

City of Ann Arbor

2024 Water Treatment Plant

Filter 18/20 Underdrain Improvements

Ann Arbor, Michigan

Issued for Bids and Construction June 3, 2024

Project Number: 231370
 RFP Number: 24-38
 C2R2 Project Number: C2A-018



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

REVISIONS

6/3/2024 BIDS AND CONSTRUCTION

Drawn By RS2
 Designer ANW
 Reviewer MTP
 Manager BP

Hard copy is intended to be
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PROJECT NO.
 231370

SHEET NO.

G101

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GENERAL

- G101 COVER SHEET
- G102 SITE LAYOUT

DEMOLITION

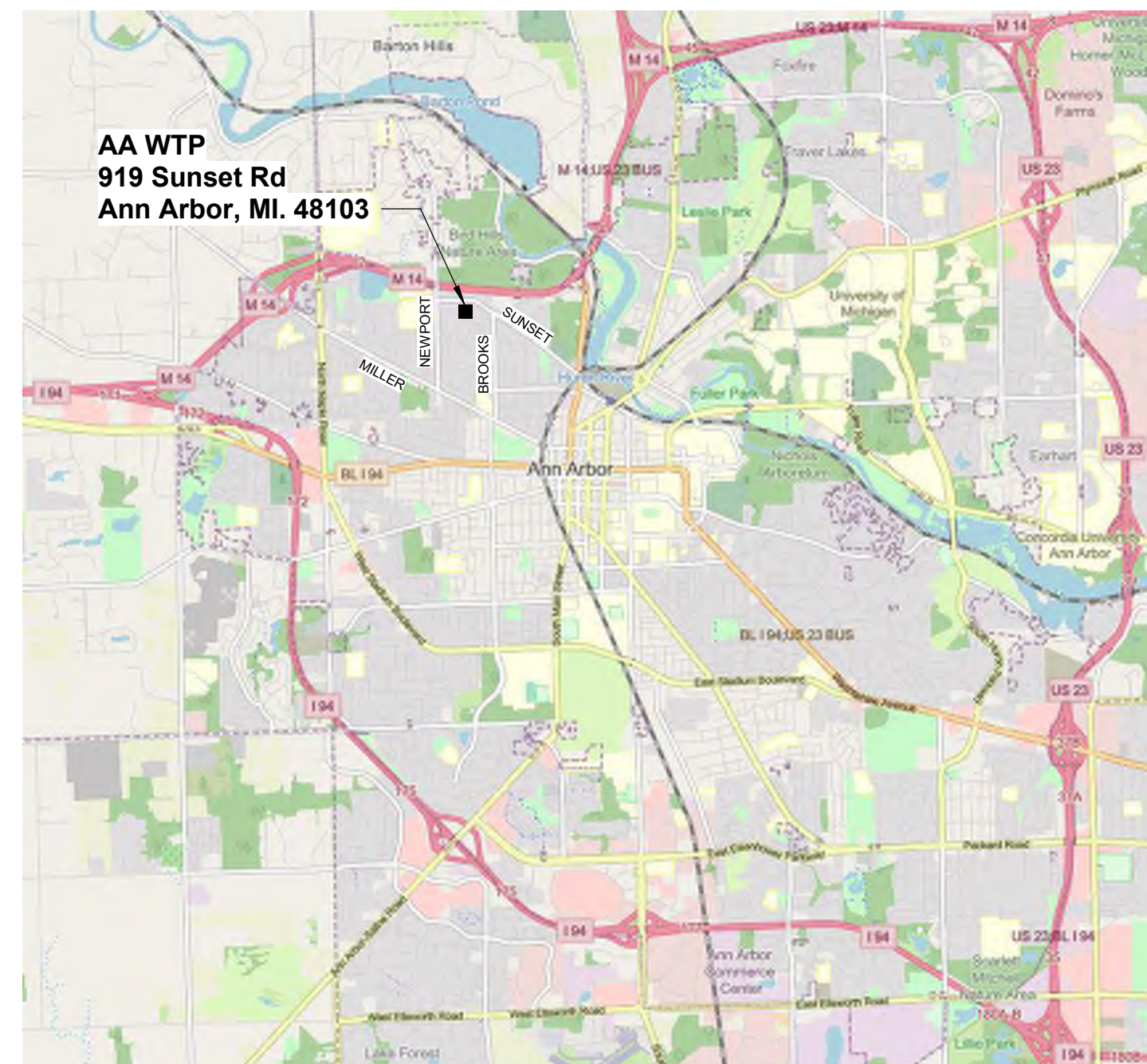
- D401 PROCESS PLANS AND SECTIONS
- D402 PROCESS PHOTOS

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	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	OS OUTSIDE	UL UNDERWRITER'S LABORATORY
CL CENTERLINE	GA GAUGE/GAGE	MAX MAXIMUM	PERP PERPENDICULAR	UNO UNLESS NOTED OTHERWISE
CWV CURTAINWALL	GALV GALVANIZED	MEZZ MEZZANINE	PL PLATE	VERT VERTICAL
CLG CEILING	GC GENERAL CONTRACTOR	MIN MINIMUM	PSF POUNDS PER SQUARE FOOT	VTR VENT THROUGH ROOF
CMU CONCRETE MASONRY UNIT	HB HOSE BIBB	MO MASONRY OPENING	PSI POUNDS PER SQUARE INCH	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	NC NOISE CRITERIA	REQD REQUIRED	W/O WITHOUT
CONT CONTINUOUS	COND CONDITIONING	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				



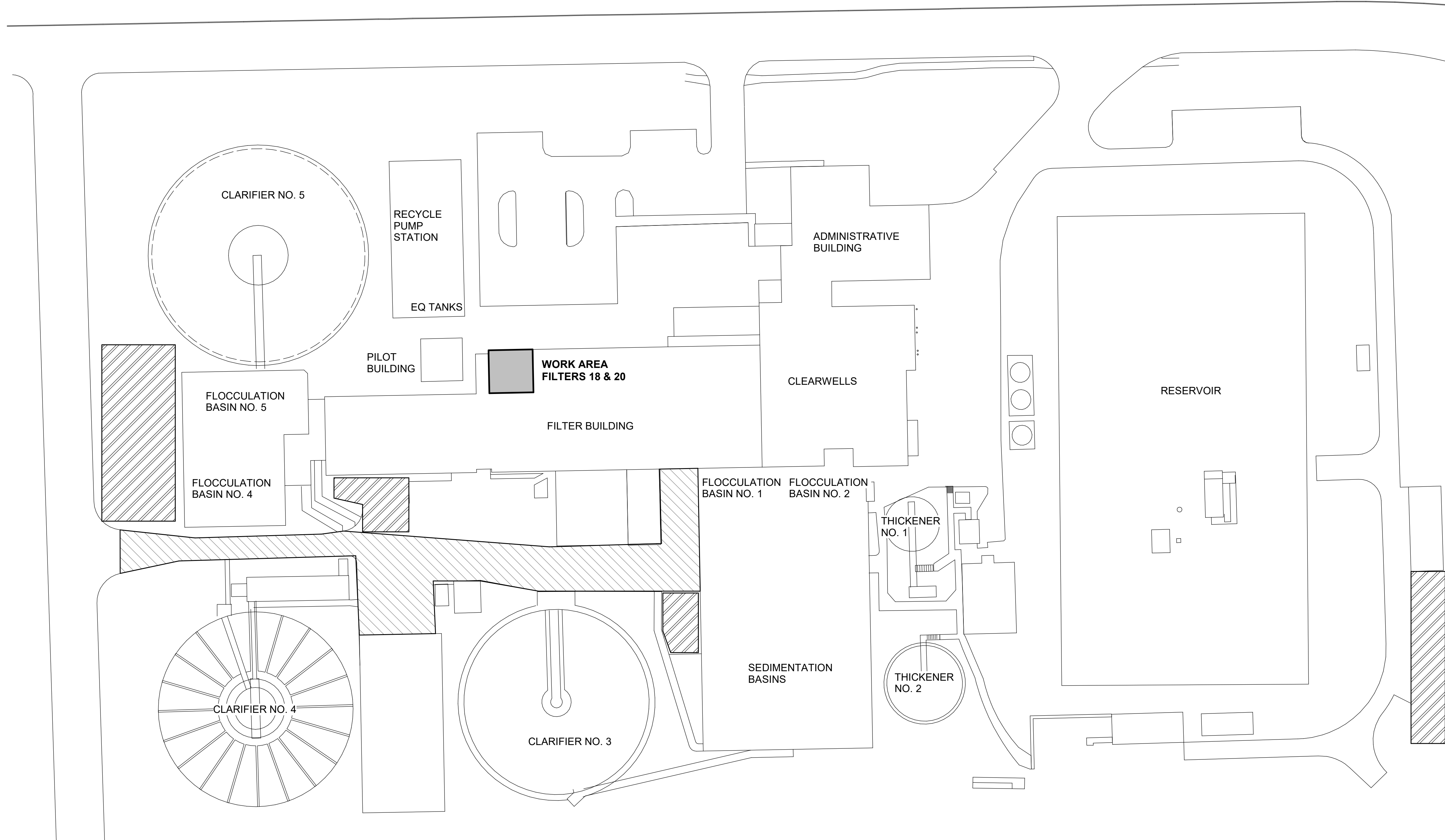
LOCATION MAP
 SCALE: NOT TO SCALE

GRAPHIC SYMBOLS

SECTION CUT LINE ① A501	ELEVATION, SECTION, AND DETAIL DESIGNATION ①	PLAN DESIGNATION PLAN SCALE: 1/8" = 1'-0"	LEVEL CALLOUT FIRST FLOOR 100'-0"	EXTERIOR ELEVATION TAG A A001	INTERIOR ELEVATION / PHOTO TAG A A301 D	NORTH ARROW DESIGNATION NORTH NORTH	ROOM NAME AND NUMBER Room name 101	ENLARGED DETAIL FRAME ① A201	ELEVATION TARGET SPOT ELEVATION EL. 100'-0"	NEW CONSTRUCTION GRID ① 000	SIGNAGE TAG ①	FINISH TAG ②	BULLETIN IDENTIFICATION B1	ADDENDUM IDENTIFICATION A1	SKETCH IDENTIFICATION S1	BARRIER FREE LOCATION ①	NEW CONSTRUCTION KEY NOTE ①	DEMOLITION KEY NOTE ①
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SEAL

PLOT INFO: 6/3/2024 12:00:25 PM Autodesk Docs://231370/2022_PR_General_231370.rvt



SYMBOLS LEGEND

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

WTP
SITE LAYOUT
 SCALE: NOT TO SCALE

NORTH

REVISIONS

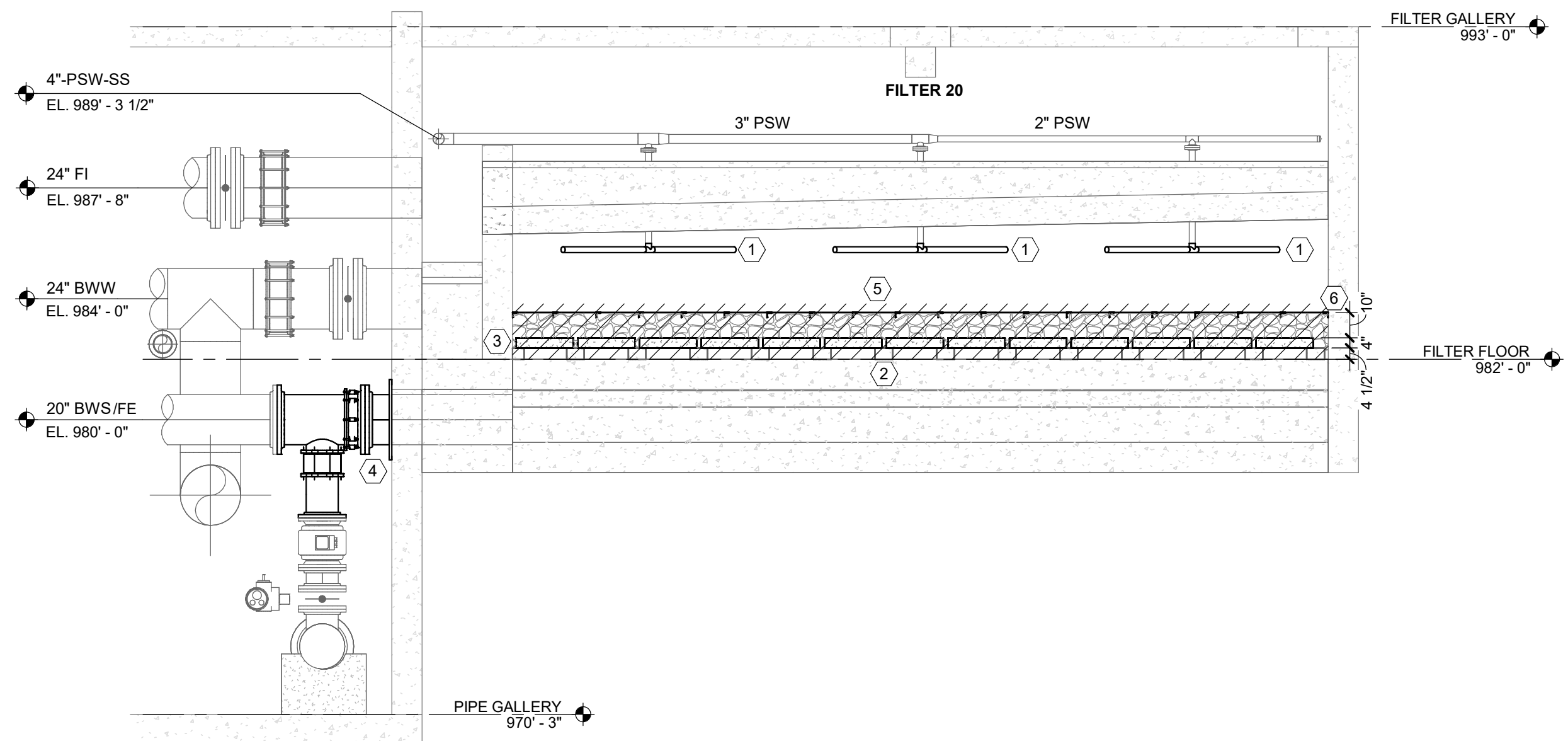
6/3/2024	BIDS AND CONSTRUCTION
Drawn By	RS2
Designer	ANW
Reviewer	MTP
Manager	BP

