEEL WALL PLATE, AND FITTINGS. TYPICAL OF FILTER 18 AND FILTER 20.
5. DEMOLISH GRAVEL AND STAINLESS STEEL #8 MESH RETAINING SCREEN. TYPICAL OF FILTER 18 AND FILTER 20. GRAVEL HIDDEN IN PLAN VIEW FOR CLARITY.
6. DEMOLISH STEEL HOLD-DOWN STRAPS AND ANGLES.
7. RESTORE CONCRETE AT WALL PLATE. SEE DETAIL.

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D401

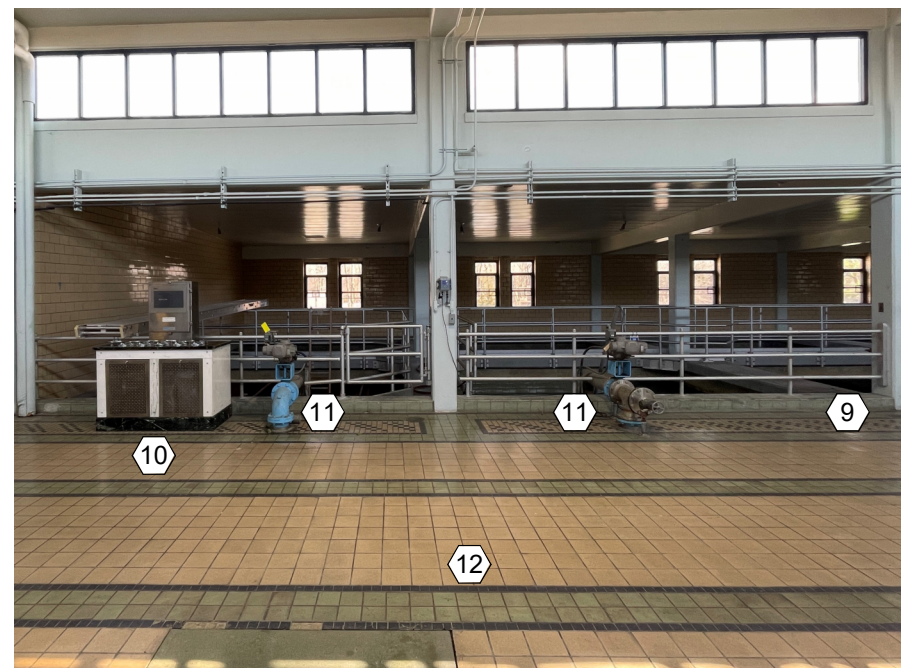
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SYMBOLS LEGEND

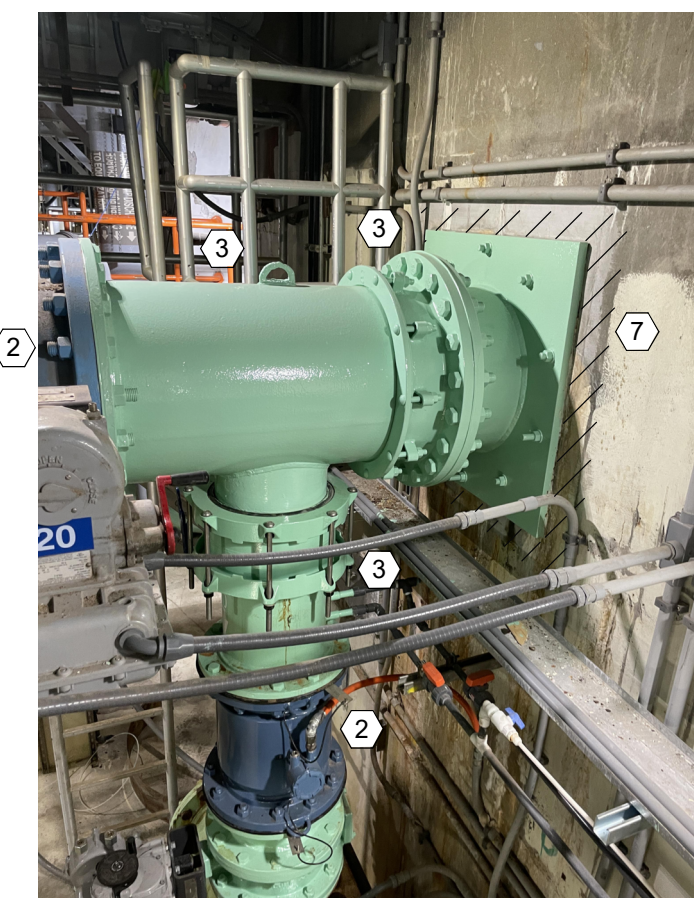


DEMOLITION KEY NOTES

- 1 REMOVE, SERVICE, AND REINSTALL SURFACE WASH ARMS. TYPICAL OF 6 PER FILTER. TYPICAL OF FILTER 18 AND FILTER 20.
- 2 PROTECT SURROUNDING INSTRUMENTATION, ETC.
- 3 REMOVE, PAINT, AND REINSTALL FW/BWS PIPE, STEEL WALL PLATE, AND FITTINGS. TYPICAL OF FILTER 18 AND FILTER 20.
- 4 DEMOLISH STEEL HOLD-DOWN STRAPS AND ANGLES.
- 5 DEMOLISH GRAVEL AND STAINLESS STEEL #8 MESH RETAINING SCREEN. TYPICAL OF FILTER 18 AND FILTER 20. GRAVEL HIDDEN IN PLAN VIEW FOR CLARITY.
- 6 REPAIR BACKWASH TROUGH CONCRETE. SEE CONCRETE RESTORATION DETAIL.
- 7 RESTORE CONCRETE AT WALL PLATE. SEE DETAIL.
- 8 RESTORE CONCRETE AT FILTER WALL. SEE DETAIL.
- 9 REMOVE, STORE, AND REINSTALL RAILING AS NEEDED.
- 10 PROTECT FILTER CONTROL CONSOLE.
- 11 PROTECT EXISTING PIPING, VALVES, ETC.
- 12 PROTECT FLOORS WHERE WORKERS ARE PRESENT. PROVIDE RUBBER MAT, MINIMUM THICKNESS 1/4". PROVIDE FELT BARRIER BETWEEN FLOOR AND RUBBER MAT. CONTRACTOR RESPONSIBLE FOR DAMAGE TO FLOORING.



I PHOTO
 SCALE: NOT TO SCALE



H PHOTO
 SCALE: NOT TO SCALE



G PHOTO
 SCALE: NOT TO SCALE



F PHOTO
 SCALE: NOT TO SCALE



E PHOTO
 SCALE: NOT TO SCALE



D PHOTO
 SCALE: NOT TO SCALE



C PHOTO
 SCALE: NOT TO SCALE



B PHOTO
 SCALE: NOT TO SCALE



A PHOTO
 SCALE: NOT TO SCALE

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D402

PROCESS GENERAL SYMBOLS

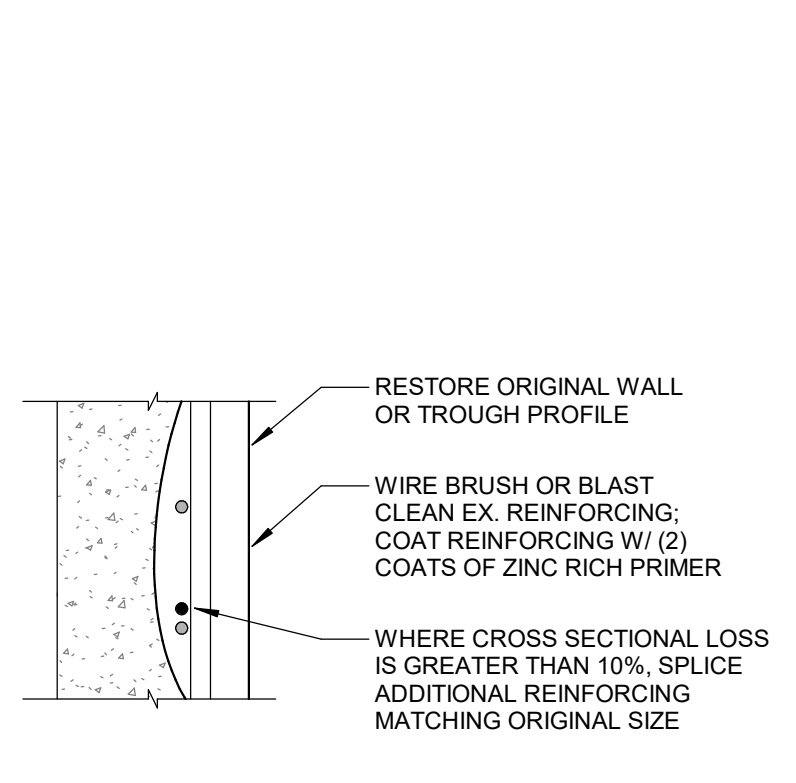
- SCREENED LINE DENOTES EXISTING PIPING OR EQUIPMENT
- SCREENED DASHED LINE DENOTES EXISTING BELOW PIPING

NOTES

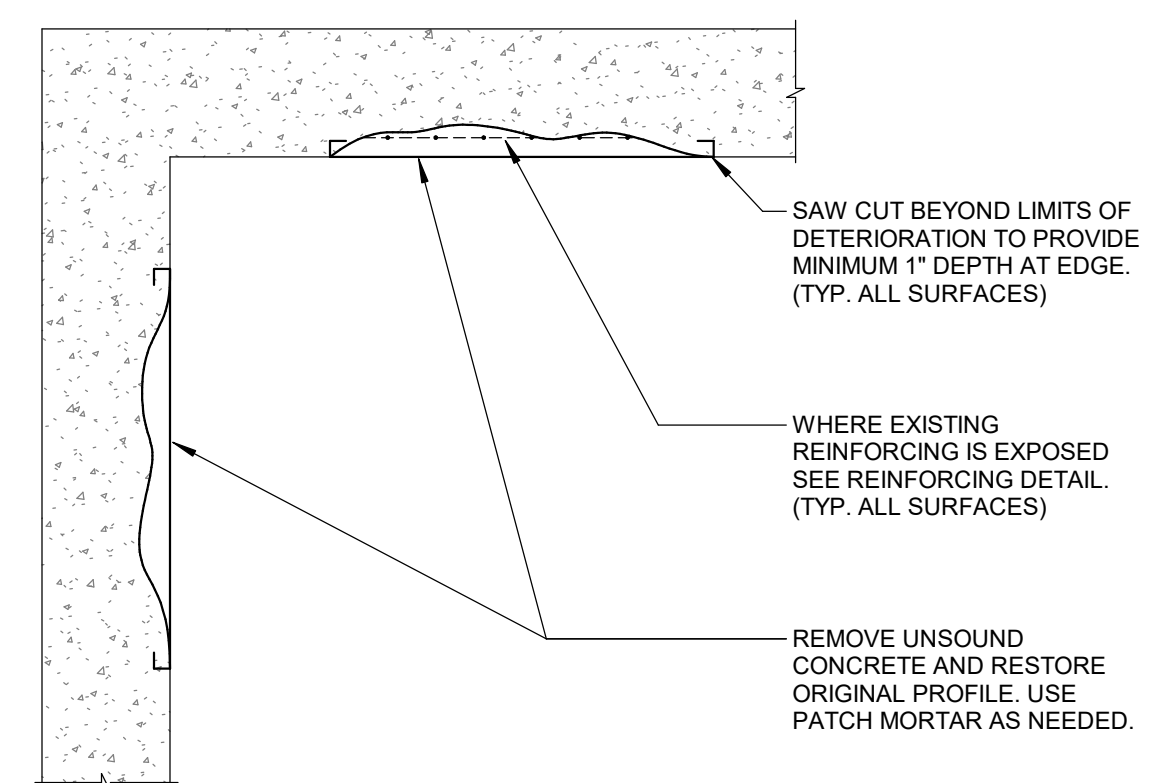
1. THE WALL PIPE SCHEDULE IS PROVIDED AS AN AID, BUT DOES NOT INCLUDE ALL THE PROJECT PENETRATIONS, SPECIFICALLY PENETRATIONS SMALLER THAN 4 INCH NOMINAL SIZE. VERIFY ALL PENETRATION REQUIREMENTS AND PROVIDE PENETRATIONS FOR A COMPLETELY OPERABLE SYSTEM.
2. CONTACT ENGINEER FOR ABBREVIATIONS AND SYMBOLS USED BUT NOT SHOWN ON THIS DRAWING.

