GENERAL NOTES:

1. THIS PLAN AND APPROVAL IS FOR DOMESTIC WASTE WATER ONLY.

SITE NOTES:

1. THE PROPERTY LINES SHOWN ON THIS PLAT WERE TAKEN FROM DOCUMENTS OF PUBLIC RECORDS AS WELL AS ACTUAL FIELD SURVEY PREPARED BY PENNONI ASSOCIATES.

2. ALL FACILITIES TO MEET ARTESIAN WASTEWATER MANAGEMENT INC. STANDARDS AND SPECIFICATIONS.

- 2. THE TOPOGRAPHY SHOWN ON THIS PLAN WAS TAKEN FROM A PLAN PREPARED BY PENNONI ASSOCIATES, VERTICAL DATUM NAVD88, HORIZONTAL DATUM NAD83.
- 3. SANITARY SEWER SERVICE FOR THE SUBDIVISION WILL BE HANDLED BY ARTESIAN WASTE WATER
- 4. WATER FOR THE SITE WILL BE PROVIDED BY ARTESIAN WATER COMPANY, INC...

AND SEDIMENT CONTROL MEASURES AS THEY DEEM NECESSARY.

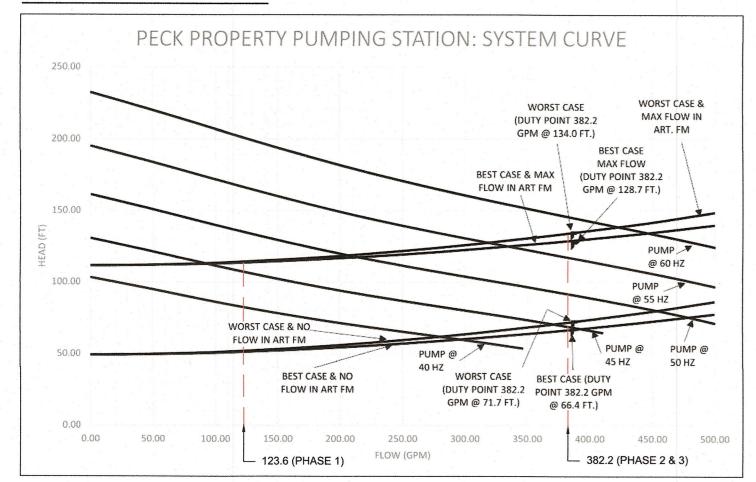
- 5. WATER AND SEWER MAINS SHALL HAVE A MINIMUM OF 10 FEET OF HORIZONTAL AND A MINIMUM OF 18 INCHES VERTICAL CLEARANCE BETWEEN THEM.
- 6. IF THE SITE CONTAINS WETLANDS CONFINED TO THE TAX DITCHES. ACTIVITIES WITHIN THESE WETLANDS MAY REQUIRE A PERMIT FROM THE U.S. ARMY CORPS OF ENGINEERS AND/OR THE STATE OF DELAWARE.
- 7. THE SITE IS LOCATED IN ZONE X BASED ON THE FEMA FLOOD INSURANCE RATE MAP NUMBER 10005C0310L, MAP REVISED JUNE 20, 2018 AND IS DETERMINED TO NOT BE INSIDE THE 500 YEAR
- 8. THE SUSSEX CONSERVATION DISTRICT RESERVES THE RIGHT TO ADD, DELETE OR MODIFY ANY EROSION
- 9. ALL DISTURBED AREAS WITHIN THE RIGHT-OF-WAY, BUT NOT IN PAVEMENT, SHALL BE TOPSOILED (6" MINIMUM), FERTILIZED AND SEEDED.
- 10. A 72 HOUR (MINIMUM) NOTICE SHALL BE GIVEN TO THE DELDOT DISTRICT PERMIT SUPERVISOR PRIOR TO
- STARTING ENTRANCE CONSTRUCTION.

 11. MISS UTILITY (811) OR 1-800-282-8555 SHALL BE NOTIFIED THREE (3) DAYS PRIOR TO EXCAVATION.
- 12. ALL SIGNING FOR MAINTENANCE OF TRAFFIC IS THE CONTRACTORS RESPONSIBILITY, AND SHALL FOLLOW THE GUIDELINES SHOWN IN "DELAWARE 2000 TRAFFIC CONTROLS FOR STREETS AND HIGHWAY CONSTRUCTION, MAINTENANCE, UTILITY, AND EMERGENCY OPERATIONS."
- 13. DAMAGE TO EXISTING SIGNS SHALL BE REPAIRED OR REPLACED AS PER THE "GUIDE FOR FABRICATION AND INSTALLATION OF TRAFFIC CONTROL DEVICES".
- 14. ALL PROPOSED FOREST BUFFERS ARE TO BE MAINTAINED BY THE CONTRACTOR.
- 15. ALL FIRE LANES, FIRE HYDRANTS AND FIRE DEPARTMENT CONNECTIONS SHALL BE MARKED IN ACCORDANCE WITH THE DELAWARE STATE FIRE PREVENTION REGULATIONS.