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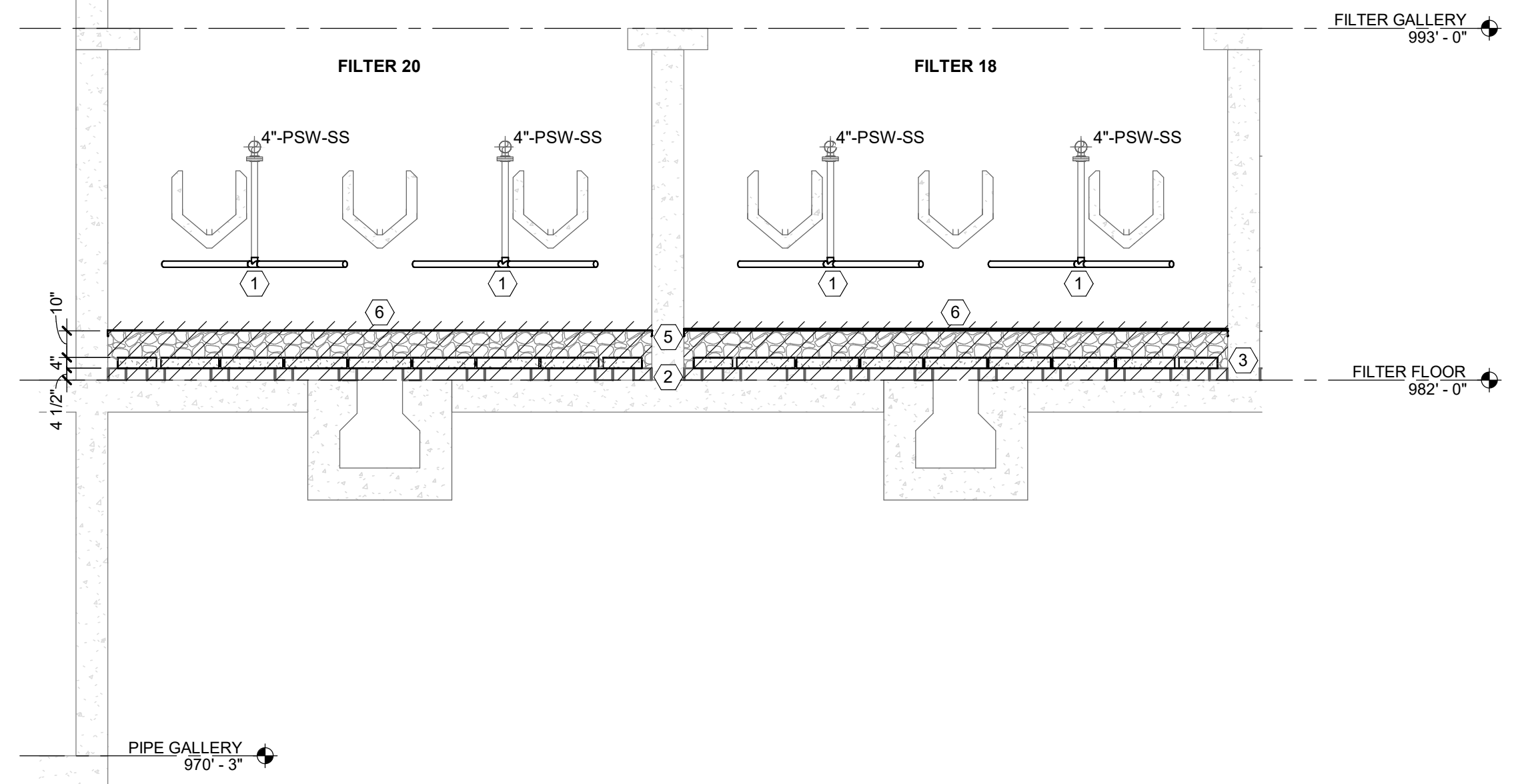
PROJECT NO.
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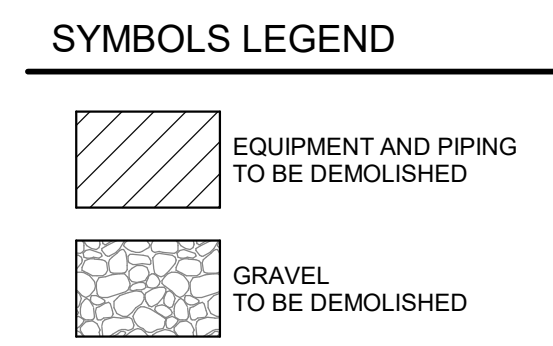
G102



2 FILTER 20 SECTION
SCALE: 1/4" = 1'-0"



1 FILTER 18 AND 20 SECTION
SCALE: 1/4" = 1'-0"



PROCESS DEMOLITION NOTES

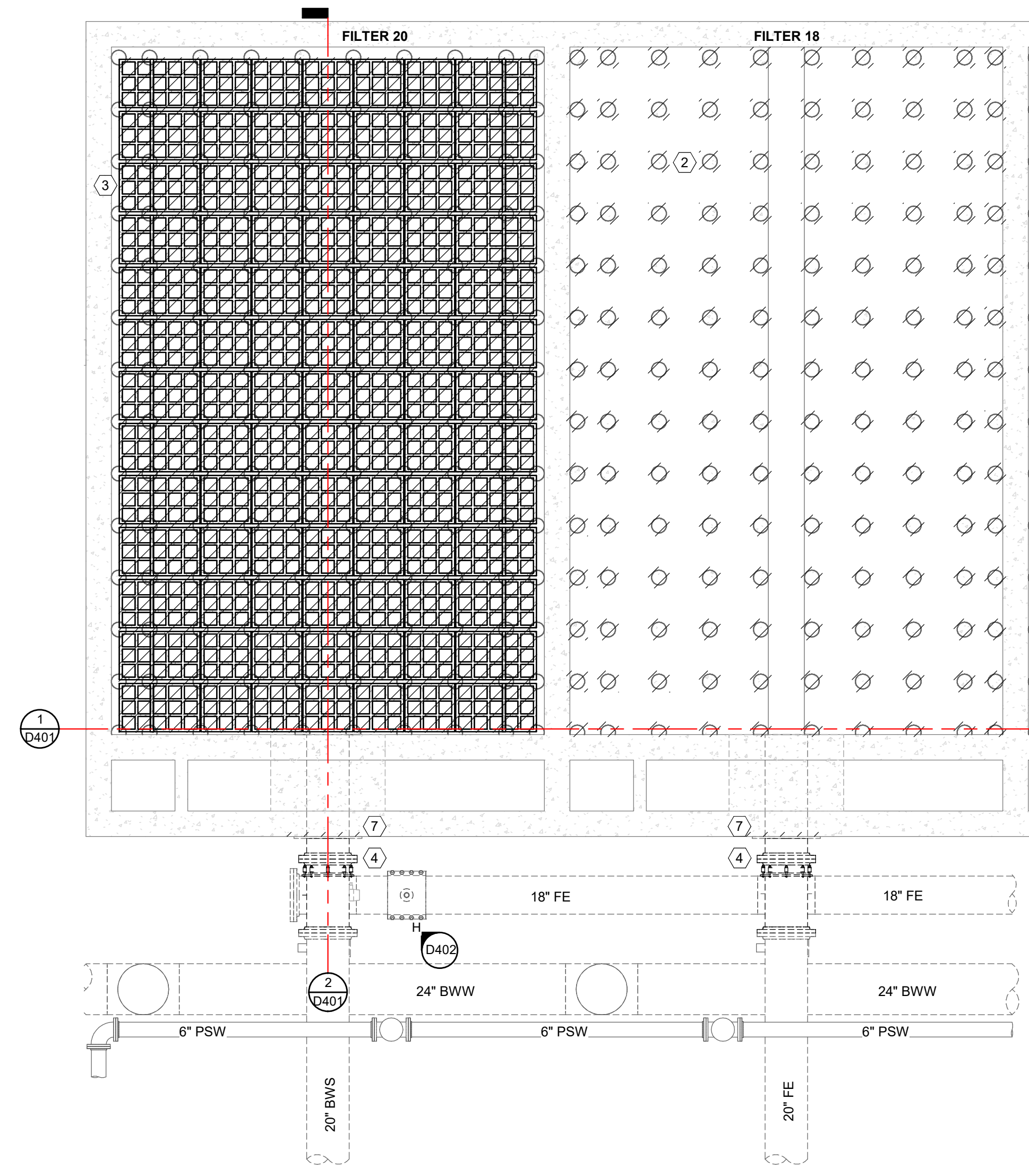
- REMOVE ALL PORTIONS OF WORK IDENTIFIED BY CROSS HATCHING UNLESS NOTED OTHERWISE.
- DEMOLITION NOTES AND PLANS DO NOT FULLY REPRESENT ALL DEMOLITION WORK REQUIRED TO INSTALL NEW WORK IN ACCORDANCE WITH CONTRACT DOCUMENTS. BUT ARE INTENDED TO SERVE AS GENERAL DEMOLITION GUIDELINES.
- GRAPHICAL REPRESENTATION 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.
- 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.
- 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

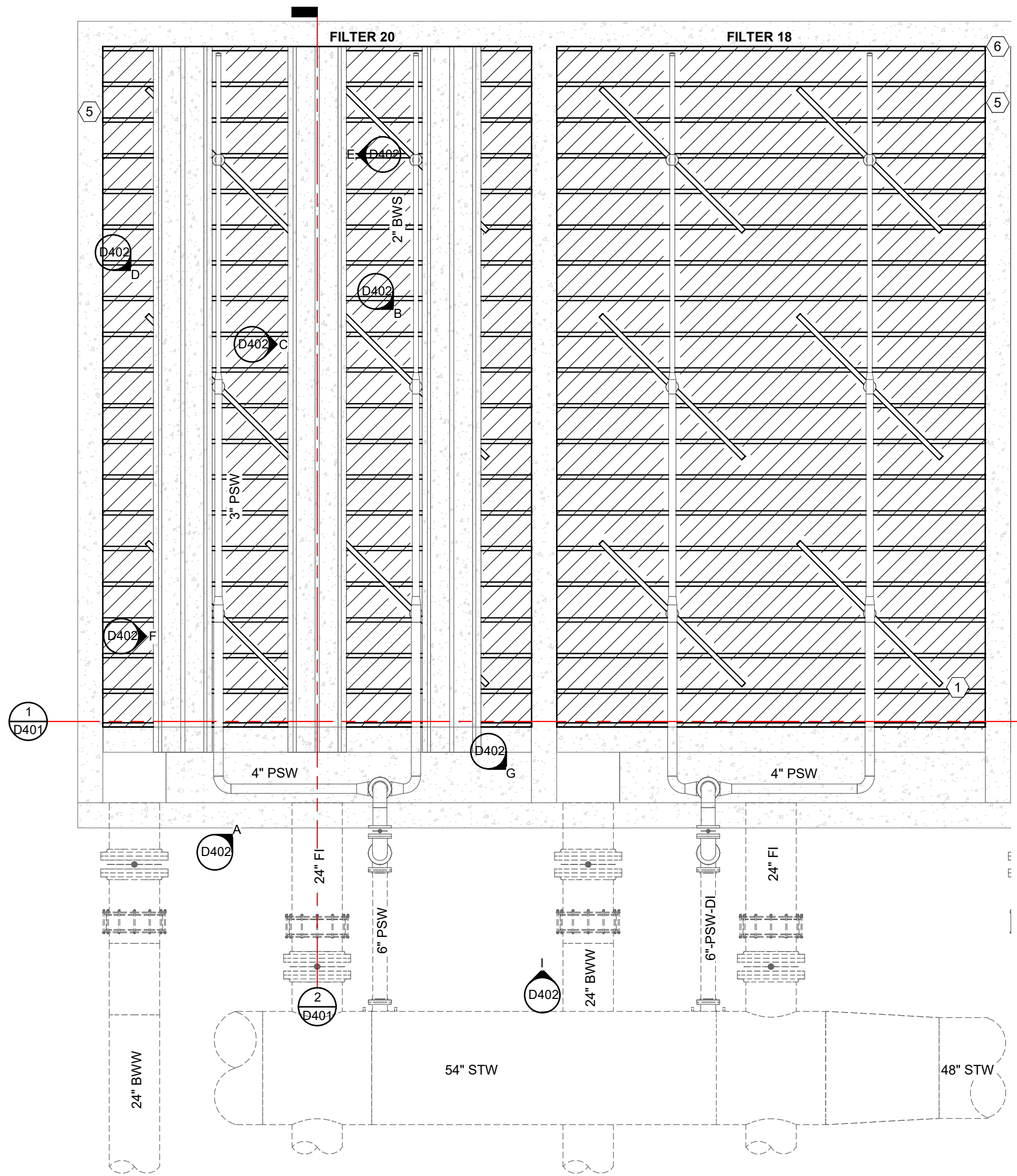
- FILTER 18 AND FILTER 20 WALKWAY HIDDEN FROM FILTER GALLERY PLAN FOR CLARITY OF BACKWASH TROUGHS AND SURFACE WASH ARMS.
- FILTER 18 BACKWASH TROUGHS HIDDEN FROM FILTER GALLERY PLAN FOR CLARITY OF SURFACE WASH ARMS.
- FILTER 18 UNDERDRAIN MODULES HIDDEN FROM FILTER FLOOR PLAN FOR CLARITY OF CONCRETE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

DEMOLITION KEY NOTES

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



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



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

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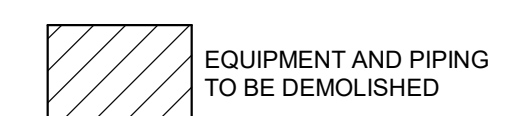
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SHEET NO.