WALL PIPE SCHEDULE					
TAG	DETAIL TYPE	PIPE SIZE	SERVICE	END CONNECTIONS	NOTES
WP-1-1	WP-1	6"	AIR SCOUR	FLGXFLG	316 STAINLESS STEEL
WP-1-2	WP-1	6"	AIR SCOUR	FLGXFLG	316 STAINLESS STEEL

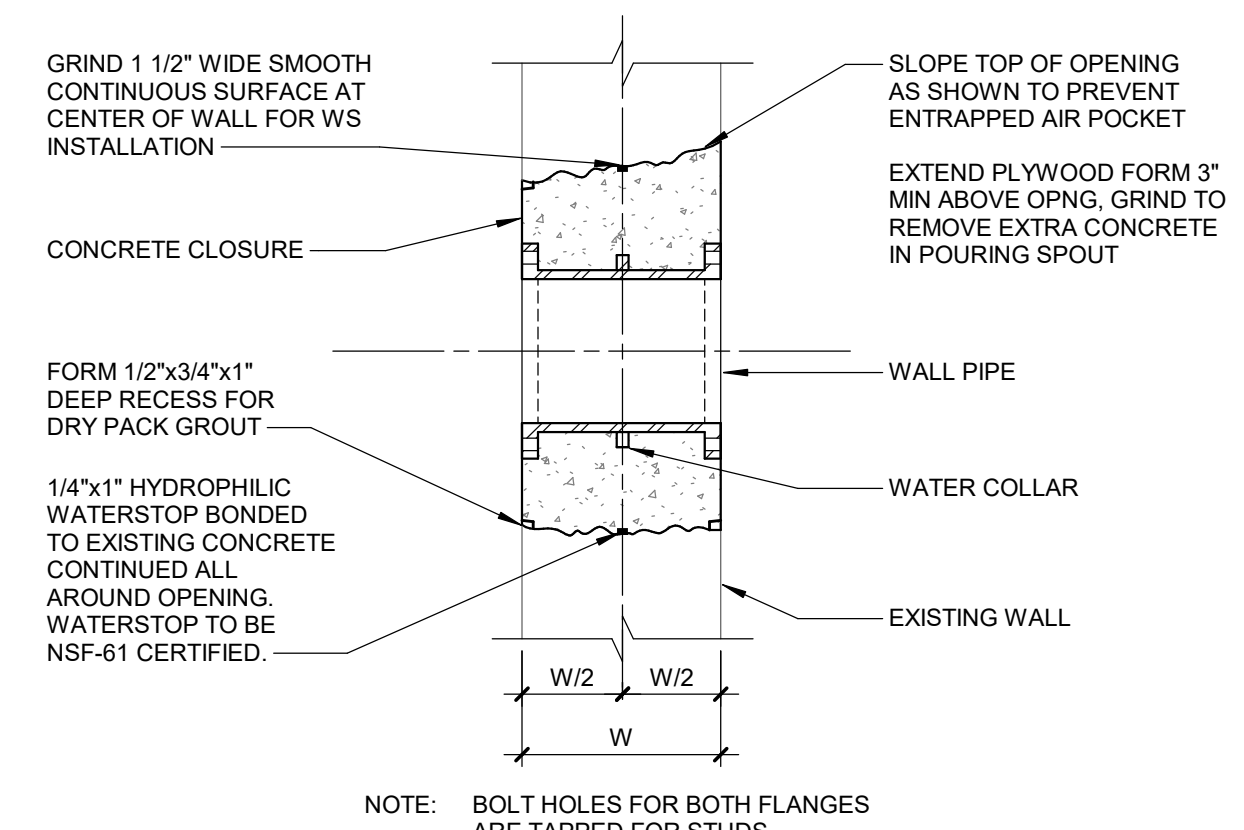
LEGEND:
 "WP" =WALL PIPE



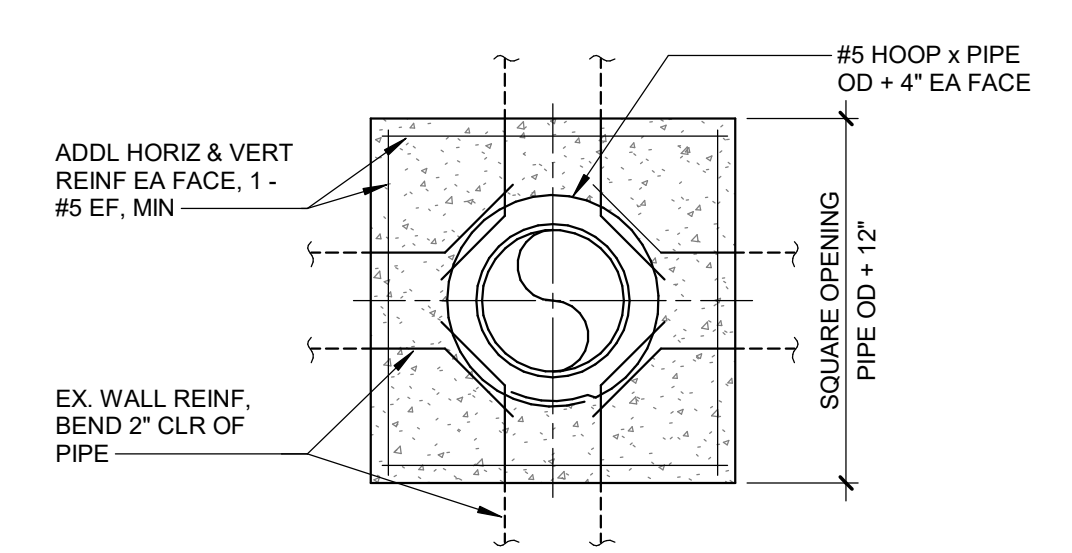
TYPICAL REINFORCING DETAIL
 NO SCALE



TYPICAL CONCRETE REPAIR SECTION
 NO SCALE



WP-1
WALL PIPE - FLG x FLG
 NO SCALE



PROCESS GENERAL ABBREVIATIONS

A AIR	DEG DEGREE	GPD GALLONS PER DAY	N NORTH	SHT SHEET/SHEETING
AB ANCHOR BOLT	DEMO DEMOLITION	GPM GALLONS PER MINUTE	NA NOT APPLICABLE	SL SIMILAR
ABAN ABANDON/ABANDONED	DET DETAIL	GR GRADE	NIC NOT IN CONTRACT	SL SLOPE
ADJ ADJACENT	DIA DIAMETER	HB HOSE BIBB	NO. NUMBER	SP SAMPLE POINT
AFF ABOVE FINISHED FLOOR	DIF DIFFUSER	HDPE HIGH DENSITY POLYETHYLENE EXTRUSION	NPT AMERICAN NATIONAL TAPER PIPE THREAD	SP STATIC PRESSURE
AG ABOVE GRADE	DIM DIMENSION	HDWL HEADWALL	NTS NOT TO SCALE	SPEC SPECIFICATION/SPECIFIED
AGGR AGGREGATE	DISCH DISCHARGE	HGR HANGER	O.C. ON CENTER	SRP SPARE
AL ALUMINUM	DIST DISTANCE	HGL HYDRAULIC GRADE LINE	O.D. OUTSIDE DIAMETER	SQ. FT. SQUARE FOOT
ALT ALTERNATE/ALTERNATIVE	DIR DIRECTION	HORIZ HORIZONTAL	Q.D. SQUARE YARD	PU PNEUMATIC UNLOADING
AMT AMOUNT	DMS DIAPHRAGM SEAL	HP HIGH POINT	OPNG OPENING	PUW PLANT UTILITY WATER
APPROX APPROXIMATE	DN DOWN	HT HORSEPOWER	OPP OPPOSITE	PW POTABLE/FINISHED WATER
ASSY ASSEMBLY	DP DEEP/DEPTH	HT HEIGHT	ORIG ORIGINAL	RAS RETURN ACTIVATED SLUDGE
AVG AVERAGE	DWG DRAWING	HVAC HEATING, VENTILATING AND AIR CONDITIONING	OVHD OVERHEAD	RW RAW WATER
B BEND	P PUMP, PUMPING	HW HOT WATER	STG STORAGE	SAN SANITARY
B/B BACK TO BACK	P&ID PROCESS AND INSTRUMENTATION DIAGRAM	HWL HIGH WATER LEVEL	STL STEEL	SBD SODIUM BISULFITE
BKCR BACKER BOARD	PE PLAIN END	HYD HYDRAULIC	SUBM SUBMERGED	SL SLUDGE
BF BLIND FLANGE	PERF PERFORATED	HZ HERTZ	SUCT SUCTION	SN SUBNATANT
BFG BELOW FINISHED GRADE	PL PLATE	I.E. INVERT ELEVATION	SURF SURFACE	SPL SAMPLE LINE
BFP BACKFLOW PREVENTER	PNL PANEL	I.D. INSIDE DIAMETER	SUSP SUSPENDED	SODA SODA ASH
BLDG BUILDING	PRM PARTS PER MILLION	IN INCH	SW SOCKET WELDED	SPD SUMP PUMP DISCHARGE
BLKHD BULKHEAD	PPM POUNDS PER MILLION	INS INSULATION, INSULATE	SYS SYSTEM	SLR SLUDGE RECIRCULATION
BLWDN BLOWDOWN	PROP PROPOSED	INCL INCLUDE	TDH TOTAL DYNAMIC HEAD	STR STR
BM BENCHMARK	PS PUMP STATION	INSTR INSTRUMENT, INSTRUMENTATION	TEMP TEMPERATURE	STW SETTLED/CLEARIFIED WATER
BMC BOLTED MECHANICAL COUPLING	PSF POUNDS PER SQUARE FOOT	INT INTERIOR	THK THICK	SW SERVICE WATER
BOT BOTTOM	TPG TOPPING	INV INVERT	THK THICK	TSL THICKENED SLUDGE
BRG BEARING	TPG TOPPING	IRN IRON PIPE SIZE	TYP TYPICAL	TW TEMPERED WATER
BSMT BASEMENT	UG UNDERGROUND	ISOLATION RING	UL UNDERWRITERS LABORATORY	V VENT
BTU BRITISH THERMAL UNITS	Q QUANTITY	JT JOINT	UL ULTRAVIOLET DISINFECTION	VC VACUUM
BTWN BETWEEN	QTY QUANTITY	LAB LABORATORY	UTIL UTILITY	W WASTE
C CENTER TO CENTER	R RADIUS	LAT LATERAL	VERT VERTICAL	WAS WASTE ACTIVATED SLUDGE
CB CATCH BASIN	RD ROOF DRAIN	LB POUND	V VOLTS	WF WARM FLARE
CF CUBIC FEET	RECIRC RECIRCULATE/RECIRCULATING/RECIRCULATION	LF LINEAL FOOT	VAC VACUUM	WTR WATER
CFS CUBIC FEET PER SECOND	RED REDUCER/REDUCING	LGTH LENGTH	V VACUUM	WW WASTE WATER
CFM CUBIC FEET PER MINUTE	REF REFERENCE	EXST EXISTING	VB VALVE BOX	WWS WASH WATER SUPPLY
CHAM CHAMFER	REHAB REHABILITATION	EXP EXPOSED	VERT VERTICAL	
CHEM CHEMICAL	REINFORCE/REINFORCING	EXT EXTERIOR	VOL VOLUME	
CHKPL CHECKERPLATE	REQD REQUIRED	F/F FACE TO FACE	VTR VENT TO ROOF	
CL CENTERLINE	RES RESERVOIR	FAB FABRICATED	W WEST	
CLR CLEARANCE	RESIL RESILIENT	FD FLOOR DRAIN	W/ WITH	
CO CLEANOUT	REV REVISION	FF FINISHED FLOOR	WGT WEIGHT	
COMP COMPANION	RFA RESTRAINED FLANGE ADAPTER	FIG FIGURE	WH WALL HYDRANT	
CONC CONCRETE	RH RIGHT HAND	FIN FINISHED	WL WATER LEVEL	