WASTEWATER FLOW GENERATION:

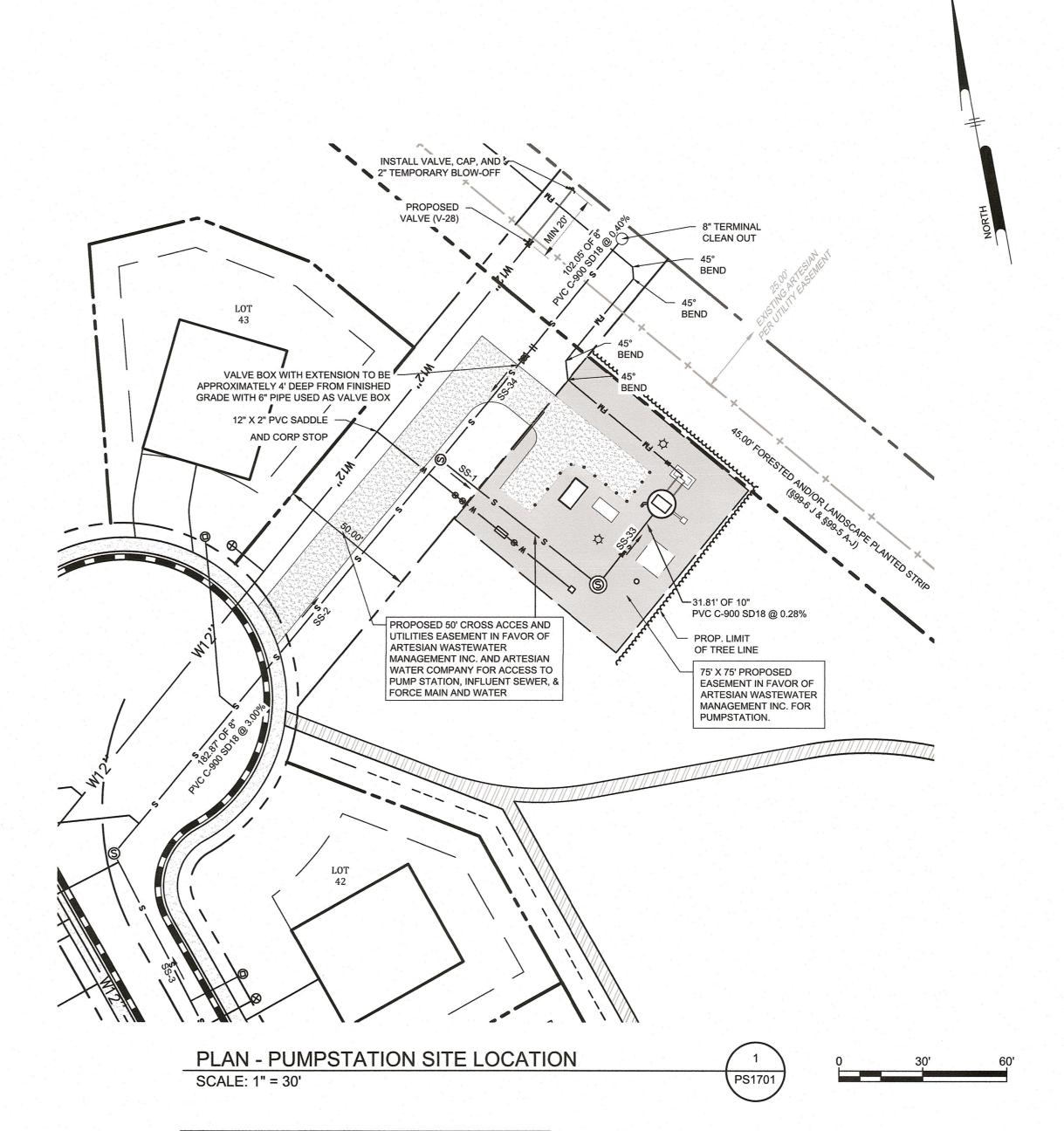
Peck Subdivision: Flow Generation						
		Phase 1 Peck Farm	Phase2 Mahoney 1	Phase 3 Mahoney 2	All Phases Combined	
Sub Division	units	Flow	Flow	Flow	Flow	
Houses (Peck)	128	30720			30720	gpd
Houses: (Maloney 1)	80		19200		19200	gpd
Houses (Maloney 2)	218			52320	52320	gpd
Clubhouse Peck 6500sf	4 edu @240	960			960	gpd
Clubhouse (Maloney 2)	4 edu @240			960	960	gpd
Infiltration (Peck)	6.4 miles	12800			12800	gpd
Infitration (Maloney, 1)	EST 4 miles		8000		8000	gpd
Infiltration (Maloney 2)	EST 10.9 Miles			21800	21800	gpd
	Total Daily flow	44480	27200	75080	146760	gpd
		30.9	18.9	52.1	101.9	gpm
Peak Hour Flow	factor 4.0/3.75	177920			550350	gpd
	Design Flow	123.6			382.2	gpm