D402

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SYMBOLS LEGEND

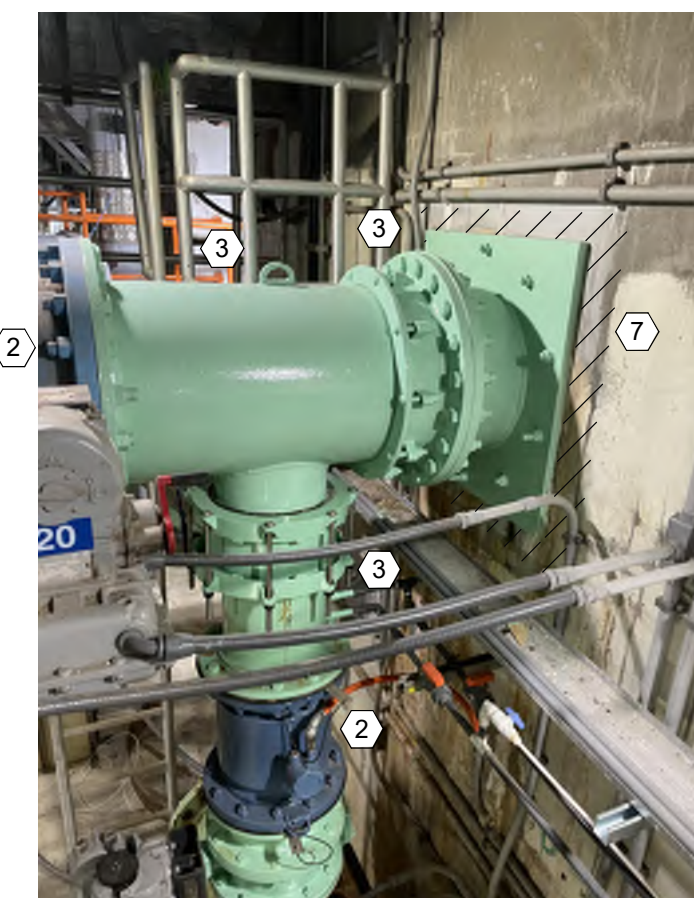


DEMOLITION KEY NOTES

- 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.



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



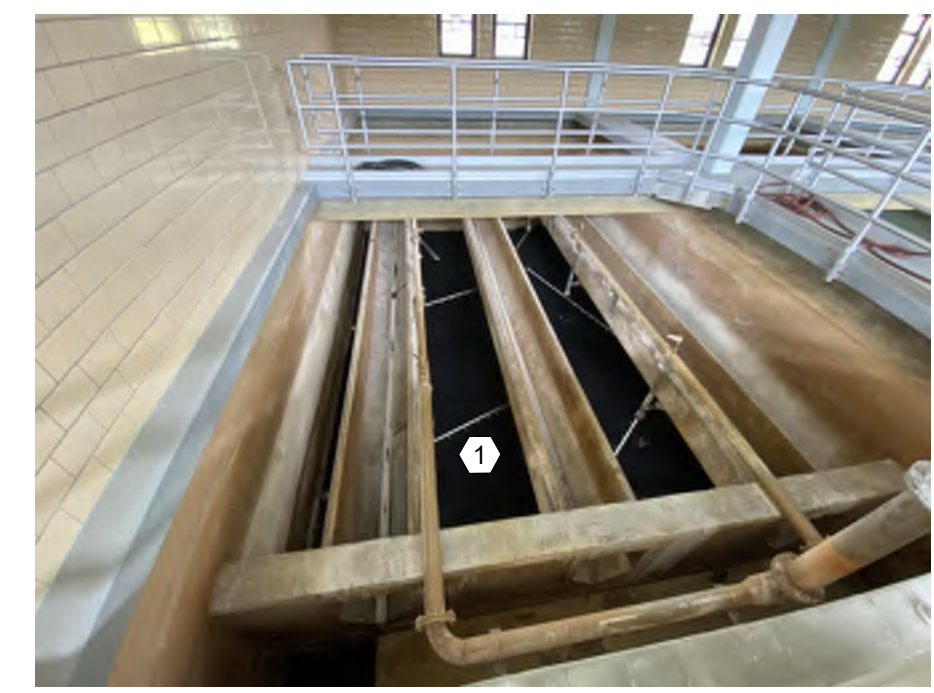
D PHOTO
 SCALE: NOT TO SCALE



C PHOTO
 SCALE: NOT TO SCALE



B PHOTO
 SCALE: NOT TO SCALE



A PHOTO
 SCALE: NOT TO SCALE

PROCESS GENERAL SYMBOLS

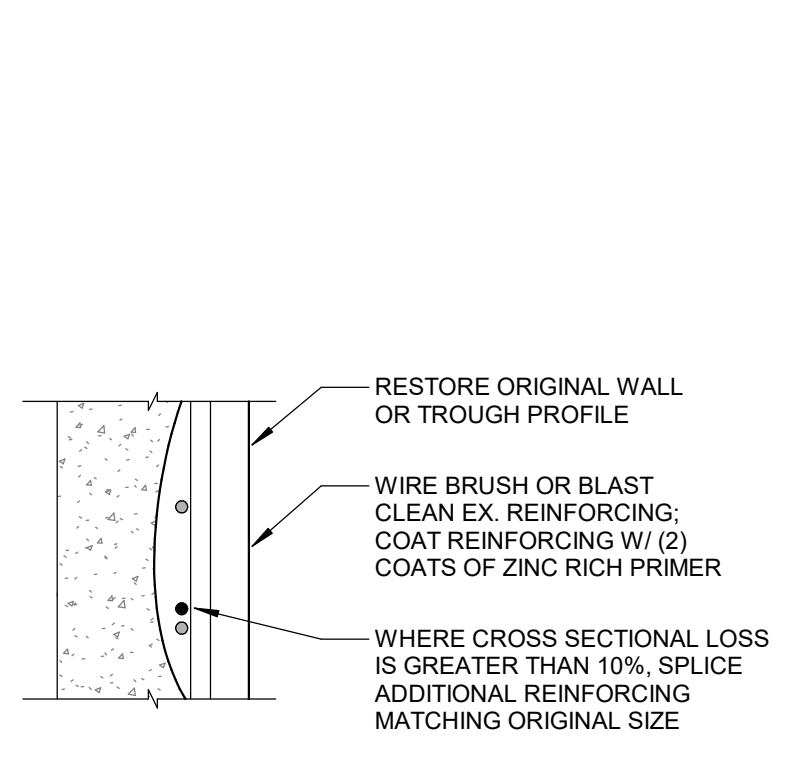
- SCREENED LINE DENOTES EXISTING PIPING OR EQUIPMENT
- SCREENED DASHED LINE DENOTES EXISTING BELOW PIPING

NOTES

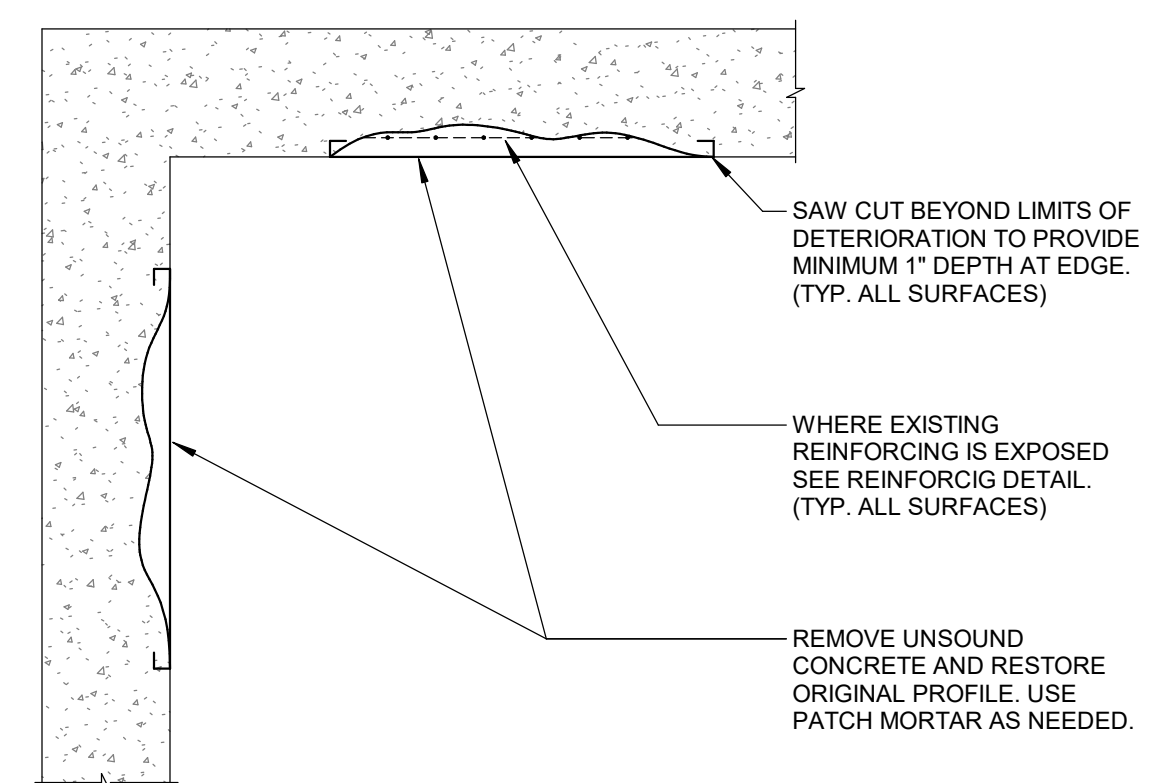
- THE WALL PIPE SCHEDULE IS PROVIDED AS AN AID, BUT DOES NOT INCLUDE ALL THE PROJECT PENETRATIONS, SPECIFICALLY PENETRATIONS SMALLER THAN 4 INCH NOMINAL SIZE. VERIFY ALL PENETRATION REQUIREMENTS AND PROVIDE PENETRATIONS FOR A COMPLETELY OPERABLE SYSTEM.
- CONTACT ENGINEER FOR ABBREVIATIONS AND SYMBOLS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