CONC CONCENTRATED	RJ RESTRAINED JOINT	FLR FLOOR	WP WEATHERPROOF	
CONC CONCENTRIC	RM ROOM	FLR FLOOR	WS WATERSTOP	
CONST CONSTRUCTION	RPO ROUGH OPENING	FM FORCE MAIN	WT WATERTIGHT	
COORD COORDINATE	RPM REVOLUTIONS PER MINUTE	FRP FIBERGLASS REINFORCED PLASTIC	WSE WATER SURFACE ELEVATION	
COR CORRUGATED	RSR RISER	FTG FITTING	XP EXPLOSION PROOF	
CPLG COUPLING	RUB RUBBER	F.V. FIELD VERIFY	YP YARD HYDRANT	
CPVC CHLORINATED POLYVINYL CHLORIDE	S SOUTH	GA GAUGE/GAGE		
CTL CONTROL	SAN SANITARY	GAC GRANULATED ACTIVATED CARBON		
CW COLD WATER	SCH SCHEDULE	GFA GROOVED FLANGE ADAPTER		
CY CUBIC YARD	SCRN SCREEN	GPC GROOVED PIPE COUPLING		
	SED SEDIMENTATION			

PIPE CONTENT ABBREVIATIONS

ACID SULFURIC ACID	PACL POLYALUMINUM CHLORIDE	ALK ALKALINITY
AR AIR RELEASE (RELIEF)	PH PHOSPHATE	CH4 METHANE
AS AIR SCOUR	PI PRIMARY INFLUENT	CL2 CHLORINE
BWR BACKWASH RETURN	PIW PRIMARY INFLUENT W/PLANT RECYCLE	CLB COMBUSTIBLE GAS
BWS BACKWASH SUPPLY	PLR PLANT RECYCLE	COMB CONDUCTIVITY
BWW BACKWASH WATER	POLY POLYMER	DO DISSOLVED OXYGEN
CA COMPRESSED AIR	PSW PLANT SERVICE WATER	F FLUORIDE
CLP CHLORINE GAS (PRESSURIZED)	PU PNEUMATIC UNLOADING	IR INFRARED
CLS CHLORINE SOLUTION	PUW PLANT UTILITY WATER	H2S HYDROGEN SULFIDE
DCR DRAIN	PW POTABLE/FINISHED WATER	METH METHANOL
DE DECANT	RAS RETURN ACTIVATED SLUDGE	NH3 AMMONIA
DG DIGESTER GAS	RW RAW WATER	NO3 NITRATE
DSL DIGESTER SLUDGE	SAN SANITARY	O2 OXYGEN
EFF EFFLUENT	SBD SODIUM BISULFITE	
FECL FERRIC CHLORIDE	SL SLUDGE	
FLT FILTRATE	SN SUBNATANT	
FW FILTERED WATER	SPL SAMPLE LINE	
FTW FILTER TO WASTE	SODA SODA ASH	
HFS HYDROFLUOROSILICIC ACID	SPD SUMP PUMP DISCHARGE	
HYPO SODIUM HYPOCHLORITE	SLR SLUDGE RECIRCULATION	
IA INSTRUMENT AIR	STR STR	
INFL INFLUENT	STW SETTLED/CLEARIFIED WATER	
LIME LIME	SW SERVICE WATER	
LO LUBRICATION OIL	TSL THICKENED SLUDGE	
LPQ LIQUIFIED PETROLEUM GAS	TW TEMPERED WATER	
METH METHANOL	V VENT	
NA CAUSTIC	VC VACUUM	
NG NATURAL GAS	W WASTE	
NH AMMONIA	WAS WASTE ACTIVATED SLUDGE	
NPW NONPOTABLE WATER	WF WARM FLARE	
OF OVERFLOW	WTR WATER	
OX OXYGEN	WW WASTE WATER	
PA PLANT AIR	WWS WASH WATER SUPPLY	
PAC POWDERED ACTIVATED CARBON		

PIPE/TUBING MATERIAL ABBREVIATIONS

CI CAST IRON	PE POLYETHYLENE
CS CHLORINATED POLYVINYL CHLORIDE	PP POLYPROPYLENE
CS CARBON STEEL	PTFE TEFLON PIPE
CU COPPER	PVC POLYVINYL CHLORIDE
DI DUCTILE IRON	PVDF POLYVINYLIDENE FLUORIDE (KYNAR)
FRP FIBERGLASS REINFORCED PLASTIC	RCP REINFORCED CONCRETE PIPE
GALV GALVANIZED STEEL	316SS STAINLESS STEEL (NUMERIC INDICATES GRADE)
HDPE HIGH DENSITY POLYETHYLENE	TT TITANIUM
PCCP PRESTRESSED CONCRETE CYLINDER PIPE	

ANALYTICAL ABBREVIATIONS

ALK ALKALINITY	O3 OZONE
CH4 METHANE	ORP OXIDATION/REDUCTION POTENTIAL
CL2 CHLORINE	PC PARTICLE COUNTER
CLB COMBUSTIBLE GAS	PH HYDROGEN ION CONCENTRATION
COMB CONDUCTIVITY	P04 PHOSPHATE
DO DISSOLVED OXYGEN	SC STREAMING CURRENT
F FLUORIDE	SO2 SULFURE DIOXIDE
IR INFRARED	TEMP TEMPERATURE
H2S HYDROGEN SULFIDE	TH TOTAL HARDNESS
METH METHANOL	TSS TOTAL SUSPENDED SOLIDS
NH3 AMMONIA	TURB TURBIDITY
NO3 NITRATE	UV ULTRAVIOLET
O2 OXYGEN	

PROCESS EQUIPMENT ABBREVIATIONS

AIC AIR COMPRESSOR	HTR HEATER
A AIR SYSTEM	HX HEAT EXCHANGER
BFP BELT FILTER PRESS	HSP HIGH SERVICE PUMP
BP BOOSTER PUMP	LSP LOW SERVICE PUMP
BPS BOOSTER PUMP SKID	MH MANHOLE
BWR BLOWER	MX MIXER
BTX BULK STORAGE CHEMICAL TANK	P PUMP
CENT CENTRIFUGE	PPF PLATE AND FRAME FILTER PRESS
CF CARTRIDGE FILTER	PSF POLYMER FEED SYSTEM
CIP CLEAN-IN-PLACE	R REACTOR
CL CLARIFIER	RD RUPTURE DISC
CN CONVEYOR	RPZ REDUCED PRESSURE ZONE VALVE
DIF DIFFUSER	SCF SCREW PRESS
DIG DIGESTER	SMP SUMP PUMP
DTK DAY TANK (CHEMICAL)	SP SAMPLE PUMP
ESEW EMERGENCY SHOWER AND EYE WASH	STR STRAINER
FLT FILTER	TK TANK
FM FLOCCULATOR MIXER	TP TRANSFER PUMP
GT GRAVITY THICKENER	U MISCELLANEOUS EQUIPMENT
	UV ULTRAVIOLET LIGHT