SYSTEM CURVE:



SYSTEM EMERGENCY STORAGE:

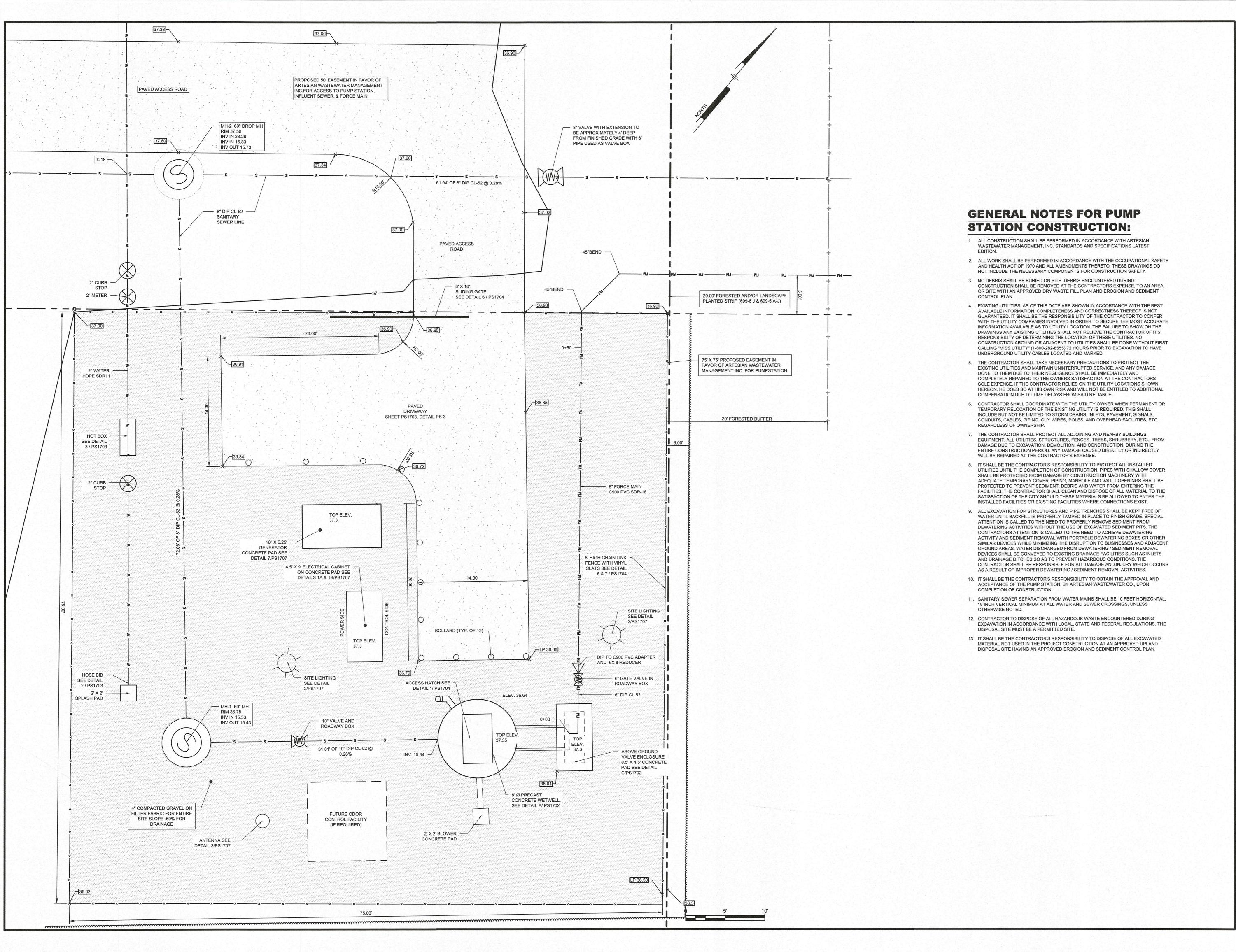
	SYSTEM EMERGENCY STORAGE						
	Stored Wastewater Elevation	Accumulated wetwell storage (gal)	Accumulated MH Vol (gal)	Accumulated pipe vol (gal)	Total stored Volume (gal)	Phase 1 Time (hours)	
	14	511	0	0	511	0.3	
-	16	1263	188	272	1723	0.9	
	18	2015	564	272	2851	1.5	
Section of the least	20	2767	940	272	3979	2.1	
	22	3519	1316	272	5107	2.7	
	24	4271	2140	2122	8533	4.6	
	26	5023	3362	4355	12740	6.9	
	28	5775	5524	8629	19928	10.7	
	30	6527	9378	13774	29679	16	
	32	7279	15112	15915	38306	20.7	
	34	8031	21316	15915	45262	24.4	