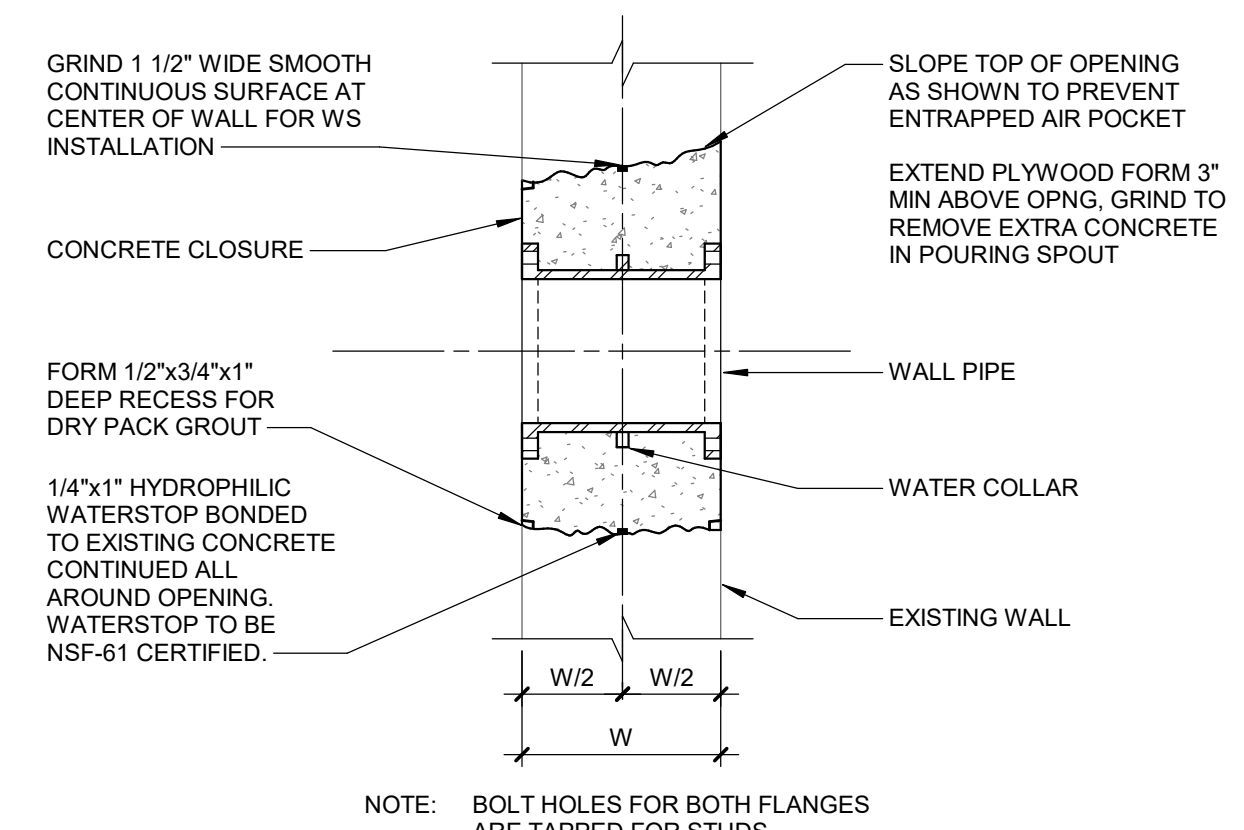
LEGEND:
 WP =WALL PIPE



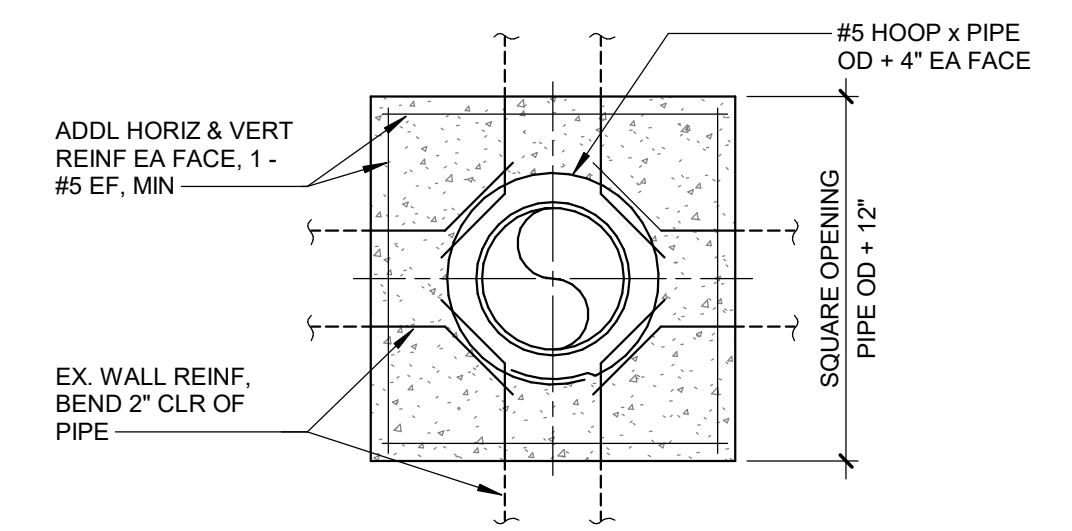
TYPICAL REINFORCING DETAIL
 NO SCALE



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	O.E. OVERHEAD ELECTRICAL	SQ. YD. SQUARE YARD
AMT AMOUNT	DMS DIAPHRAGM SEAL	HP HIGH POINT	OPNG OPENING	SR SHORT RADIUS
APPROX APPROXIMATE	DN DOWN	HT HORSEPOWER	OPP OPPOSITE	SS STAINLESS STEEL
ASSY ASSEMBLY	DP DEEP/DEPTH	HT HEIGHT	ORIG ORIGINAL	STA STATION
AVG AVERAGE	DWG DRAWING	HVAC HEATING, VENTILATING AND AIR CONDITIONING	OVHD OVERHEAD	STD STANDARD
B BEND	DWN DRAIN-WASTE-VENT	HW HOT WATER	P PUMP, PUMPING	STG STORAGE
B/B BACK TO BACK	E EAST	HWL HIGH WATER LEVEL	P&ID PROCESS AND INSTRUMENTATION DIAGRAM	STL STEEL
BCKR BACKER BOARD	E/E END TO END	HYD HYDRAULIC	PE PLAIN END	SUBM SUBMERGED
BF BLIND FLANGE	EA EACH	HZ HERTZ	PERF PERFORATED	SUCT SUCTION
BFG BELOW FINISHED GRADE	ECC ECCENTRIC	I.E. INVERT ELEVATION	PL PLATE	SURF SURFACE
BFP BACKFLOW PREVENTER	ED EQUIPMENT DRAIN	I.D. INSIDE DIAMETER	PNL PANEL	SUSP SUSPENDED
BLDG BUILDING	EHT ELECTRICALLY HEAT-TRACED	IN INCH	PRM PARTS PER MILLION	SW SOCKET WELDED
BLKHD BULKHEAD	EJ EXPANSION JOINT	INS INSULATION, INSULATE	PPM PROPOSED	IA INSTRUMENT AIR
BLWDN BLOWDOWN	EL ELEVATION	INCL INCLUDE	TDH TOTAL DYNAMIC HEAD	INFL INFLUENT
BM BENCHMARK	ELEV ELEVATION	INSTR INSTRUMENT, INSTRUMENTATAION	TEMP TEMPERATURE	LIME LIME
BMC BOLTED MECHANICAL COUPLING	ELL ELBOW	INT INTERIOR	THK THICK	LO LUBRICATION OIL
BOT BOTTOM	EMBED EMBEDMENT	INV INVERT	TPG TOPPING	LPQ LIQUIFIED PETROLEUM GAS
BRG BEARING	ENGR ENGINEER	IPN IRON PIPE SIZE	TYP TYPICAL	HAPL HAZARDOUS AIR POLLUTANT
BSMT BASEMENT	EQ EQUAL	IR ISOLATION RING	UG UNDERGROUND	NA NAUSTIC
BTU BRITISH THERMAL UNITS	EQUIP EQUIPMENT	JT JOINT	UL UNDERWRITERS LABORATORY	NG NATURAL GAS
BTWN BETWEEN	ES EACH SIDE	LAB LABORATORY	UTIL UTILITY	NH AMMONIA
CB CENTER TO CENTER	ESEW EMERGENCY SHOWER AND EYE WASH	RD ROOF DRAIN	ULTR ULTRAVIOLET DISINFECTION	NPW NONPOTABLE WATER
CB CATCH BASIN	EW EACH WAY	LB POUND	V VOLTS	OF OVERFLOW
CF CUBIC FEET	EXC EXCAVATE (ION)	LF LINEAL FOOT	VAC VACUUM	OX OXYGEN
CFS CUBIC FEET PER SECOND	EXX EXISTING	LGTH LENGTH	V VACUUM	PA PLANT AIR
CFM CUBIC FEET PER MINUTE	EXP EXPOSED	LH LEFT HAND	VBL VALVE BOX	PAC POWDERED ACTIVATED CARBON
CHAM CHAMFER	EXT EXTERIOR	LIQ LIQUID	VERT VERTICAL	
CHEM CHEMICAL	F/F FACE TO FACE	LLWL LOW LOW WATER LEVEL	VOL VOLUME	
CHKPL CHECKERPLATE	FAB FABRICATED	LONG LONGITUDINAL	VTR VENT TO ROOF	
CL CENTERLINE	FD FLOOR DRAIN	LP LOW POINT	W WEST	
CLR CLEARANCE	FF FINISHED FLOOR	LR LONG RADIUS	W/ WITH	
CO CLEANOUT	FIG FIGURE	LWL LOW WATER LEVEL	WO WITHOUT	
COMP COMPANION	FIN FINISHED	M MOTOR	WGT WEIGHT	
CONC CONCRETE	FLR FLOOR	MAINT MAINTENANCE	WH WALL HYDRANT	
CONC CONCENTRATED	FLR FLOOR	MATL MATERIAL	WL WATER LEVEL	
CONC CONCENTRIC	FM FORCE MAIN	MAX MAXIMUM	WP WEATHERPROOF	
CONST CONSTRUCTION	FRP FIBERGLASS REINFORCED PLASTIC	MFGR MANUFACTURER	WS WATERSTOP	
COORD COORDINATE	FSP FABRICATED STEEL PIPE	MGD MILLION GALLONS PER DAY	WT WATERTIGHT	
COR CORRUGATED	FTG FITTING	MIN MINIMUM	WSE WATER SURFACE ELEVATION	
CPLG COUPLING	F.V. FIELD VERIFY	MISC MISCELLANEOUS	XP EXPLOSION PROOF	
CPVC CHLORINATED POLYVINYL CHLORIDE	GA GAUGE/GAGE	MJ MECHANICAL JOINT	YH YARD HYDRANT	
CTL CONTROL	GAC GRANULATED ACTIVATED CARBON	MOUNT MOUNTED		
CW COLD WATER	GFA GROOVED FLANGE ADAPTER	MTD MOUNTED		
CY CUBIC YARD	GPC GROOVED PIPE COUPLING	MTL METAL		

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	COMB COMBUSTIBLE GAS
BWS BACKWASH SUPPLY	PLR PLANT RECYCLE	CON 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 SUPERNATANT	
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 SLUDGE TRANSFER	
INFL INFLUENT	STW SETTLED/CLEARIFIED WATER	
LIME LIME	SW SERVICE WATER	
LO LUBRICATION OIL	TSL THICKENED SLUDGE	
LPQ LIQUIFIED PETROLEUM GAS	TW TEMPERED WATER	
METHANOL	V VENT	
NA NAUSTIC	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
COMB COMBUSTIBLE GAS	PH HYDROGEN ION CONCENTRATION
CON 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	PS POLYMER FEED SYSTEM
CIP CLEAN-IN-PLACE	R REACTOR
CL CLARIFIER	RD RUPTURE DISC
CON 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

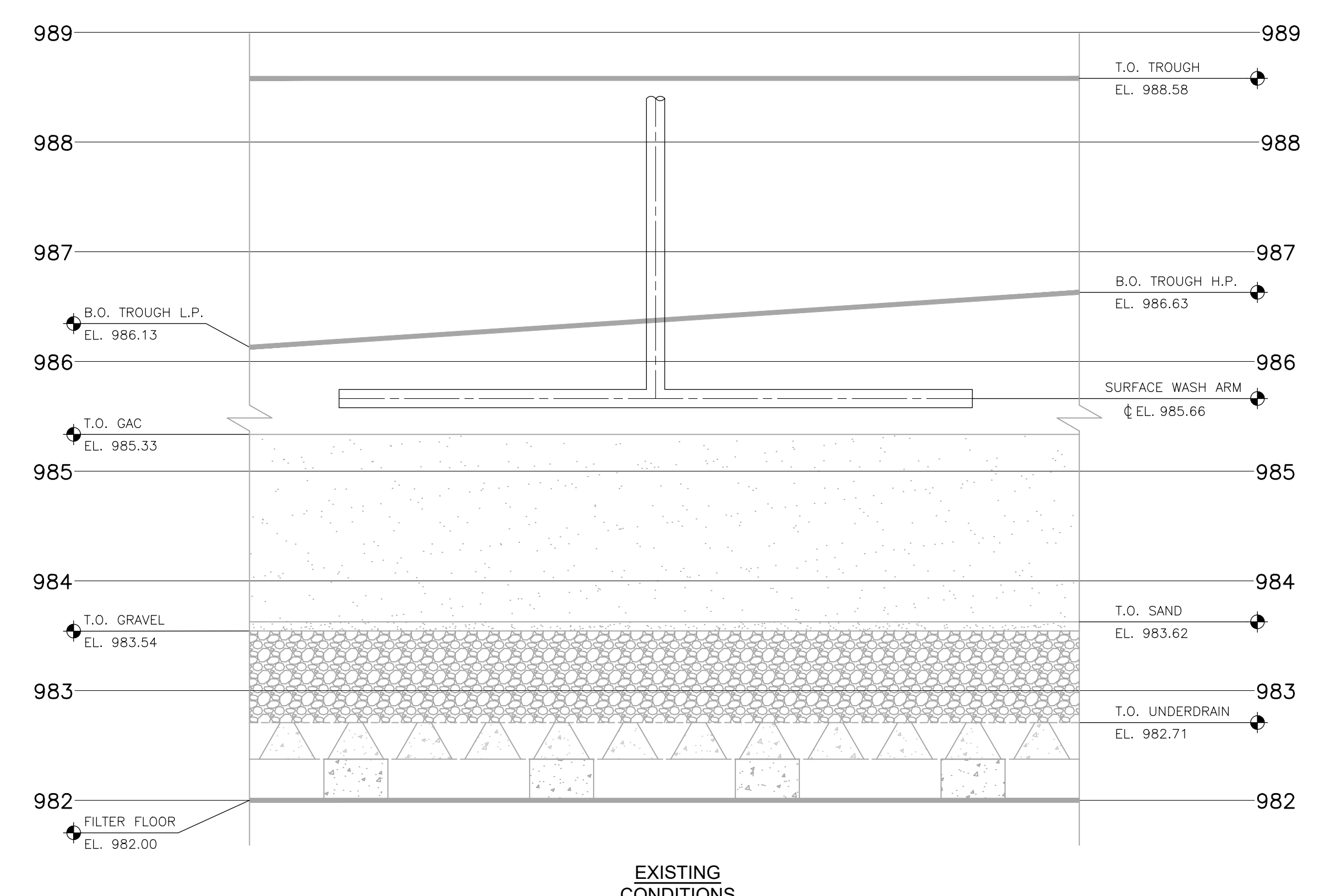
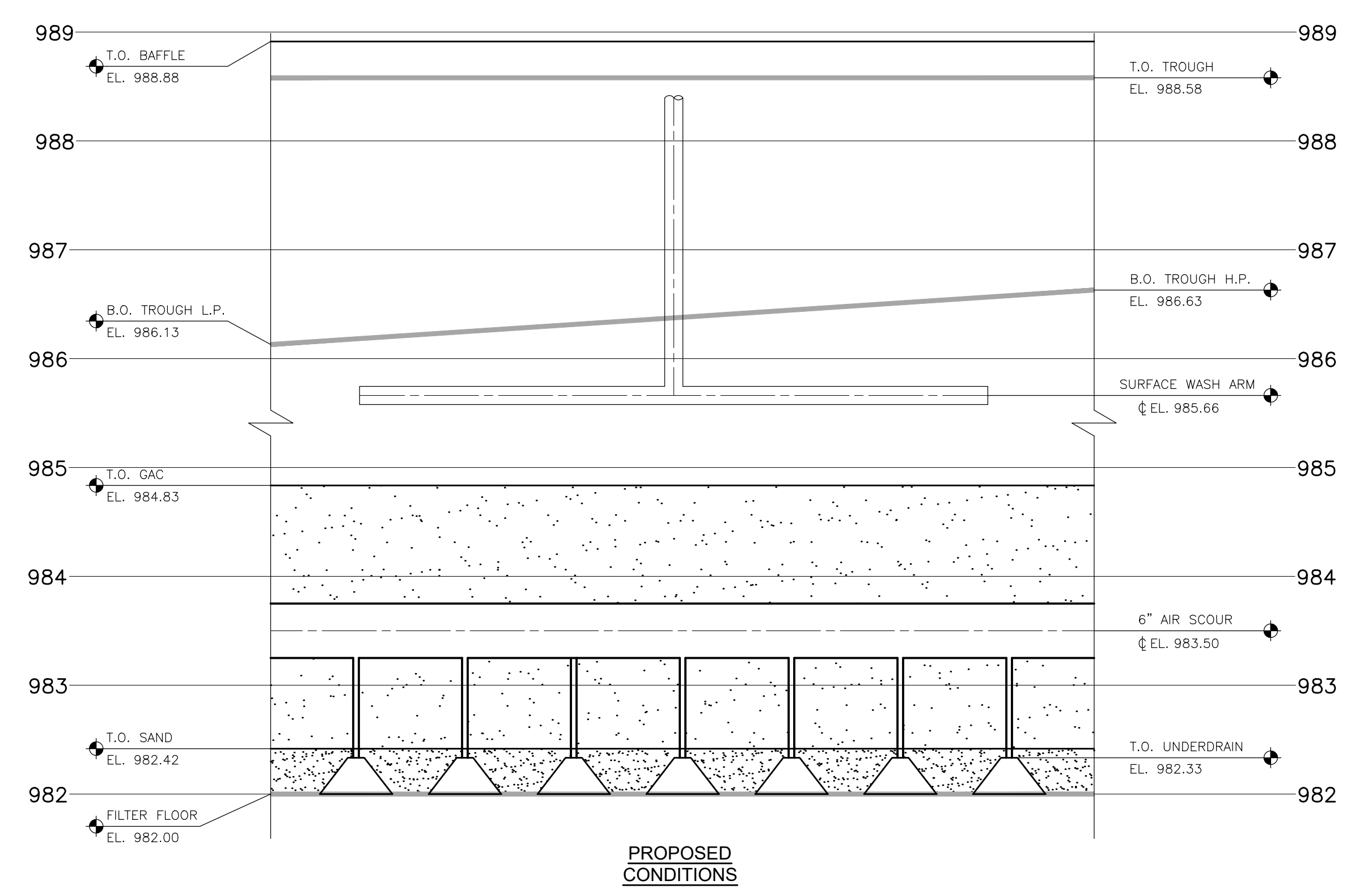
NO.	DATE	DESCRIPTION
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231370
 SHEET NO.