REVISIONS

NO.	DATE	DESCRIPTION
1	7/25/2024	BIDS AND CONSTRUCTION

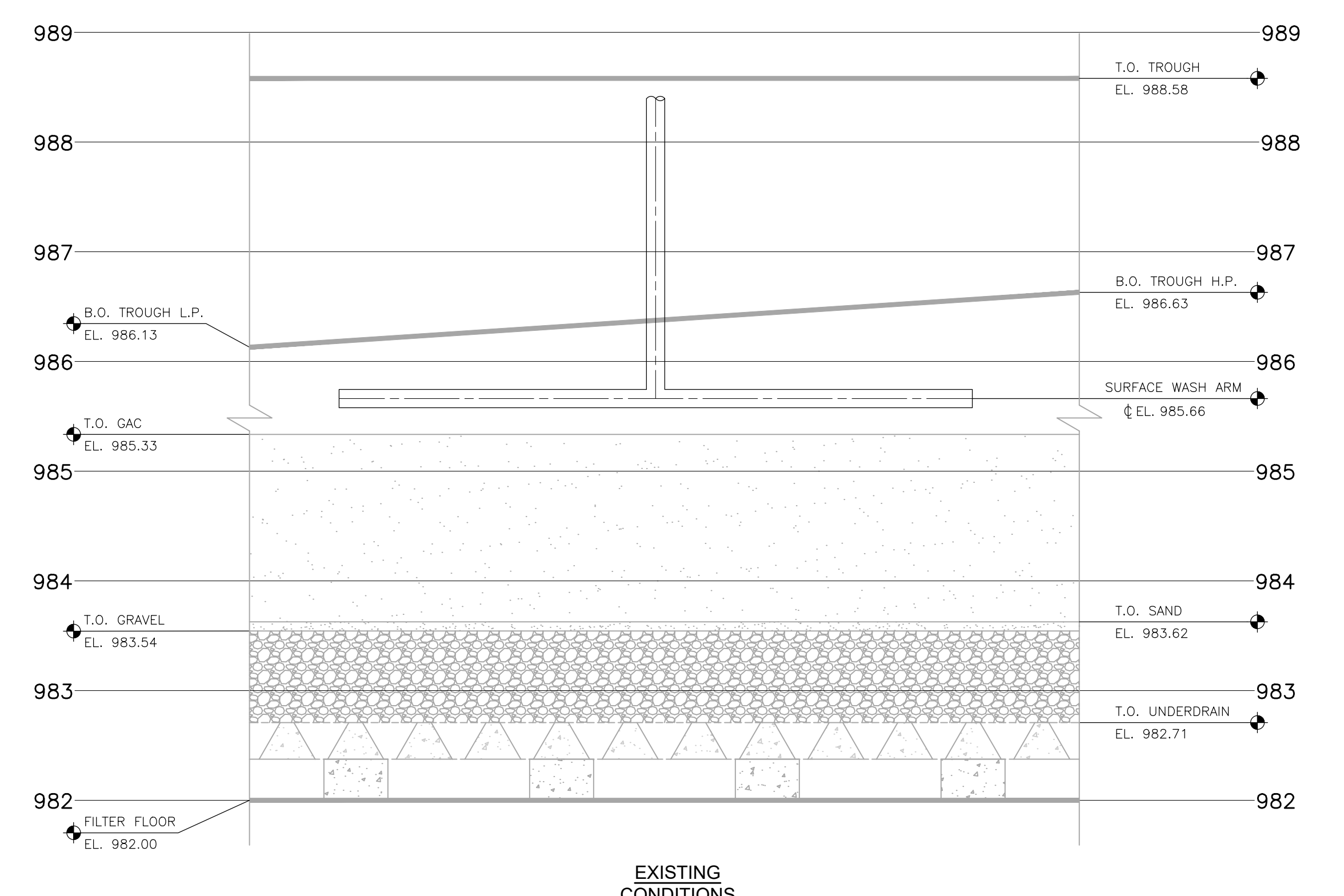
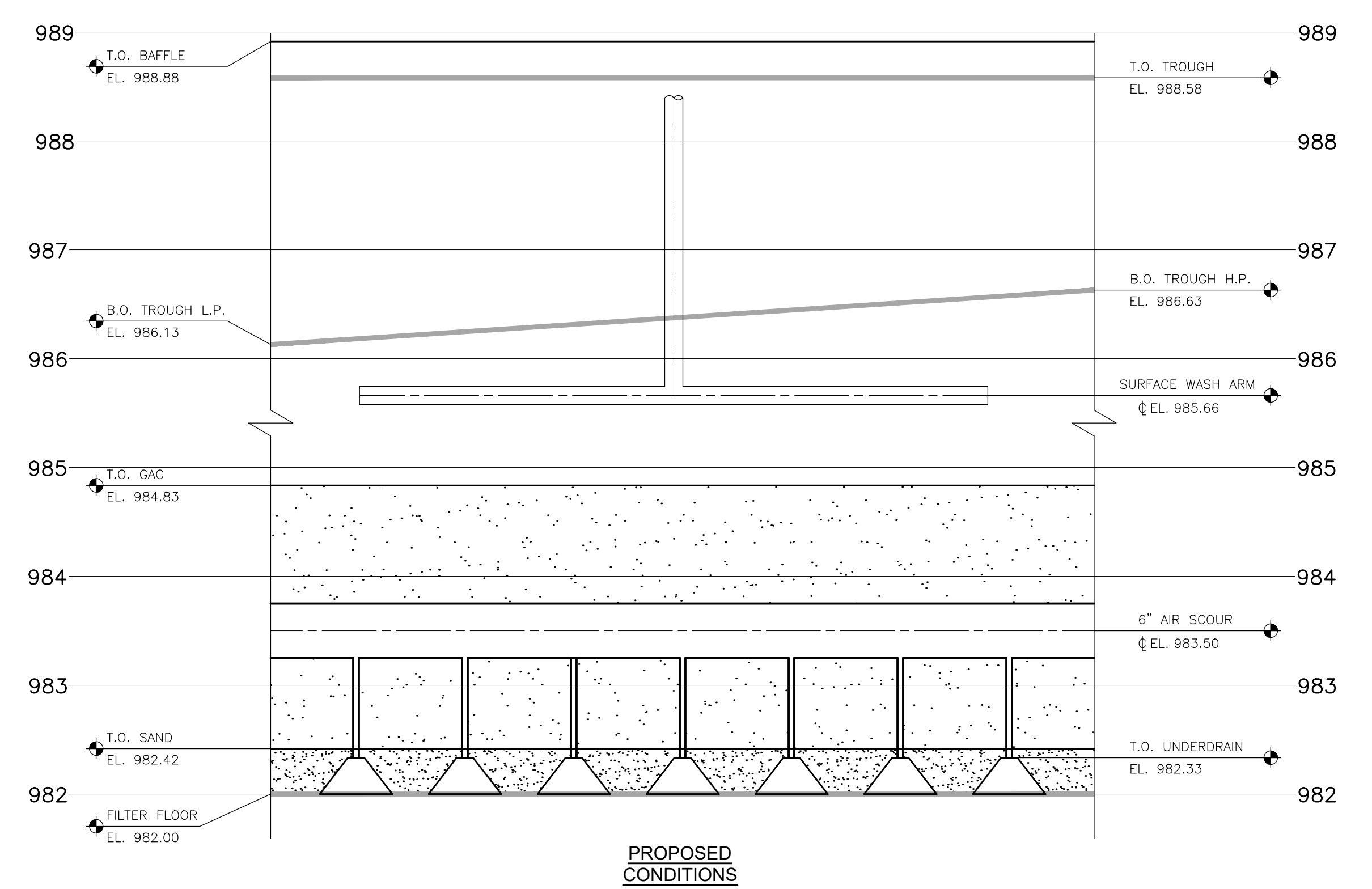
Drawn By ANW
 Designer ANW
 Reviewer ANW
 Manager BP

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SHEET NO.

P001

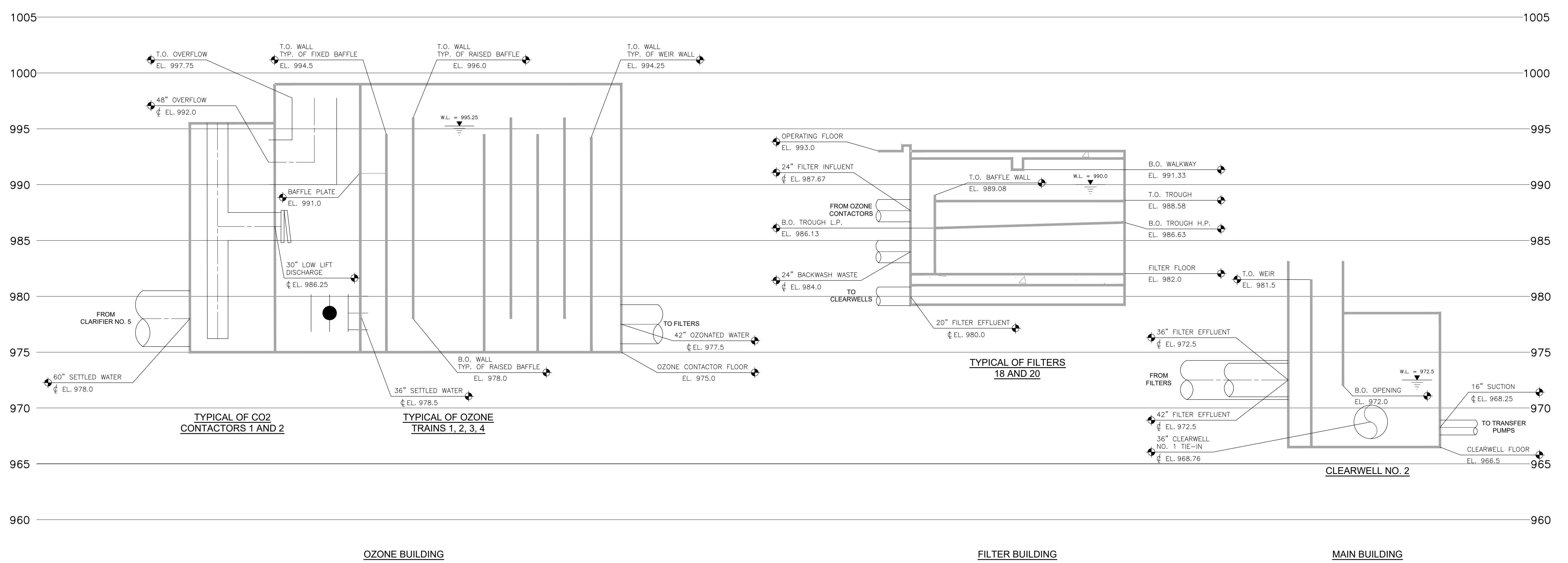


FILTER PROFILE

SCALE: HORIZONTAL N.T.S.
 VERTICAL 1" = 1'

NOTES

1. FIELD VERIFY EXISTING ELEVATIONS.
2. PROPOSED FILTER PROFILE SHOWN FOR REFERENCE ONLY. SEE PROCESS SECTIONS FOR DETAILS.
3. DEMOLISH FILTER UNDERDRAIN AND GRAVEL SHOWN IN EXISTING FILTER PROFILE. SEE PROCESS DEMOLITION FOR DETAILS.



HYDRAULIC PROFILE

SCALE: HORIZONTAL N.T.S.
 VERTICAL 1" = 5'

REVISIONS

7/25/2024	BIDS AND CONSTRUCTION
Drawn By	ANW
Designer	ANW
Reviewer	MTP
Manager	BP

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PROJECT NO.
231370

SHEET NO.

P101

REVISIONS

7/25/2024 BIDS AND CONSTRUCTION
 Drawn By RS2
 Designer ANW
 Reviewer MTP
 Manager BP

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PROJECT NO.
 231370
 SHEET NO.