NOTE:

INFLUENT GRAVITY SEWER SHOWN ON SITE DEVELOPMENT PLANS
 EQUIPMENT PAD & WETWELL SLAB TO BE MINIMUM 5" ABOVE ADJACENT GRAVEL SURFACE

ALL DOCUMENTS PREPARED BY PENNONI ASSOCIATES ARE INSTRUMENTS OF SERVICE IN RESPECT OF THE PROJECT. THEY ARE NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR REUSE BY OWNER OR OTHERS ON THE EXTENSIONS OF THE PROJECT OR ON ANY OTHER PROJECT. ANY REUSE WITHOUT WRITTEN VERIFICATION OR ADAPTATION BY PENNONI ASSOCIATES FOR THE SPECIFIC PURPOSE INTENDED WILL BE AT OWNERS SOLE RISK AND WITHOUT LIABILITY OR LEGAL EXPOSURE TO PENNONI ASSOCIATES; AND OWNER ASSOCIATES FROM ALL CLAIMS, DAMAGES, LOSSES AN EXPENSES ARISING OUT OF OR RESULTING THEREFROM **RIBER22001** 03/03/2025 DRAWING SCALE AS SHOWN





PENNONI A

NO 20868

DISCREPANCIES BEFORE PRO

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PUMP STATION S

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EXPENSES ARISING OUT OF OR RESULTING THEREFROM

PROJECT RIBER22001

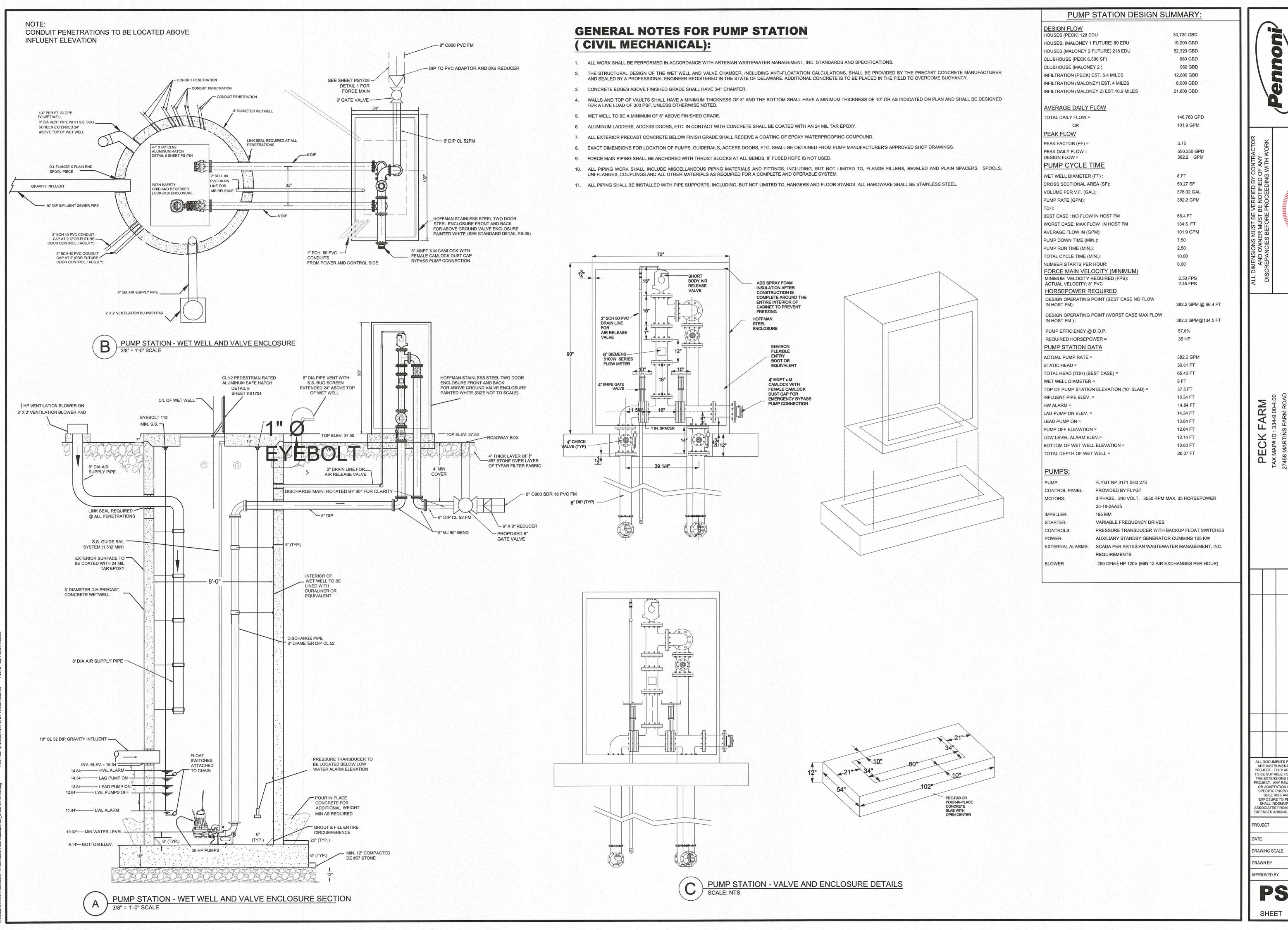
DATE 03/03/2025

DRAWING SCALE AS SHOWN

DRAWN BY

PS1701

SHEET 60 OF 74



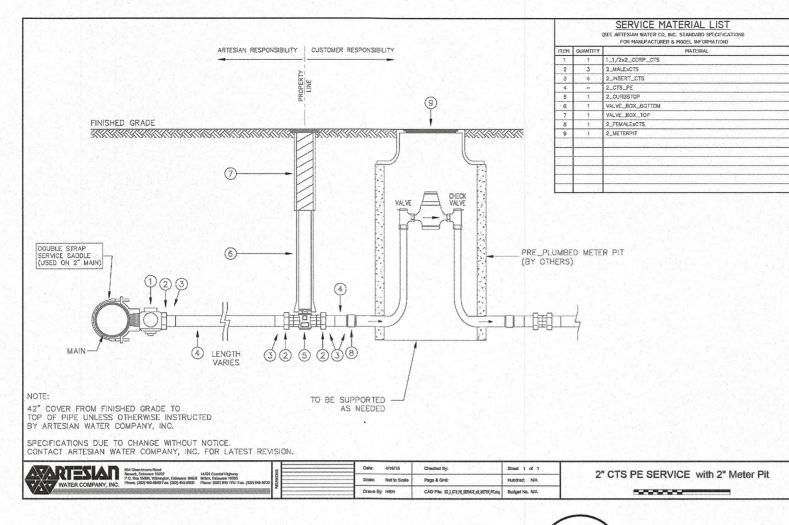


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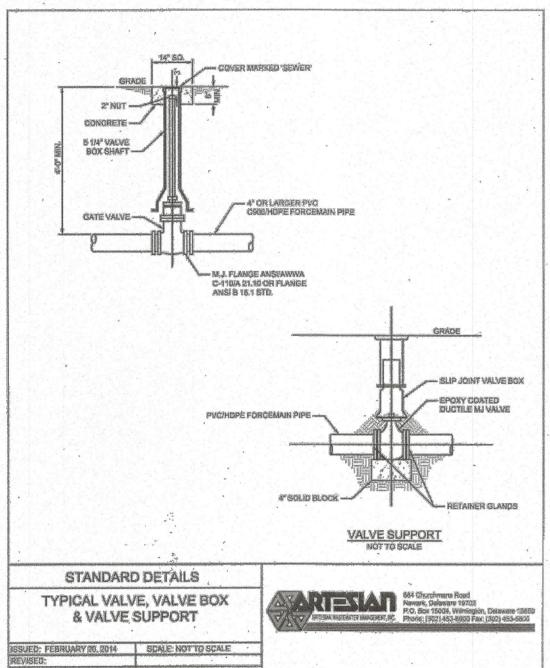
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RIBER22001 03/03/2025 AS SHOWN

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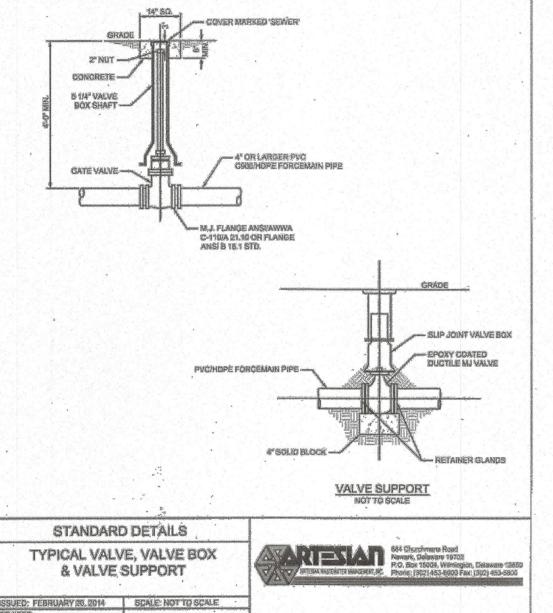