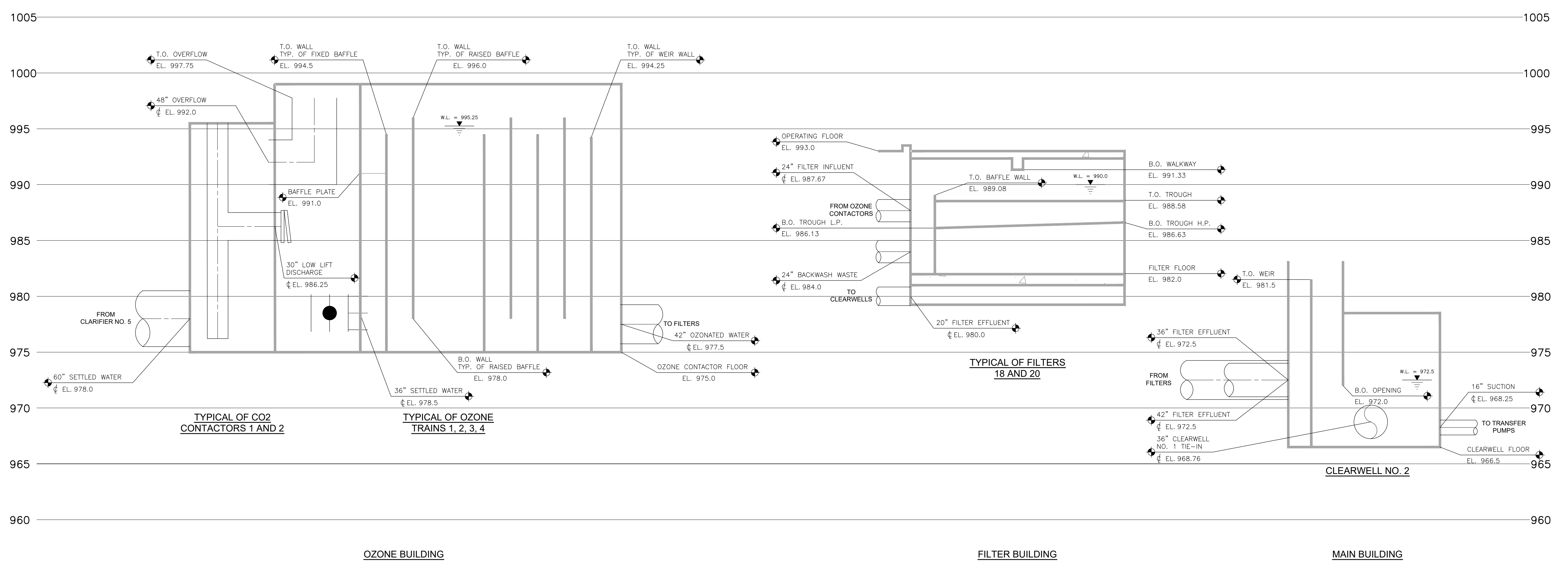
P001



FILTER PROFILE

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

- NOTES**
- FIELD VERIFY EXISTING ELEVATIONS.
 - PROPOSED FILTER PROFILE SHOWN FOR REFERENCE ONLY. SEE PROCESS SECTIONS FOR DETAILS.
 - 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

6/3/2024	BIDS AND CONSTRUCTION
Drawn By	ANW
Designer	ANW
Reviewer	MTP
Manager	BP

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PROJECT NO.
231370
 SHEET NO.

P101

REVISIONS

6/3/2024 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

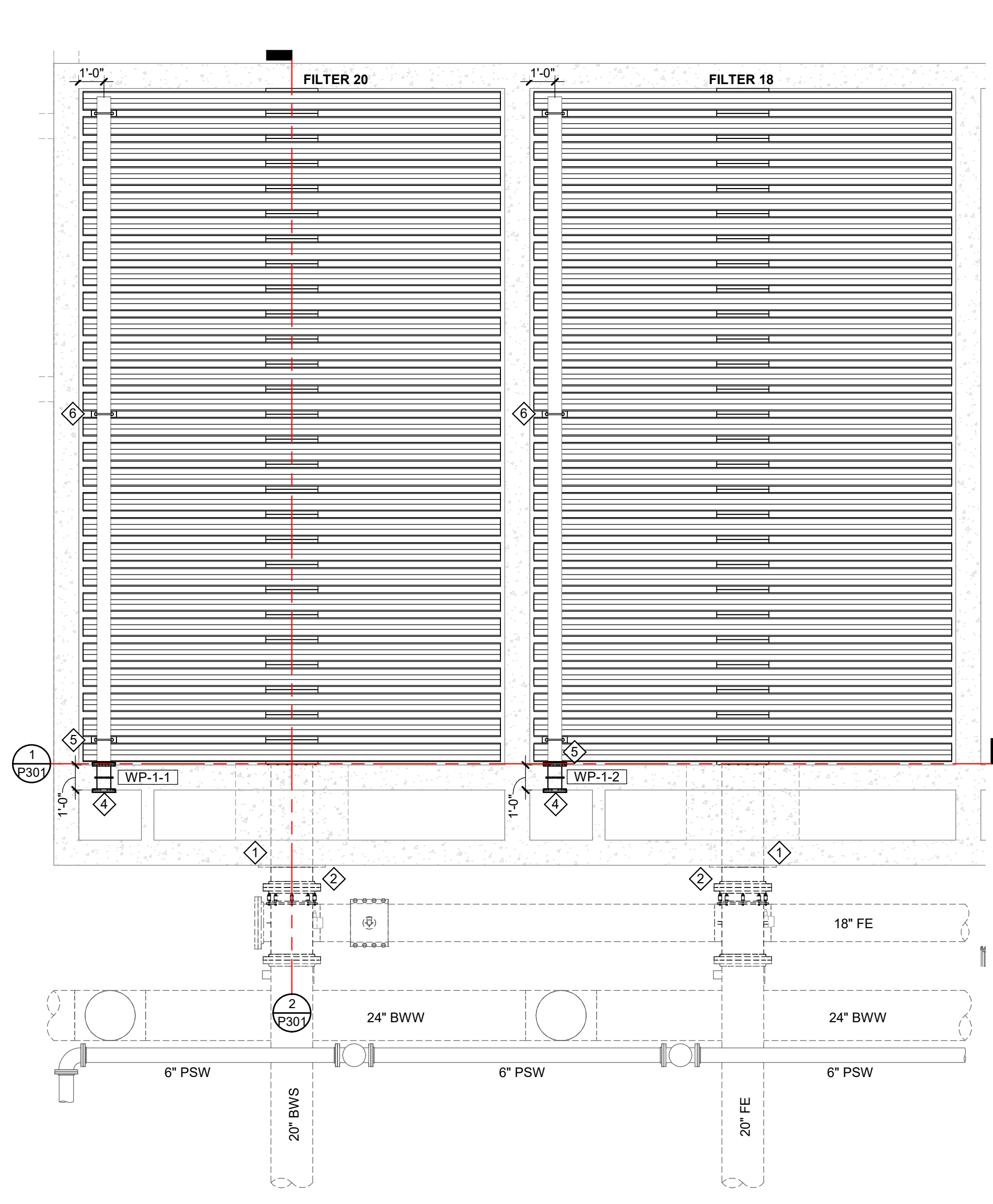
1. THE FOLLOWING NOTES APPLY TO ALL PROCESS SHEETS.
2. NOTES, SYMBOLS, LEGENDS AND ABBREVIATIONS SHOWN ON PROCESS DRAWINGS MAY NOT BE ALL INCLUSIVE, ONLY APPLY TO PROCESS DRAWINGS (P## SHEETS) AND, ALSO WHEN PRESENT, PROCESS DEMOLITION (D4# SHEETS).
3. GRAPHICAL REPRESENTATION OF EXISTING SYSTEMS IS 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

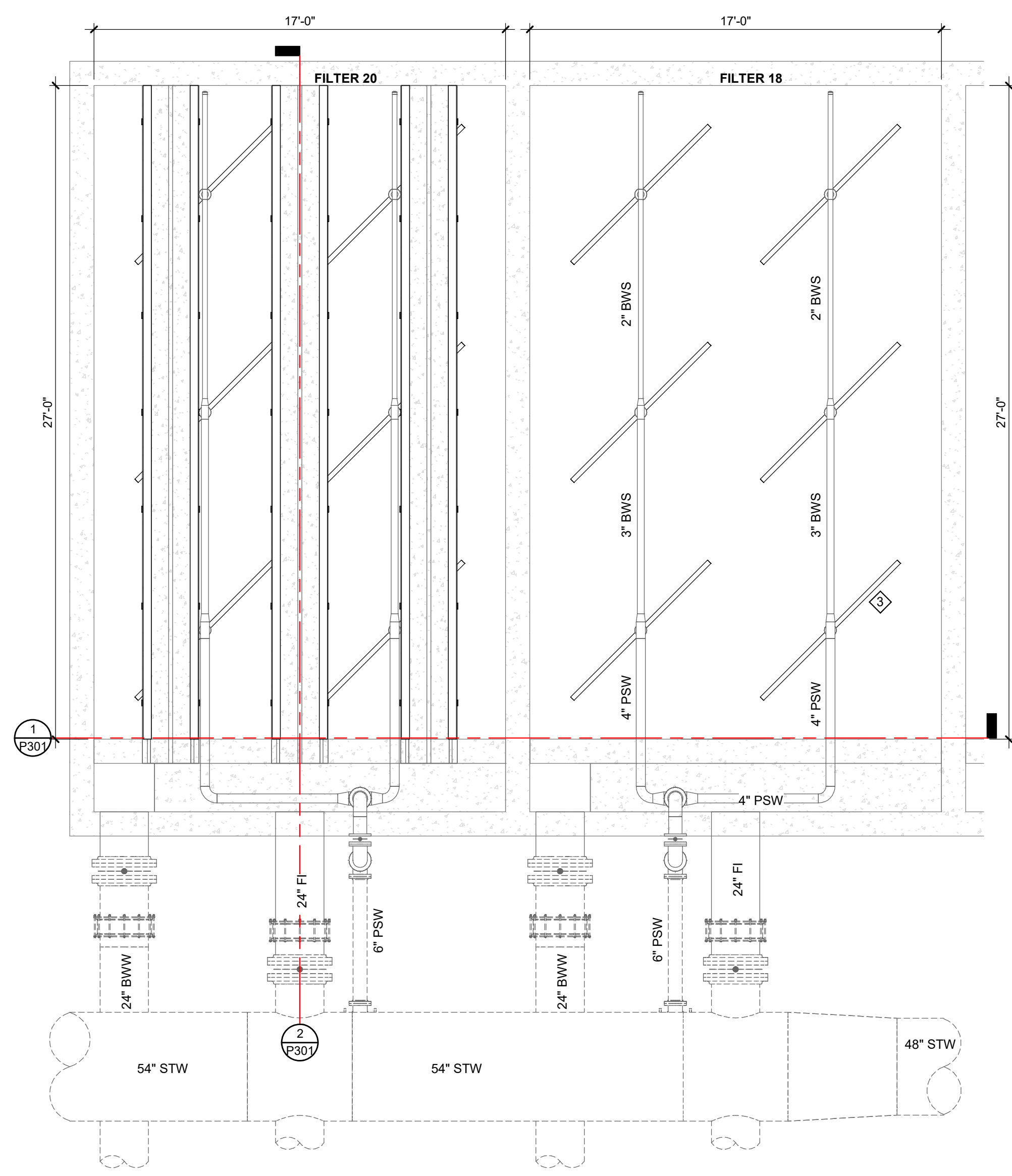
1. FILTER 18 AND FILTER 20 WALKWAY HIDDEN FROM FILTER GALLERY PLAN FOR CLARITY OF BACKWASH TROUGHS AND SURFACE WASH ARMS.
2. FILTER 18 AND FILTER 20 MEDIA HIDDEN FROM PLANS FOR CLARITY.
3. FILTER 18 BACKWASH TROUGHS HIDDEN FROM FILTER GALLERY PLAN FOR CLARITY OF SURFACE WASH ARMS.