P201

PROCESS GENERAL NOTES

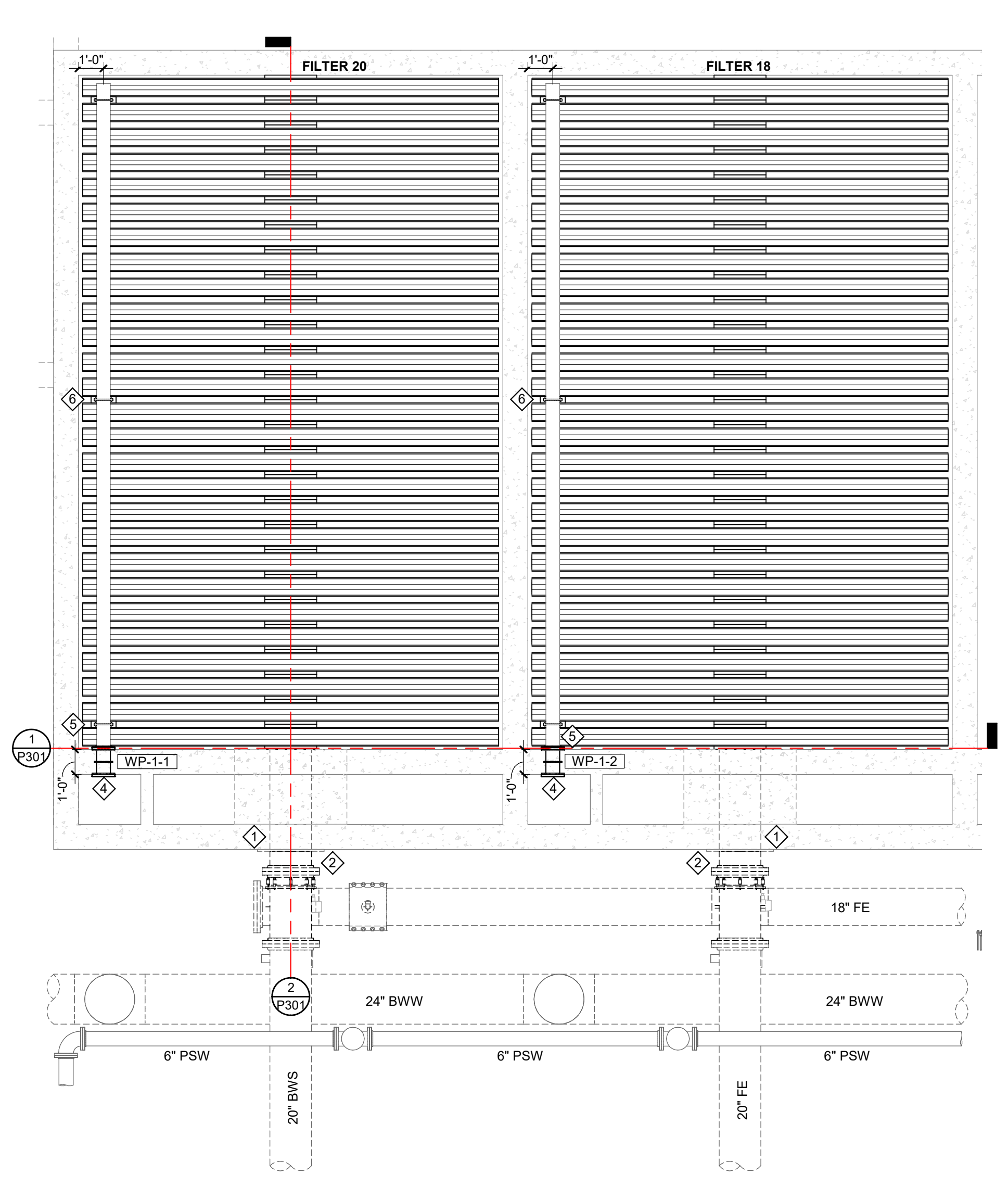
1. THE FOLLOWING NOTES APPLY TO ALL PROCESS SHEETS.
2. NOTES, SYMBOLS, LEGENDS AND ABBREVIATIONS SHOWN ON PROCESS DRAWINGS MAY NOT BE ALL INCLUSIVE, ONLY APPLY TO PROCESS DRAWINGS (P## SHEETS) AND, ALSO WHEN PRESENT, PROCESS DEMOLITION (D4# SHEETS).
3. GRAPHICAL REPRESENTATION OF EXISTING SYSTEMS IS BASED ON PREVIOUS CONSTRUCTION AND/OR RECORD DRAWINGS AND MAY NOT FULLY REPRESENT EXISTING CONDITIONS, AND IS FOR REFERENCE ONLY. FIELD VERIFY EXISTING CONDITIONS TO DETERMINE EXTENT OF WORK.
4. FIELD VERIFY ALL DIMENSIONS SHOWN.

NOTES

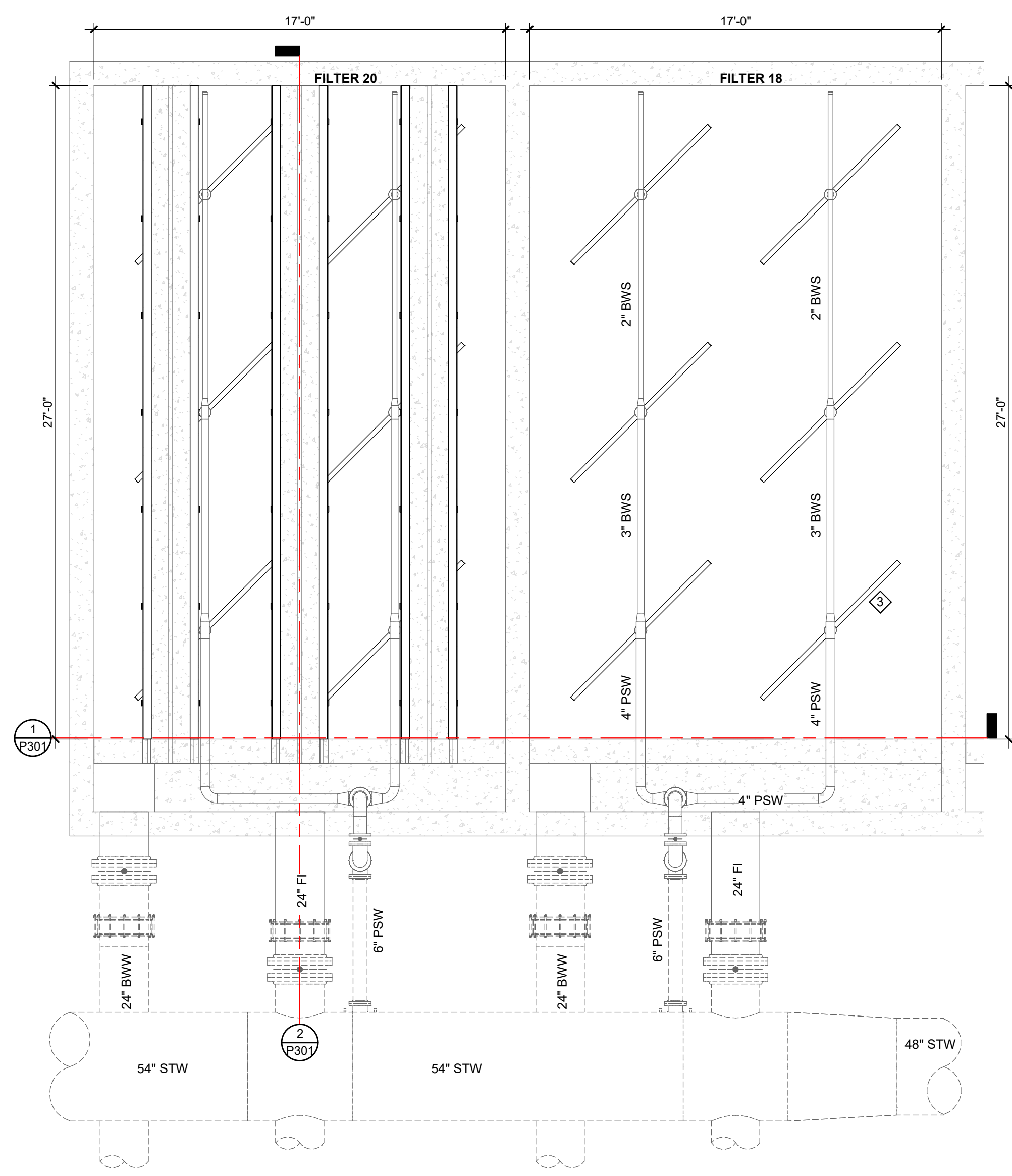
1. FILTER 18 AND FILTER 20 WALKWAY HIDDEN FROM FILTER GALLERY PLAN FOR CLARITY OF BACKWASH TROUGHS AND SURFACE WASH ARMS.
2. FILTER 18 AND FILTER 20 MEDIA HIDDEN FROM PLANS FOR CLARITY.
3. FILTER 18 BACKWASH TROUGHS HIDDEN FROM FILTER GALLERY PLAN FOR CLARITY OF SURFACE WASH ARMS.

KEY NOTES

1. INSTALL NEW SEAL WITHIN FW/BWS PIPE AND NEW GASKET AT WALL PLATE. SEE DETAIL, TYPICAL OF FILTER 18 AND FILTER 20.
2. REINSTALL FW/BWS PIPE, STEEL WALL PLATE, AND FLANGED COUPLING ADAPTER, TYPICAL OF FILTER 18 AND FILTER 20.
3. REINSTALL FW/BWS PIPE, STEEL WALL PLATE, AND FLANGED COUPLING ADAPTER, TYPICAL OF FILTER 18 AND FILTER 20.
4. INSTALL BLIND FLANGE AT WALL PIPE.
5. INSTALL 6" SS AIR SCOUR HEADER, PROVIDED BY FILTER UNDERDRAIN SUPPLIER.
6. INSTALL U-BOLT AIR SCOUR PIPE STAND, PROVIDED BY FILTER UNDERDRAIN SUPPLIER. (TYP)



FILTER FLOOR
 FILTER 18 AND 20
PIPING PLAN
 SCALE: 1/4" = 1'-0"



FILTER GALLERY
 FILTER 18 AND 20
PIPING PLAN
 SCALE: 1/4" = 1'-0"