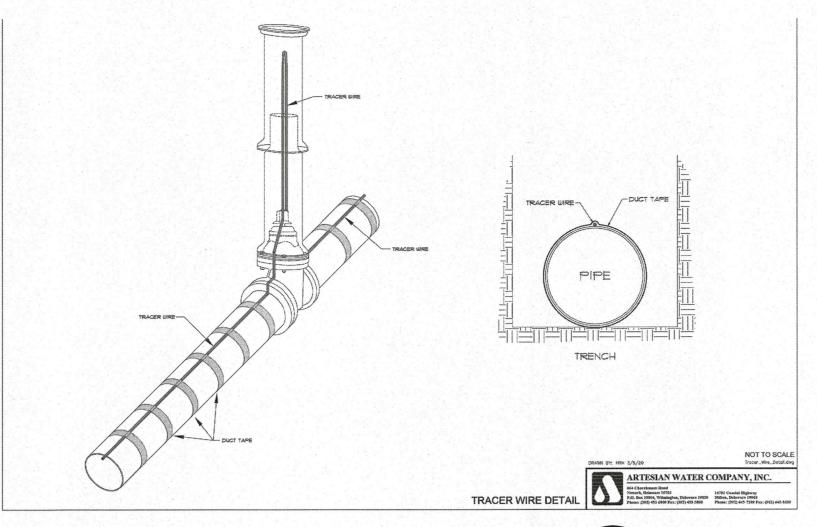


DETAIL- TYPICAL VALVE, VALVE BOX

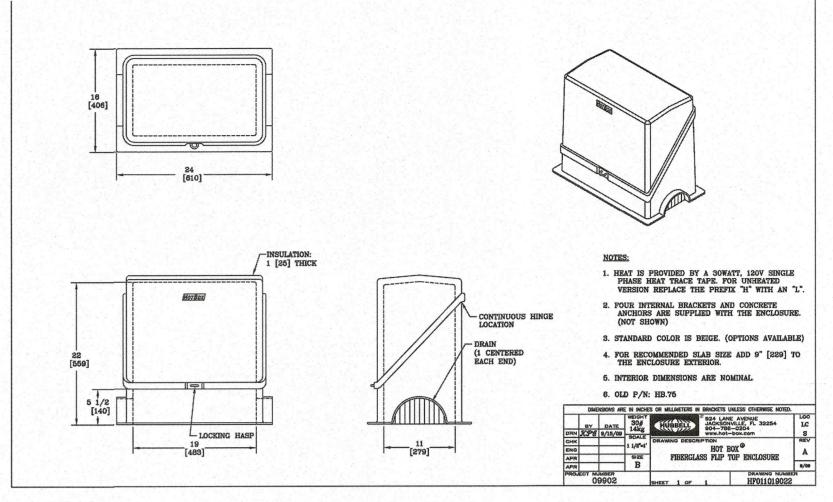
NOT TO SCALE & VALVE SUPPORT



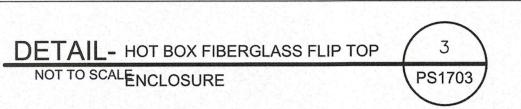
PS1703







NOT TO SCALENCLOSURE





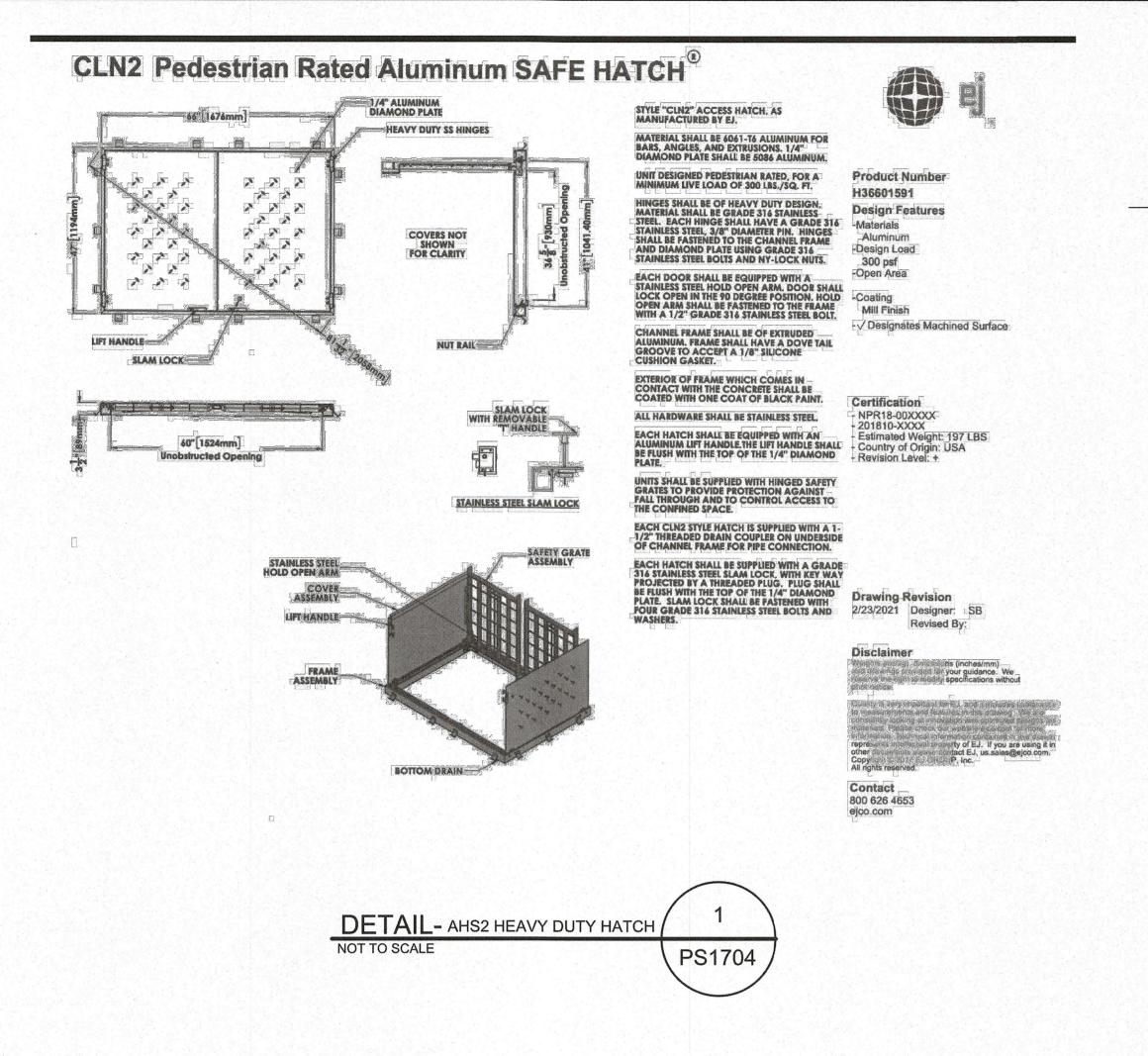