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"
 NORTH



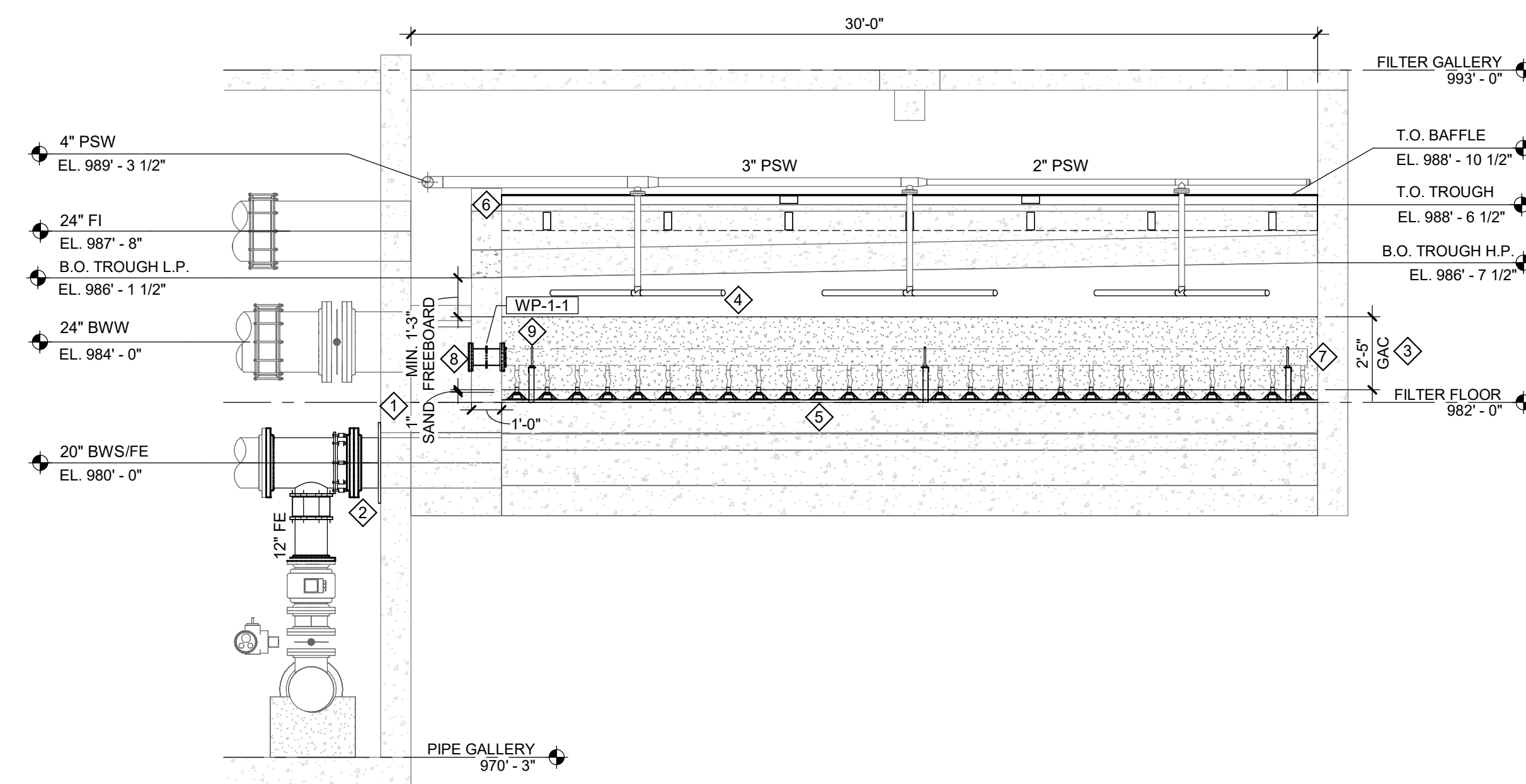
FILTER GALLERY
 FILTER 18 AND 20
PIPING PLAN
 SCALE: 1/4" = 1'-0"
 NORTH

SYMBOLS LEGEND

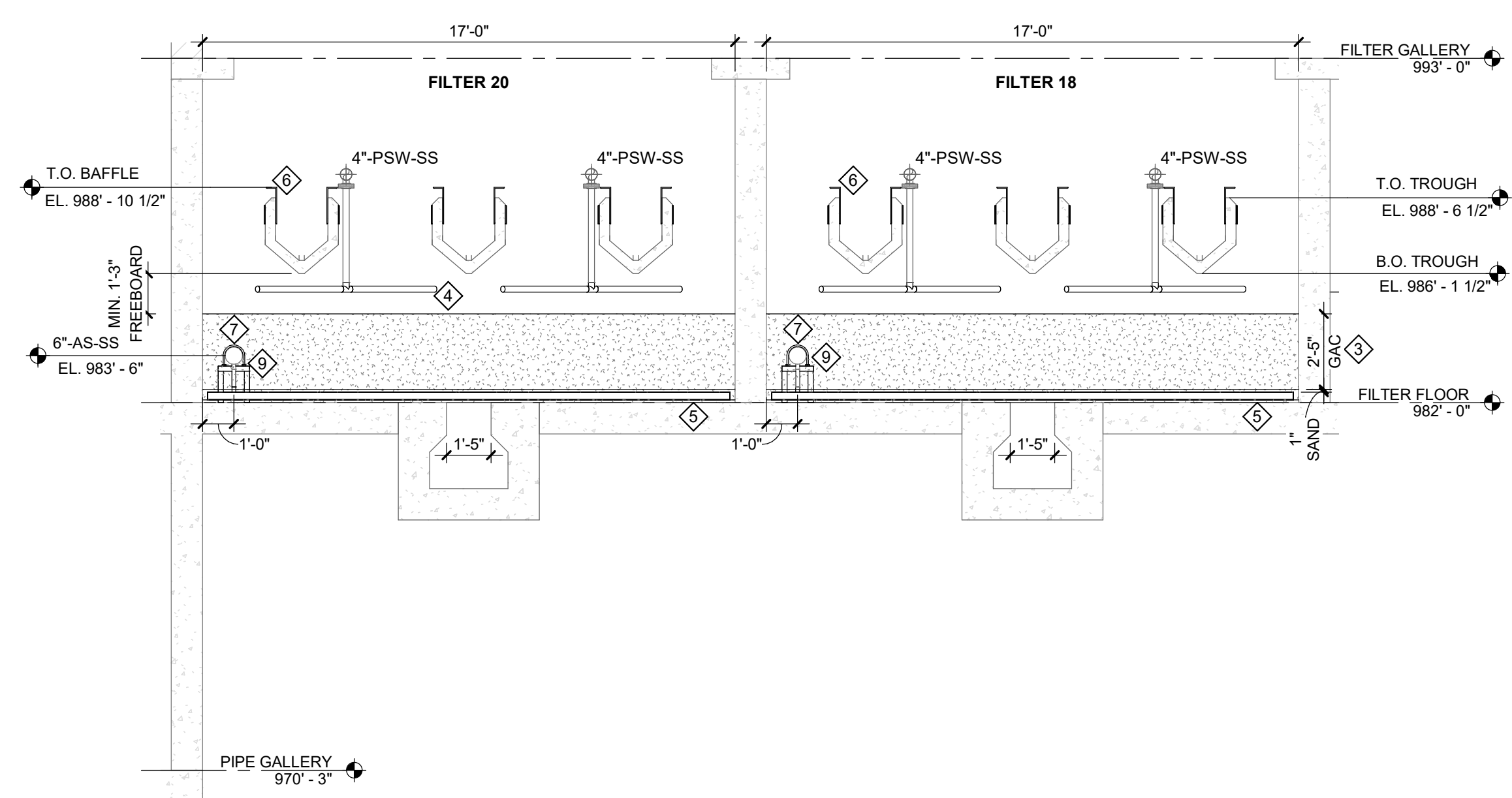


KEY NOTES

- 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 FILTER GAC TO BE FURNISHED AND INSTALLED BY FILTER GAC SUPPLIER. TYPICAL OF FILTER 18 AND FILTER 20.
- 4 REINSTALL SURFACE WASH ARMS. TYPICAL OF 6 PER FILTER. TYPICAL OF FILTER 18 AND FILTER 20.
- 5 INSTALL UNDERDRAIN LATERALS. SEE DETAILS.
- 6 INSTALL MEDIA RETENTION BAFFLE. SEE DETAIL.
- 7 INSTALL 6" SS AIR SCOUR HEADER. PROVIDED BY FILTER UNDERDRAIN SUPPLIER.
- 8 INSTALL BLIND FLANGE AT WALL PIPE.
- 9 INSTALL U-BOLT AIR SCOUR PIPE STAND. PROVIDED BY FILTER UNDERDRAIN SUPPLIER. (TYP)



2 FILTER 20 SECTION
 SCALE: 1/4" = 1'-0"



1 FILTER 18 AND 20 SECTION
 SCALE: 1/4" = 1'-0"

REVISIONS

6/3/2024 BIDS AND CONSTRUCTION
 Drawn By RS2
 Designer ANW
 Reviewer MTP
 Manager BP

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PROJECT NO.
 231370

SHEET NO.
P301

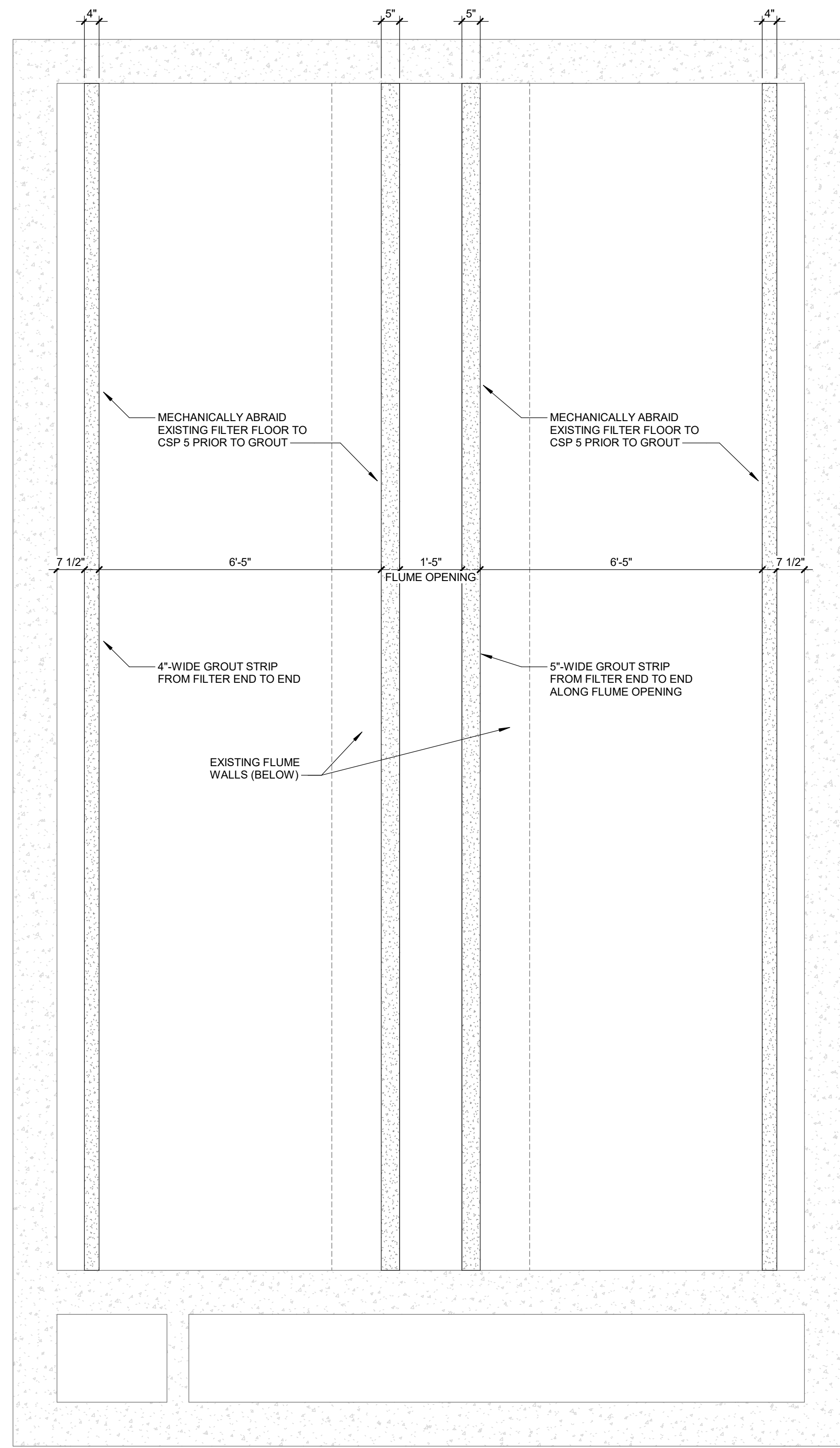
REVISIONS

6/3/2024 BIDS AND CONSTRUCTION
 Drawn By RS2
 Designer ANW
 Reviewer MTP
 Manager BP