REVISIONS

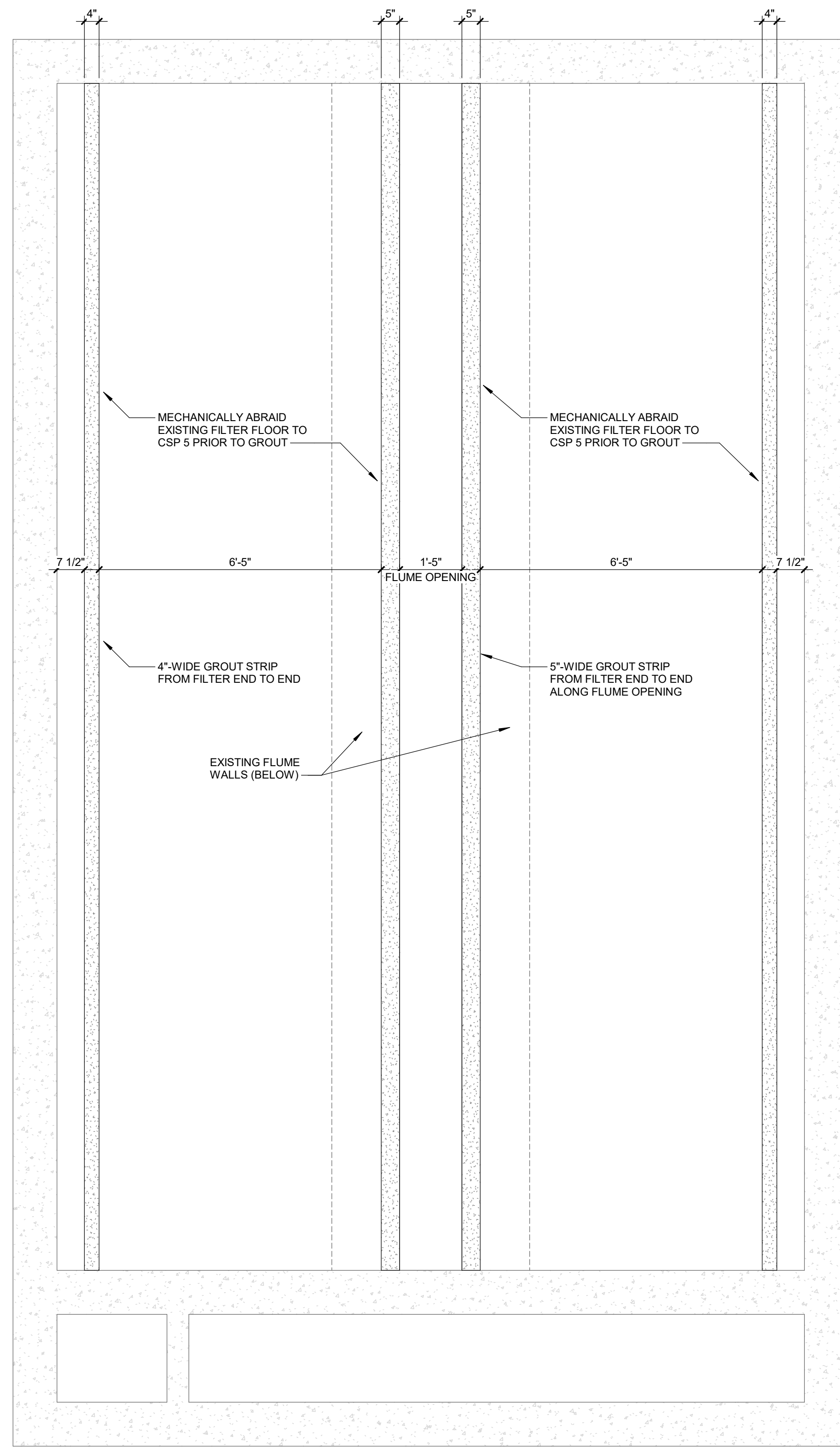
7/25/2024 BIDS AND CONSTRUCTION
 Drawn By RS2
 Designer ANW
 Reviewer MTP
 Manager BP

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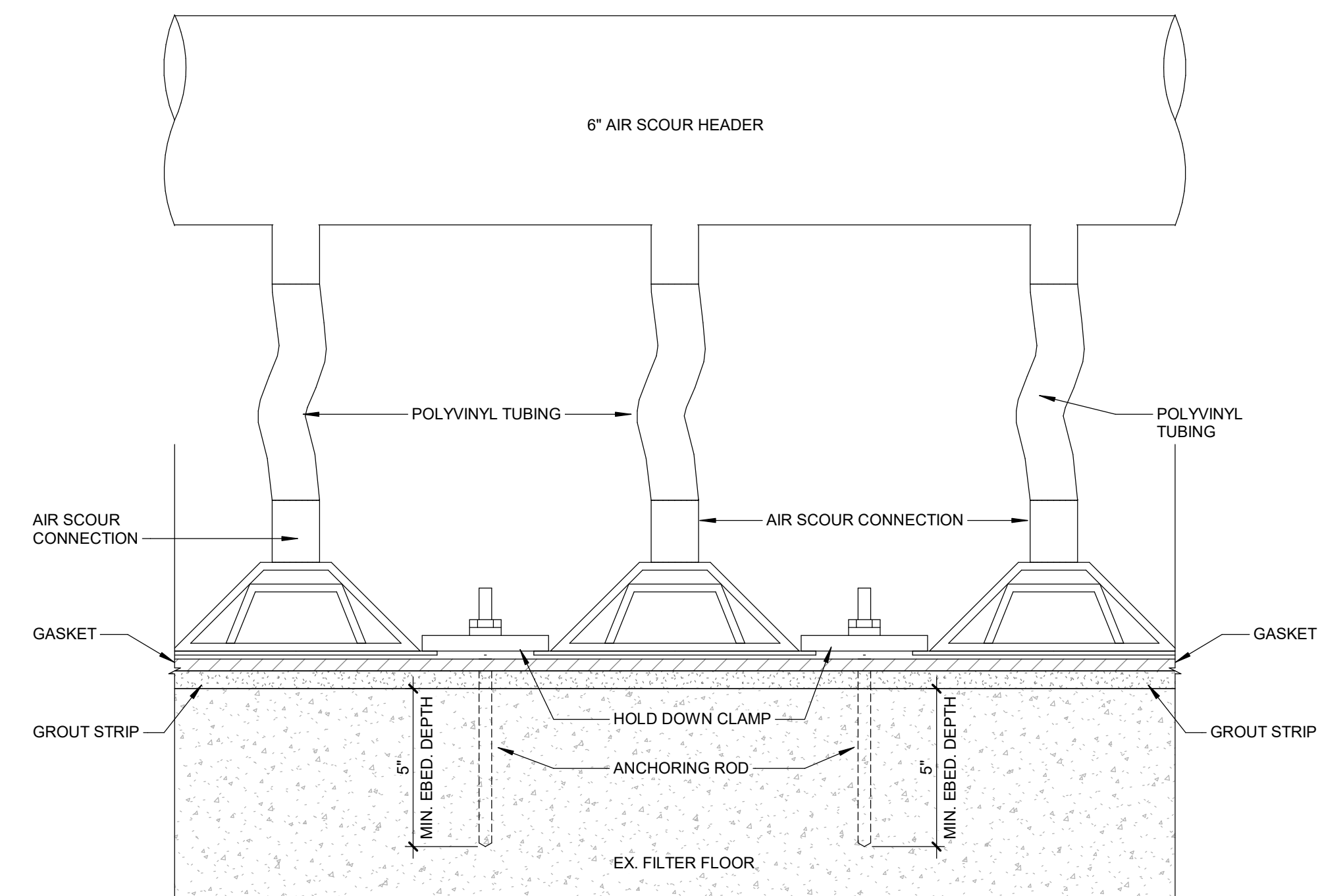
PROJECT NO.
 231370

SHEET NO.

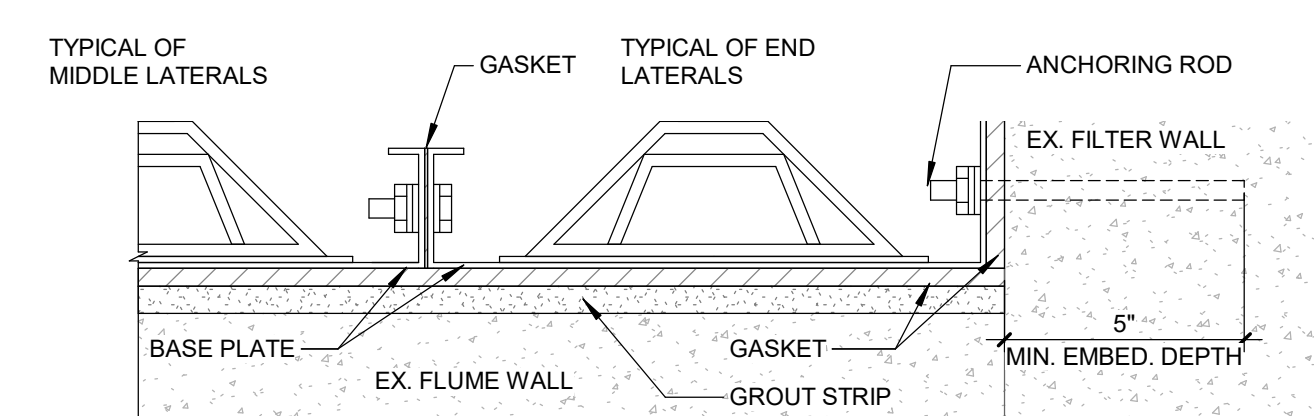
P401



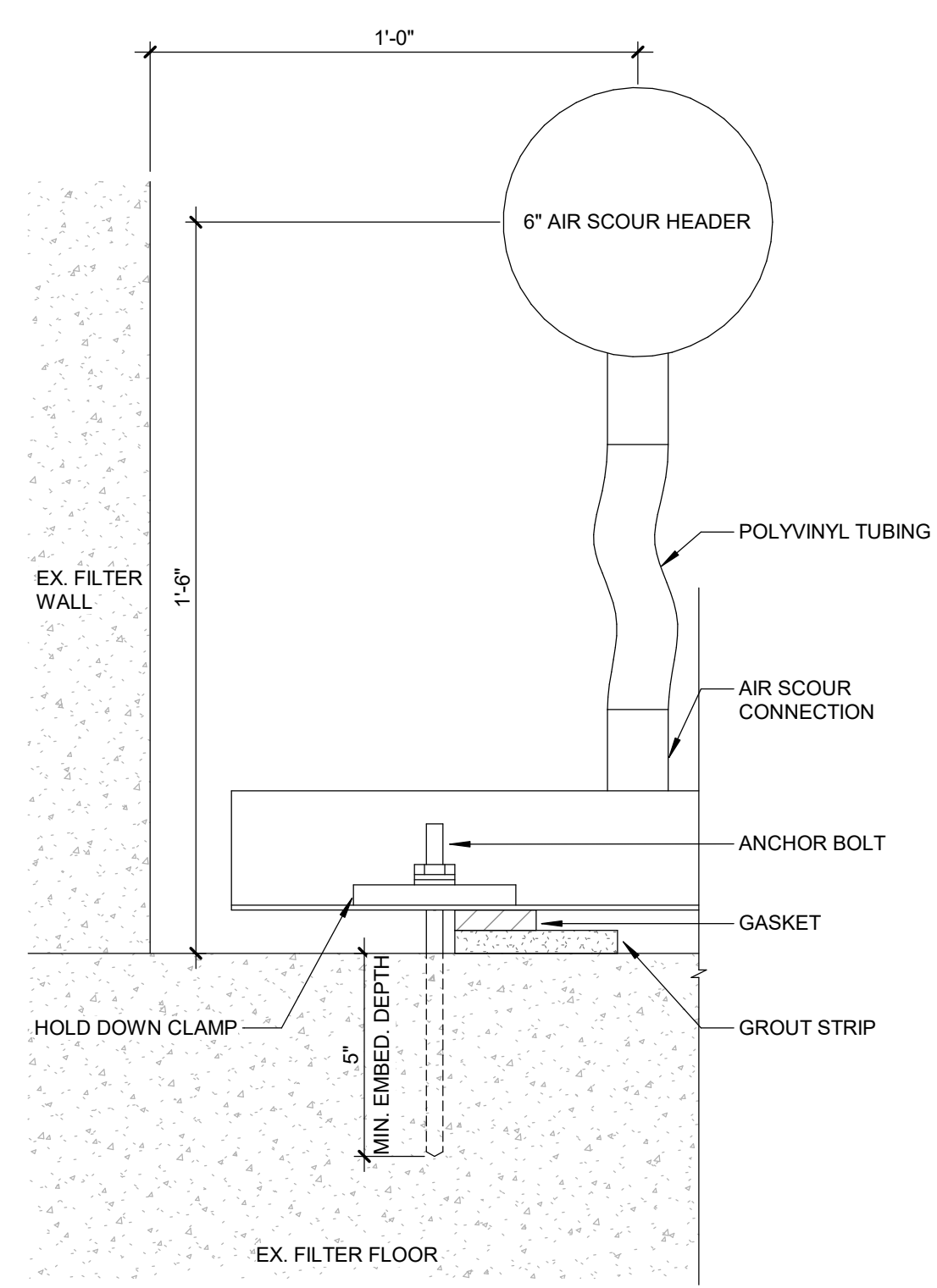
FILTER UNDERDRAIN GROUT DETAIL
 NO SCALE
 NOTE: PROVIDE LEVEL GROUT STRIP,
 MINIMUM THICKNESS OF 1/2"