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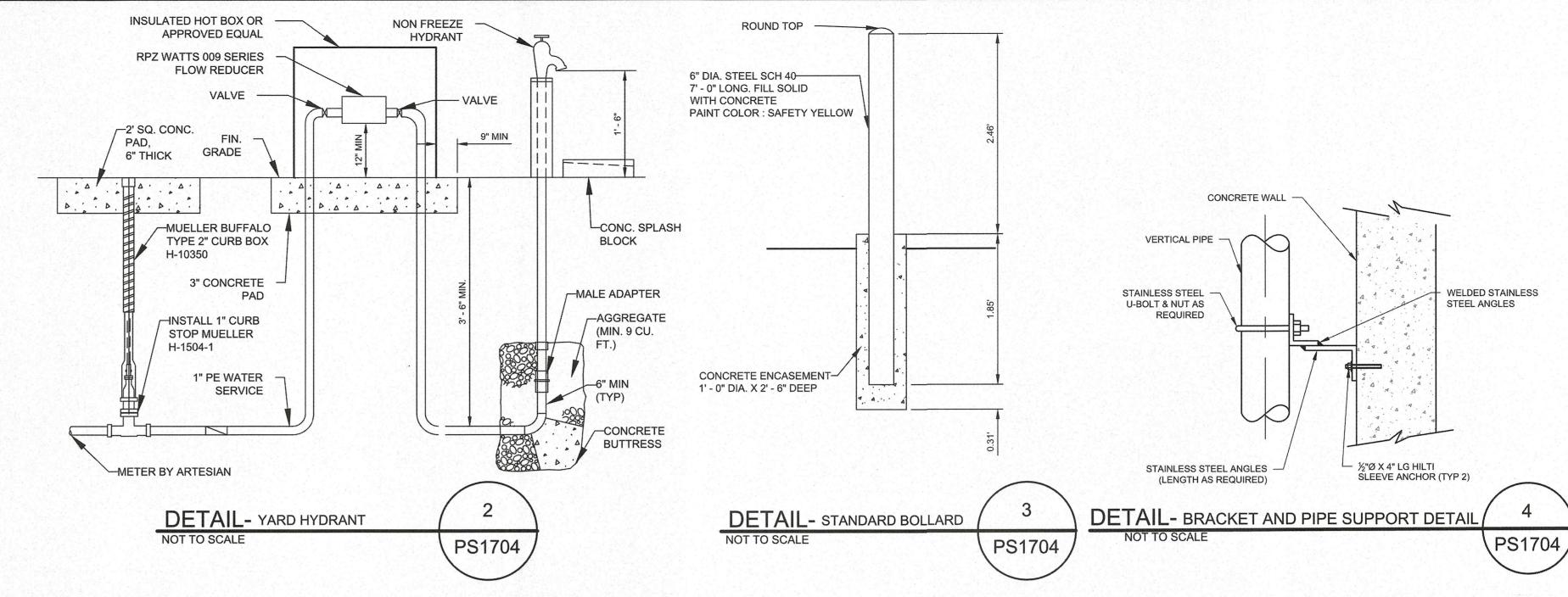
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		REVISED PER ARTESIAN COMMENTS	REVISED PER AWMI & AWC COMMENTS	REVISIONS
		7	-	NO.
		2025-09-11	2025-05-23	DATE