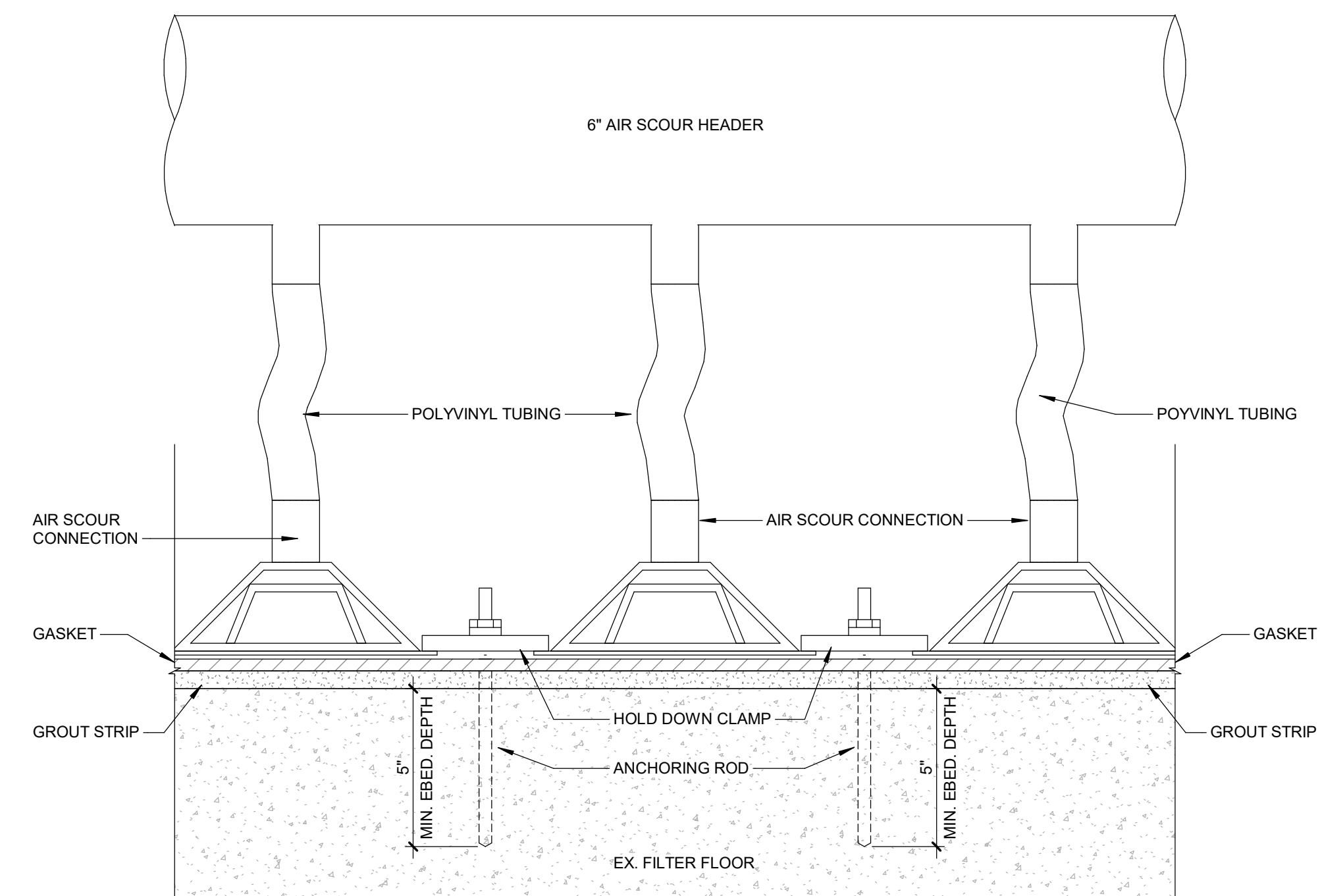
Hard copy is intended to be 24"x36" when plotted. Scale(s) indicated and graphic quality may not be accurate for any other size.

PROJECT NO.
 231370
 SHEET NO.

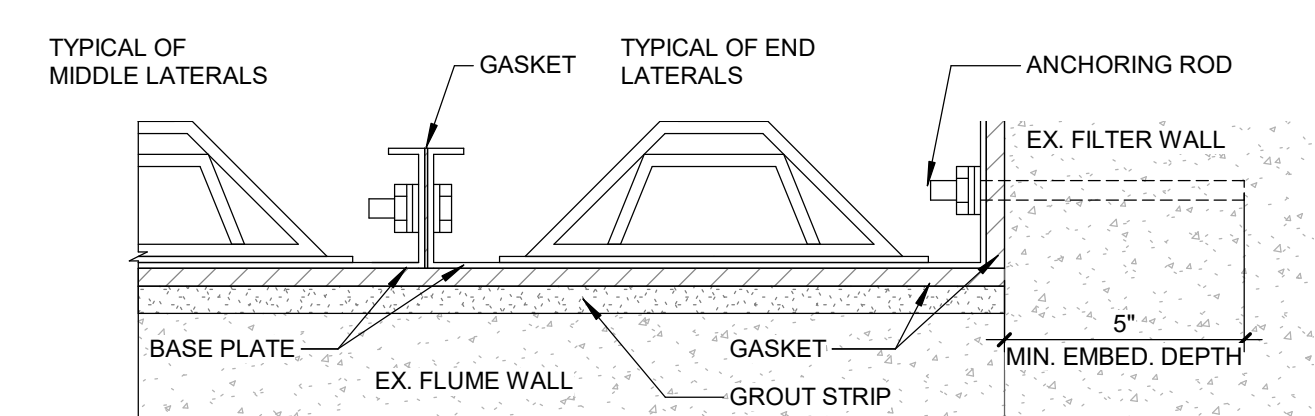
P401



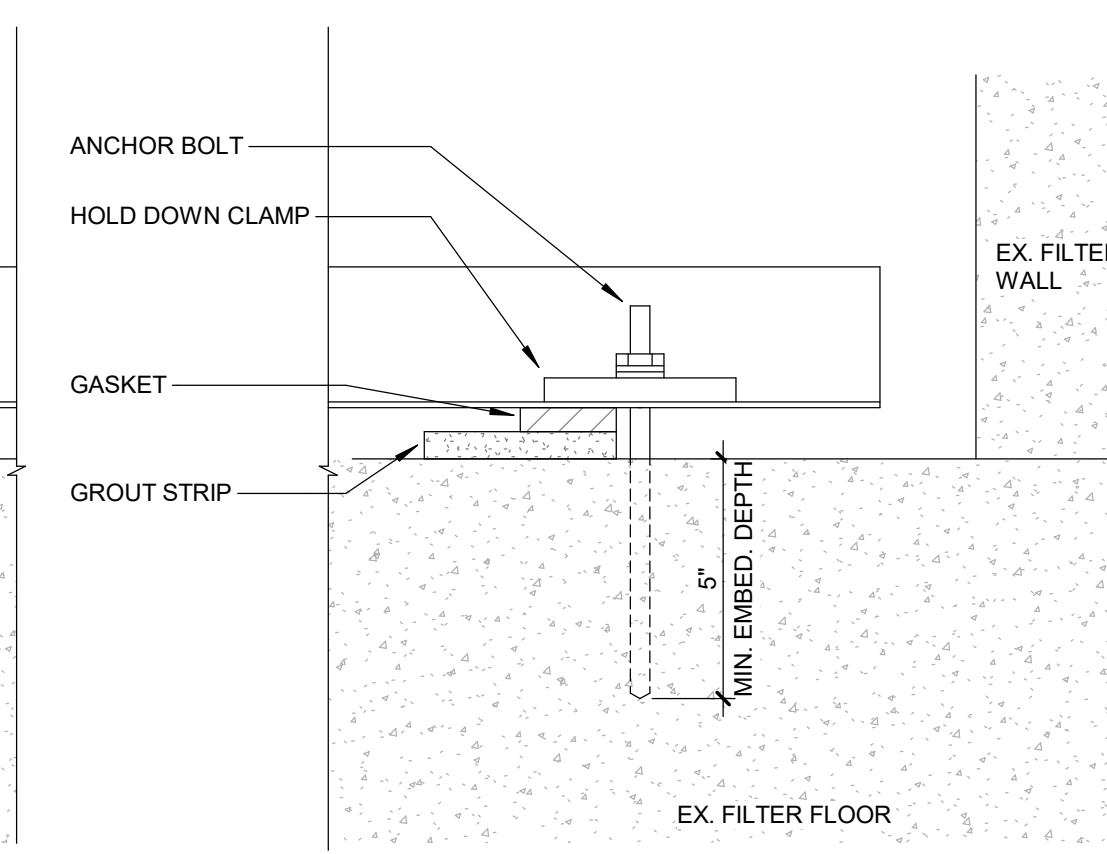
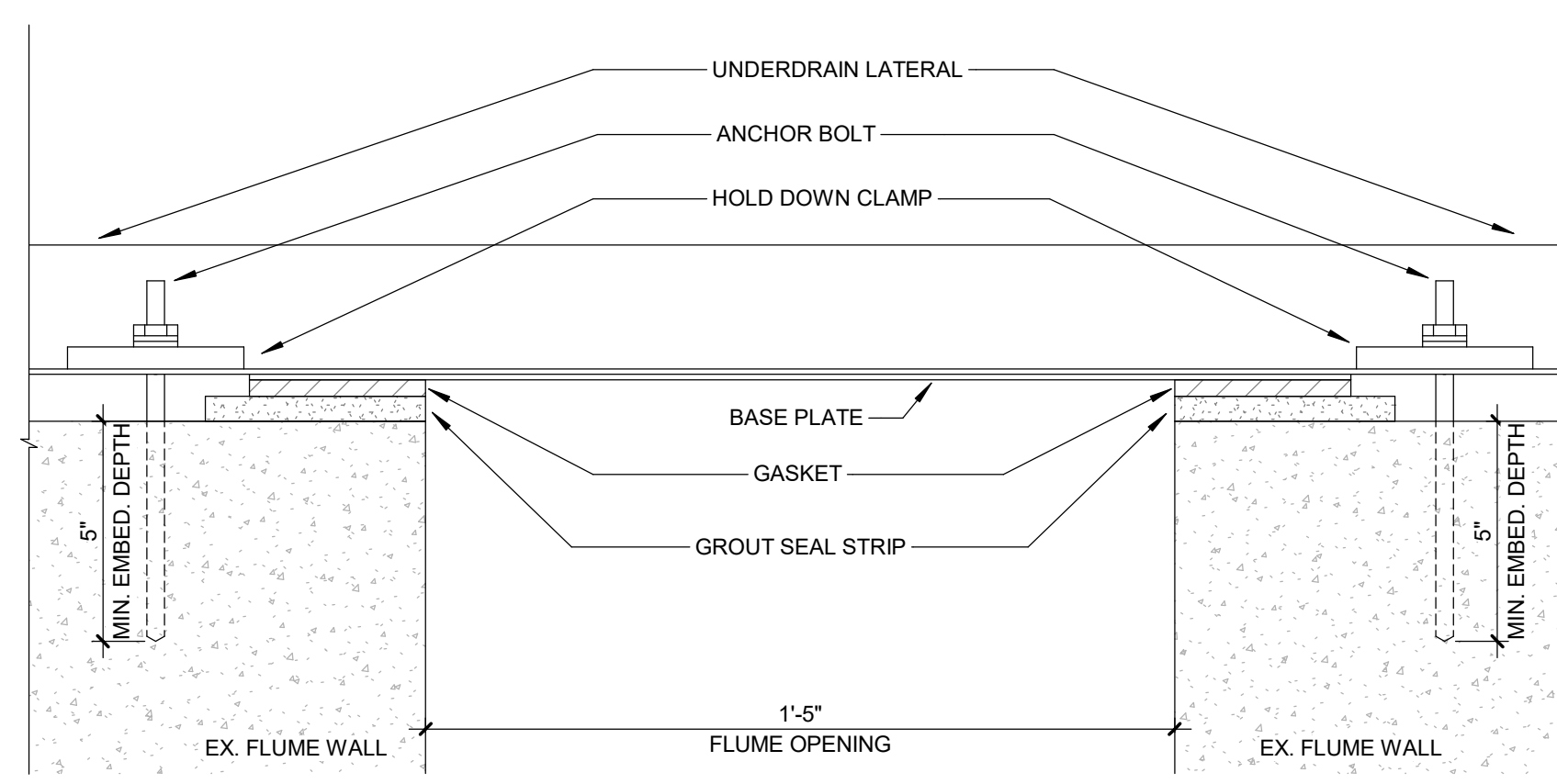
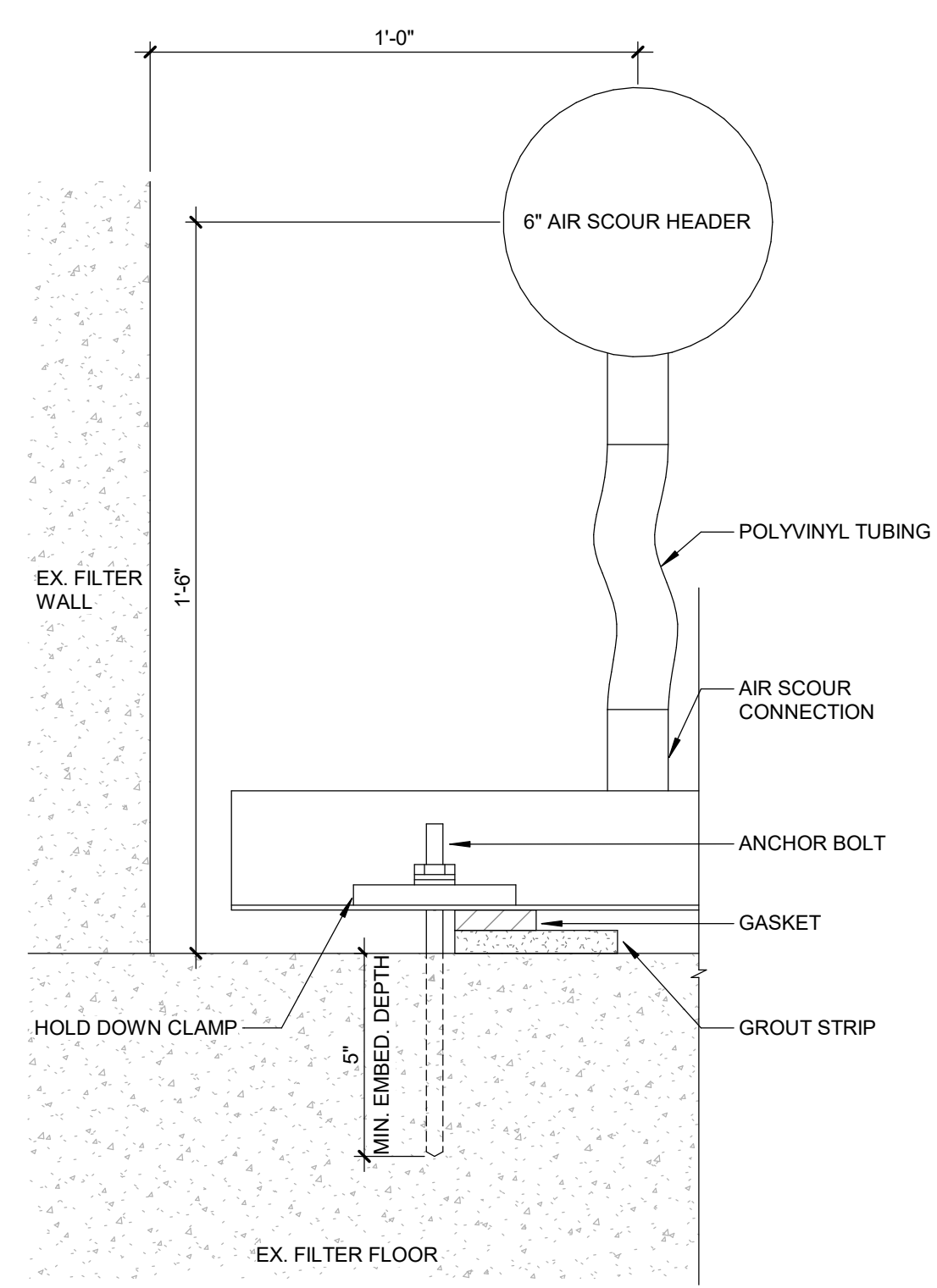
FILTER UNDERDRAIN GROUT DETAIL
 NO SCALE
 NOTE: PROVIDE LEVEL GROUT STRIP, MINIMUM THICKNESS OF 1/2"