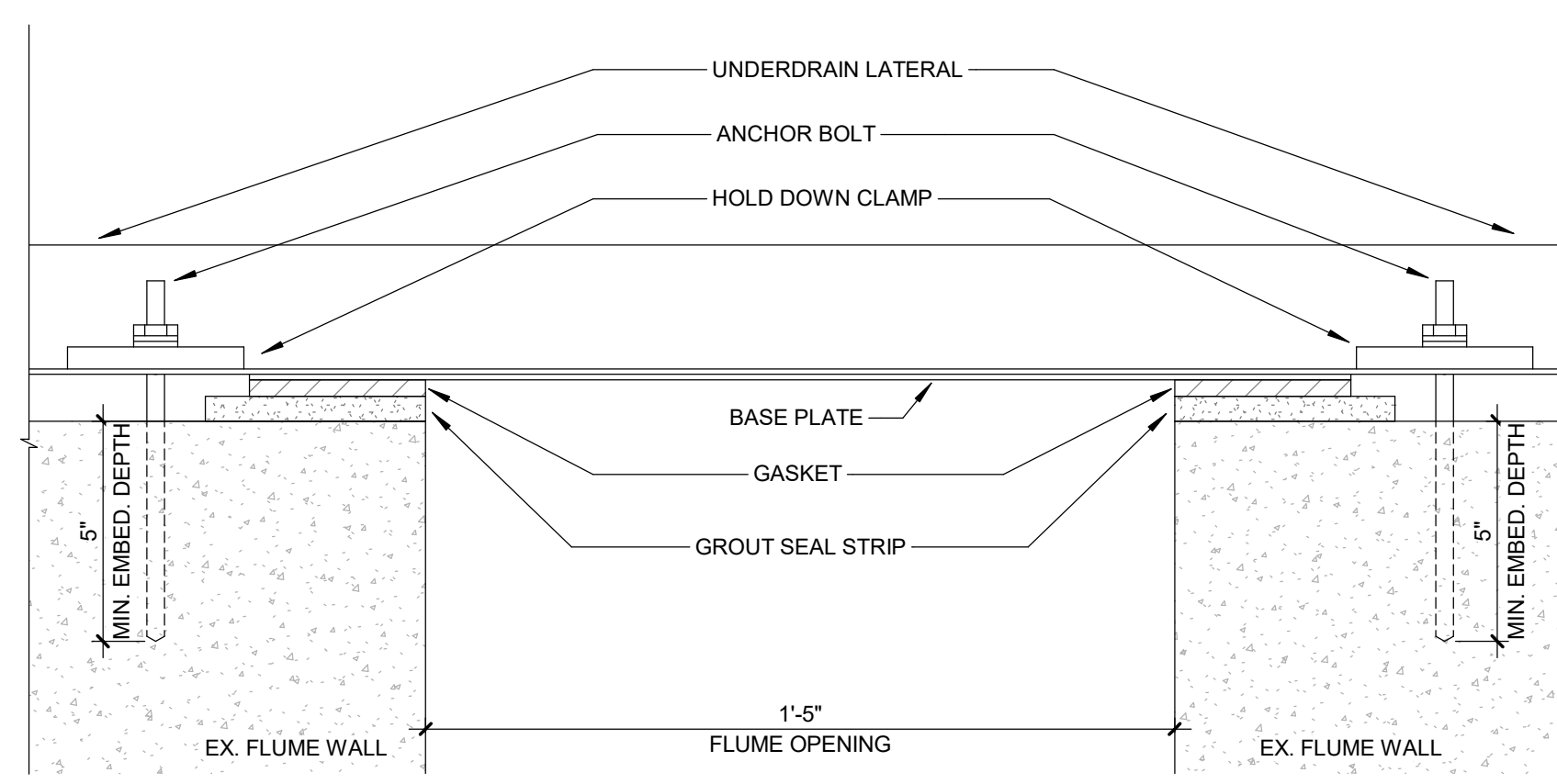
UNDERDRAIN ANCHORING DETAIL - END VIEW
 NO SCALE



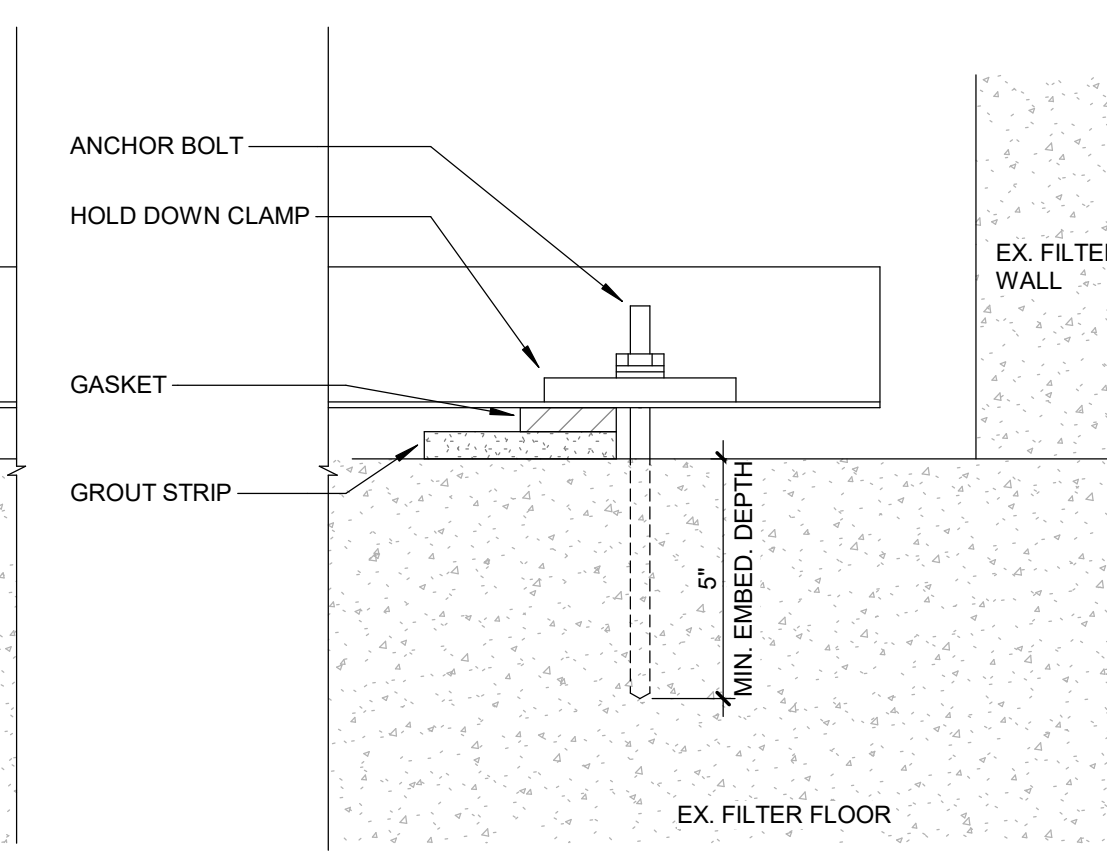
UNDERDRAIN ANCHORING DETAIL - MIDDLE VIEW
 NO SCALE



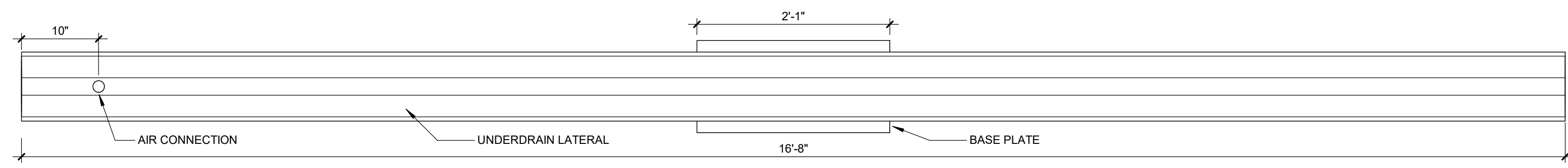
UNDERDRAIN ANCHORING DETAIL - SIDE VIEW
 NO SCALE