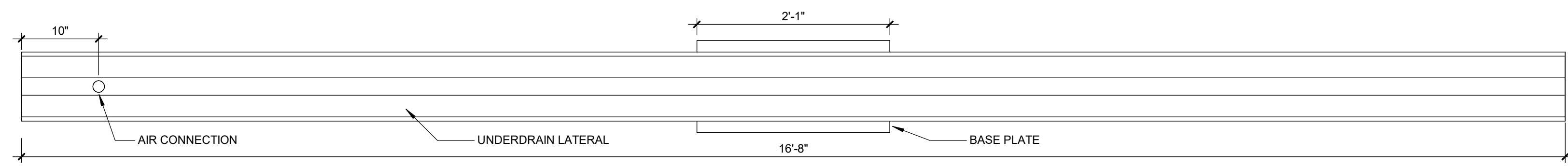
UNDERDRAIN ANCHORING DETAIL - END VIEW
 NO SCALE



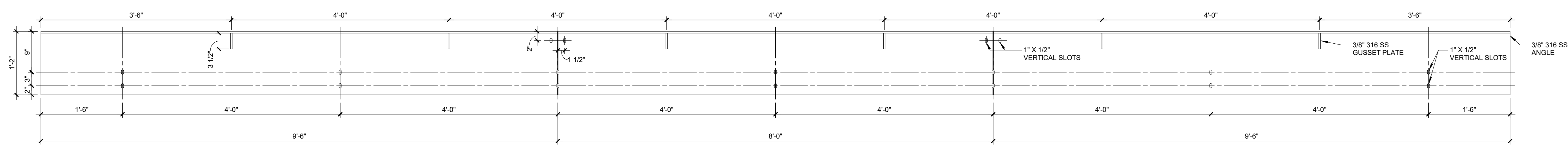
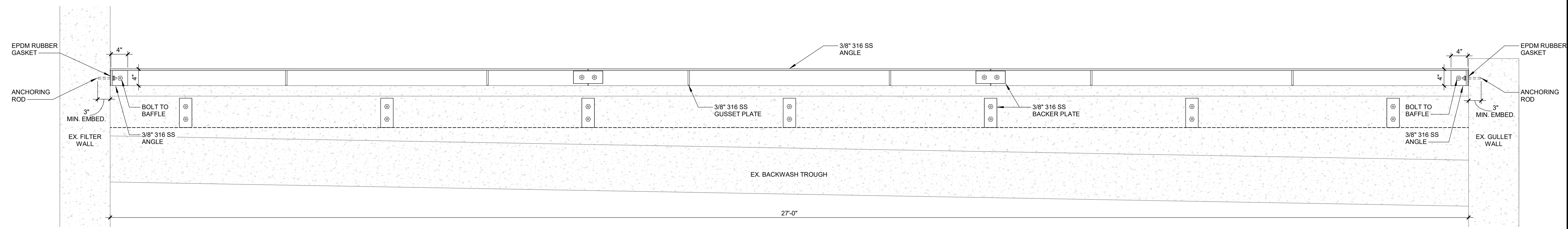
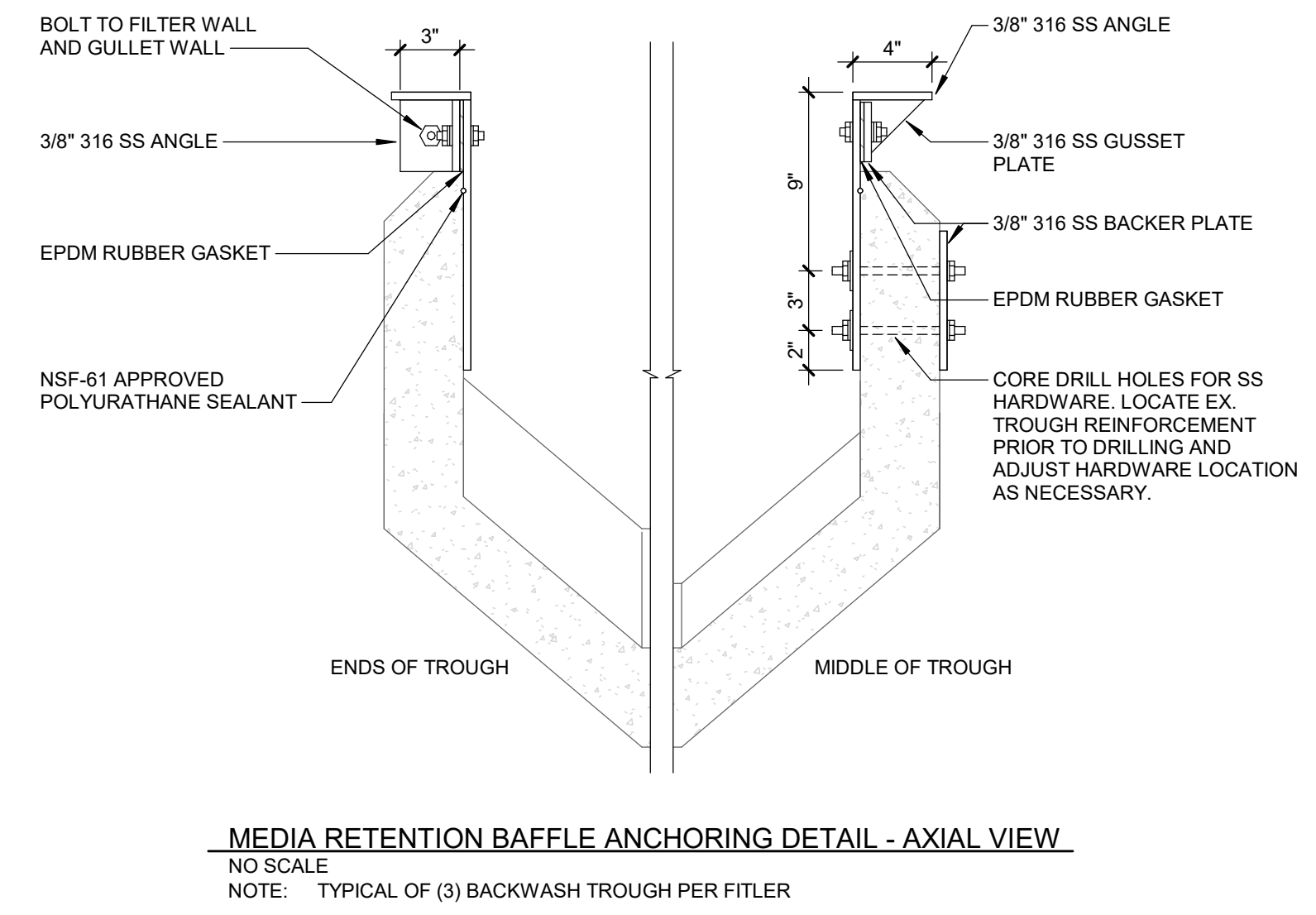
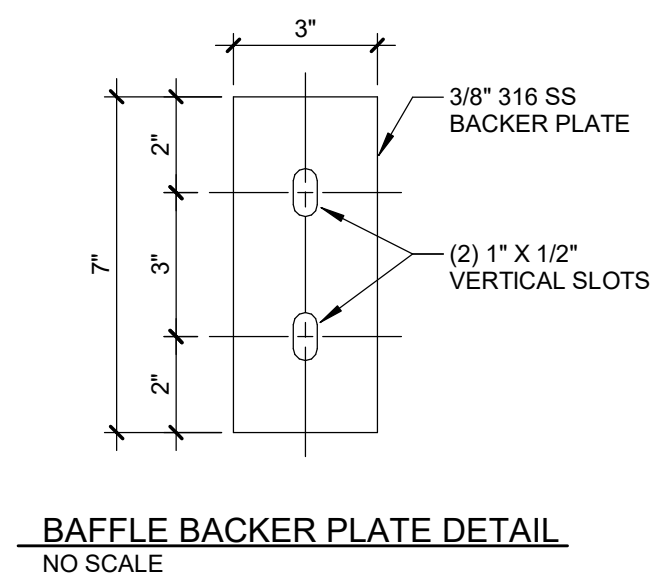
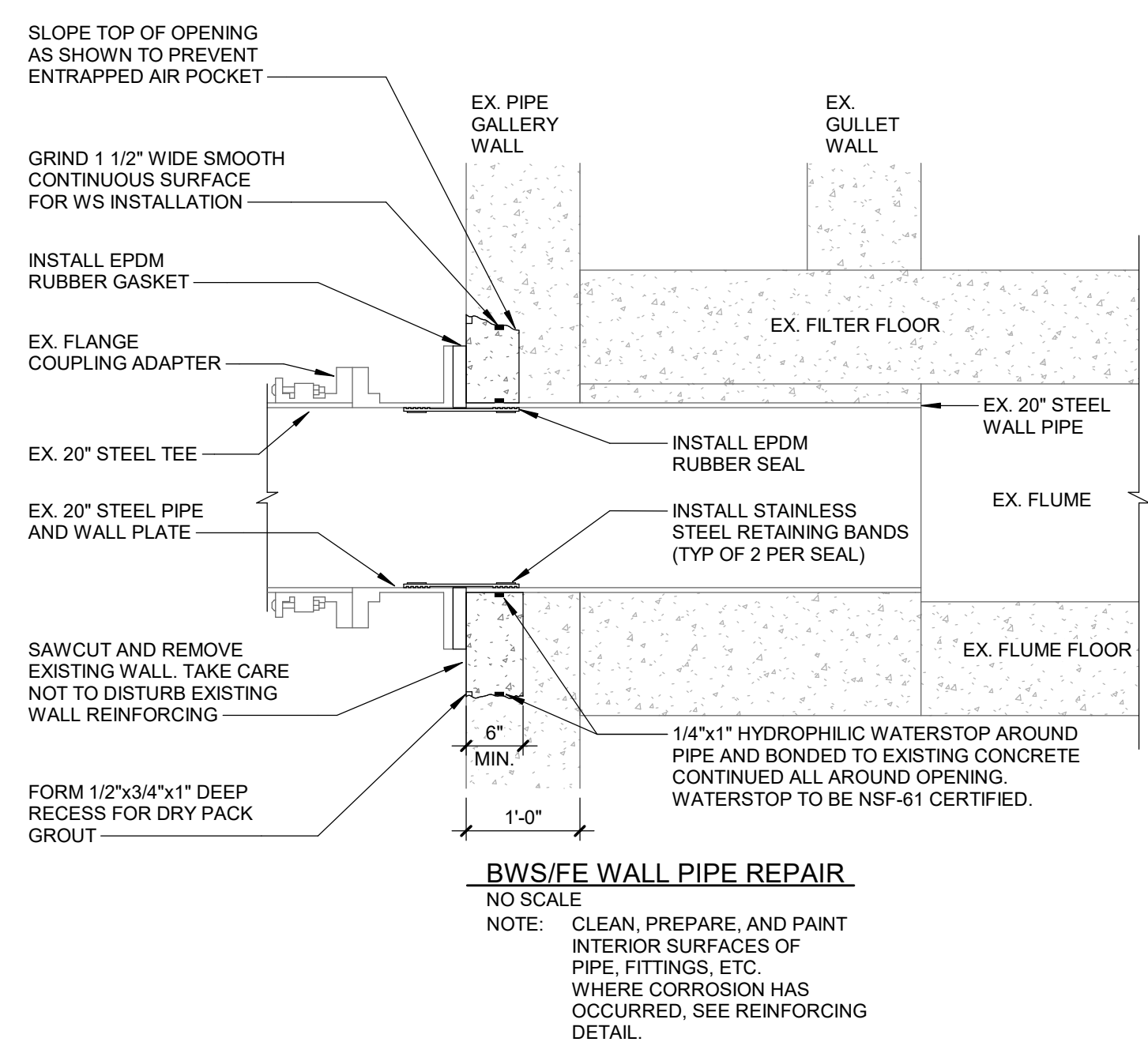
UNDERDRAIN ANCHORING DETAIL - MIDDLE VIEW
 NO SCALE



UNDERDRAIN ANCHORING DETAIL - SIDE VIEW
 NO SCALE



UNDERDRAIN 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

6/3/2024 BIDS AND CONSTRUCTION
 Drawn By ANW
 Designer ANW
 Reviewer Checker
 Manager BP

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PROJECT NO.
 231370
 SHEET NO.

P402