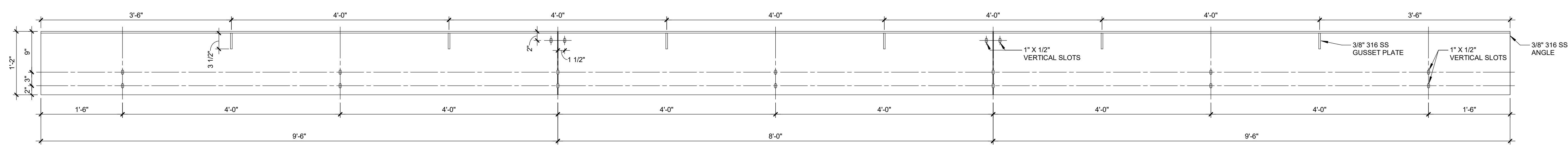
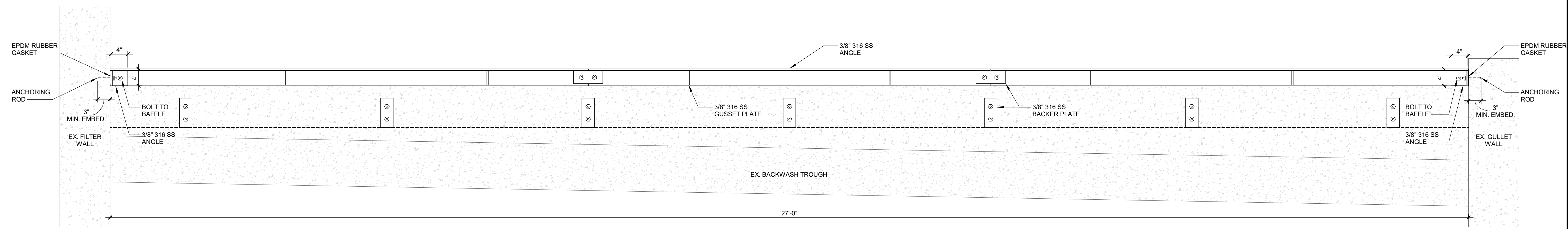
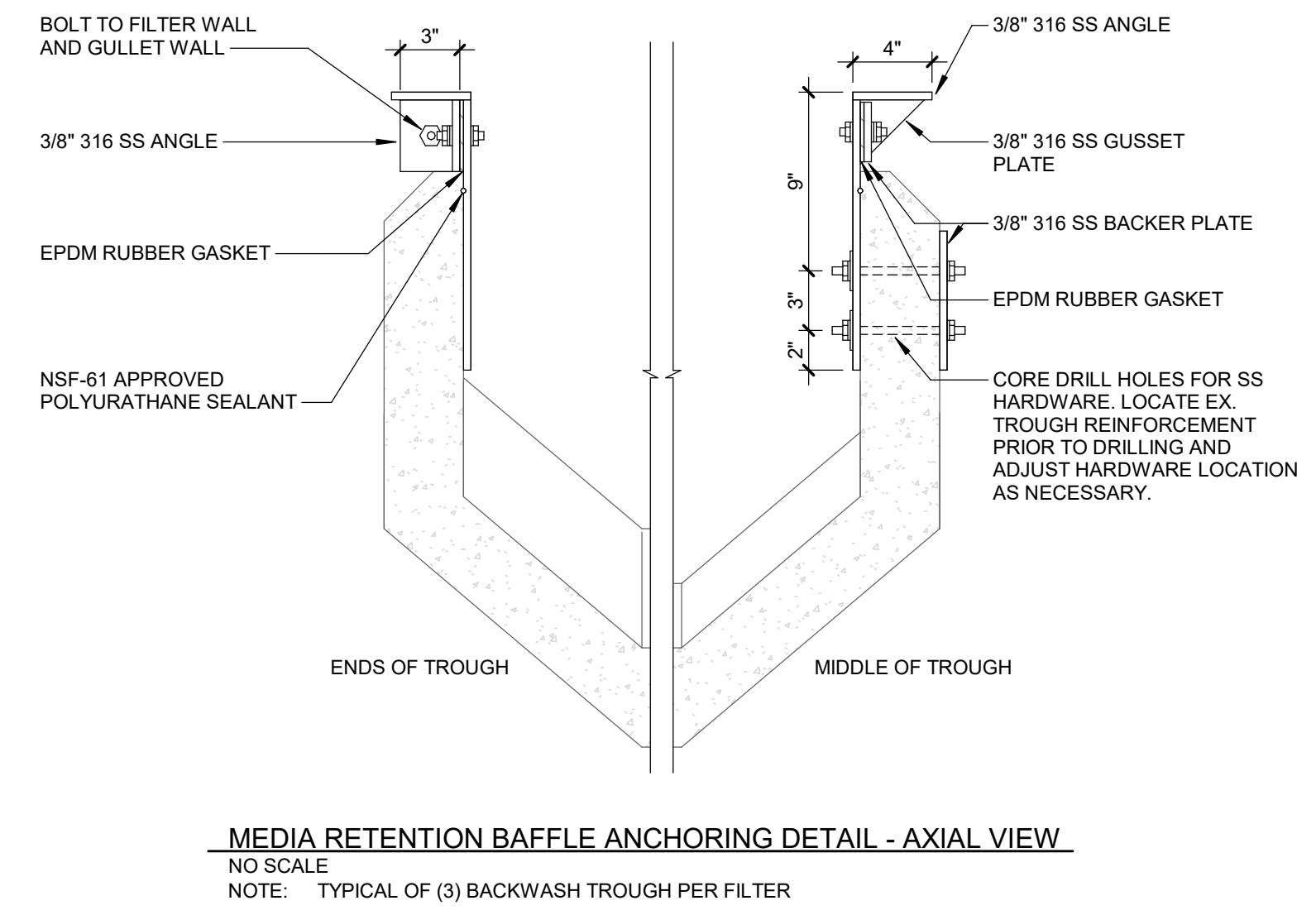
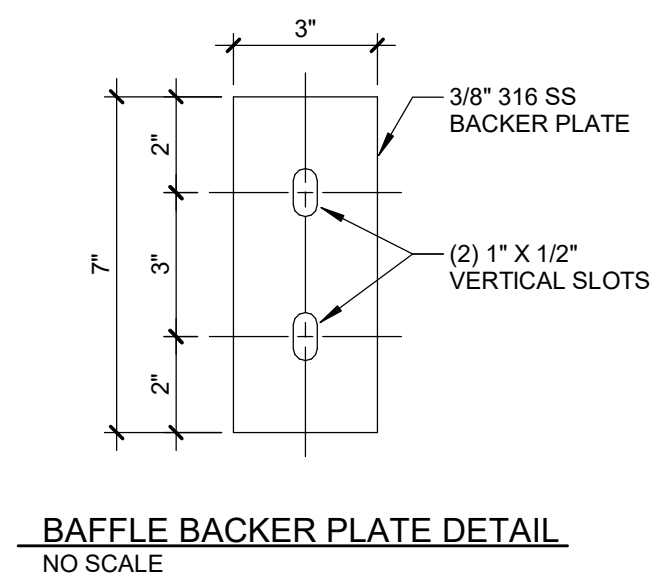
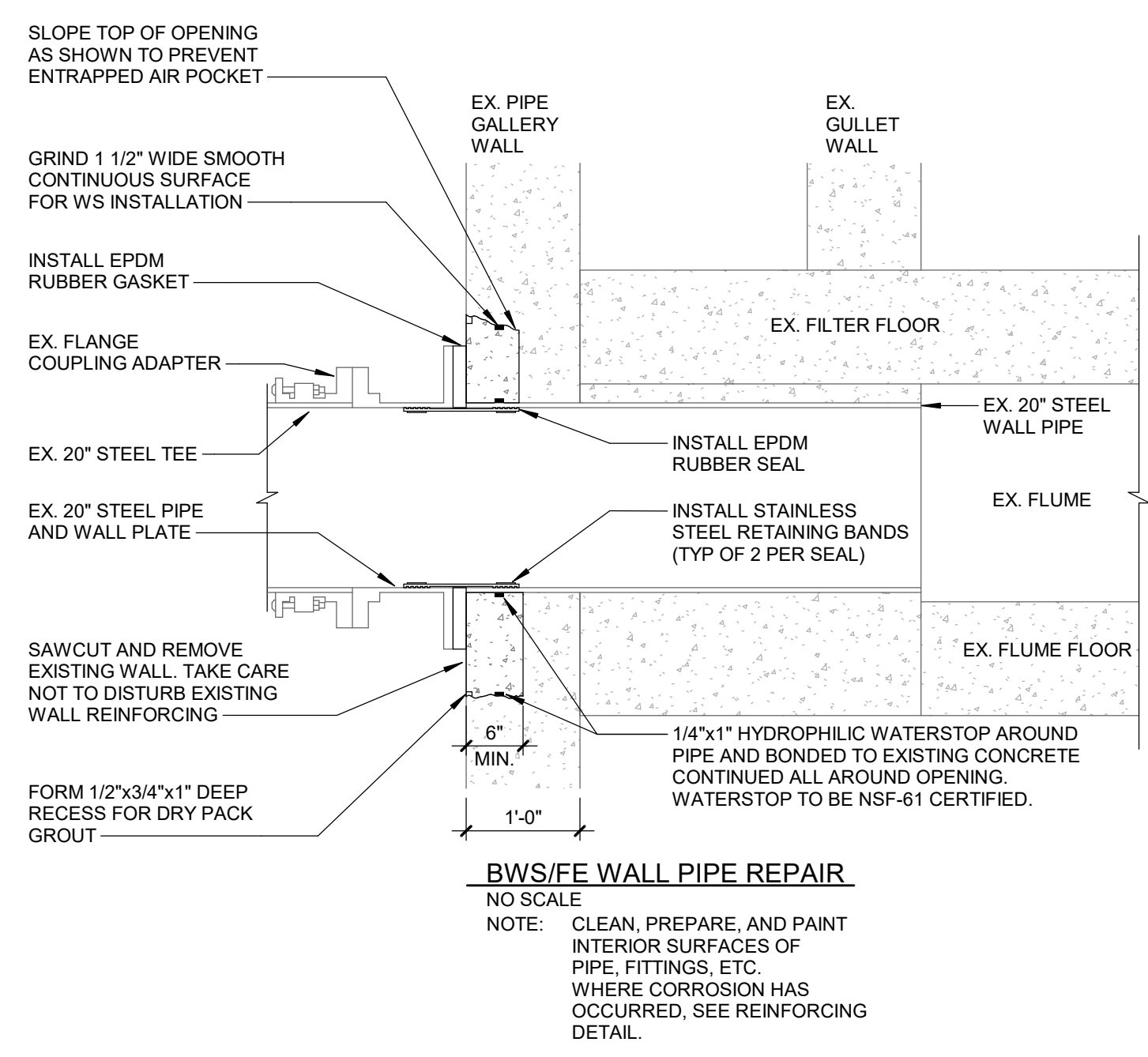
UNDERDRAIN ANCHORING DETAIL - SIDE VIEW
 NO SCALE



UNDERDRAIN ANCHORING DETAIL - SIDE VIEW
 NO SCALE



UNDERDRAIN PLAN VIEW DETAIL
 NO SCALE



DETAIL IS MEANT TO ILLUSTRATE MINIMUM DESIGN INTENT. IT IS THE RESPONSIBILITY OF THE SUPPLIER TO COMPLETE THE DESIGN AND SUBMIT FABRICATION LEVEL SHOP DRAWINGS.

REVISIONS

7/25/2024 BIDS AND CONSTRUCTION
 Drawn By ANW
 Designer ANW
 Reviewer Checker
 Manager BP

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PROJECT NO.
 231370
 SHEET NO.

P402