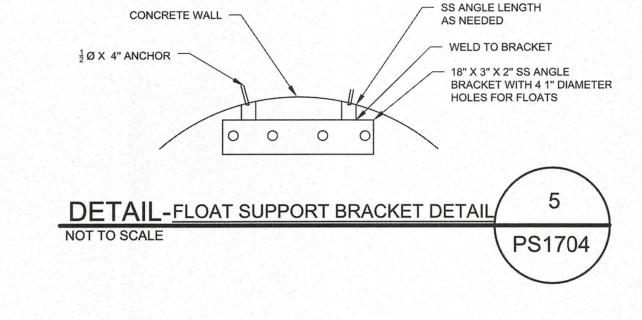
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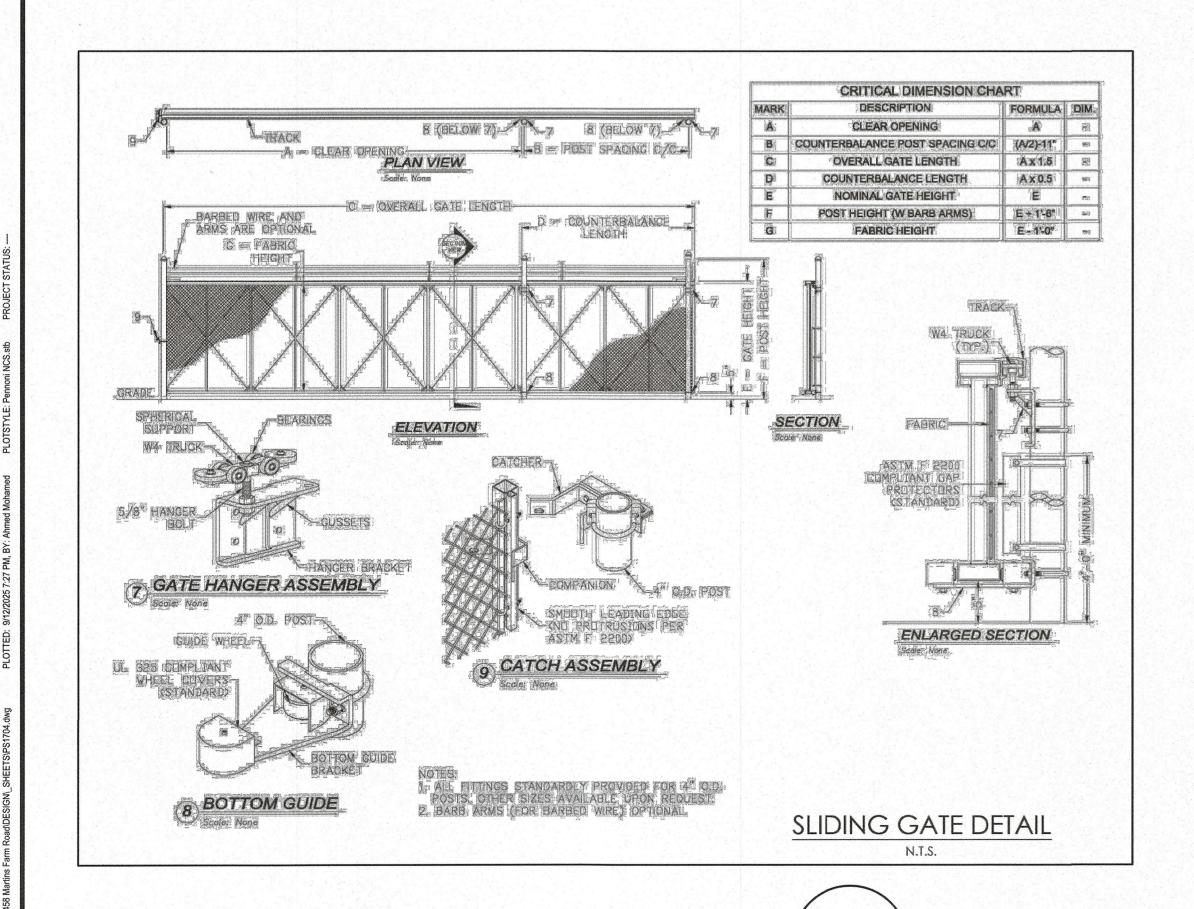
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SHEET 62 OF 74





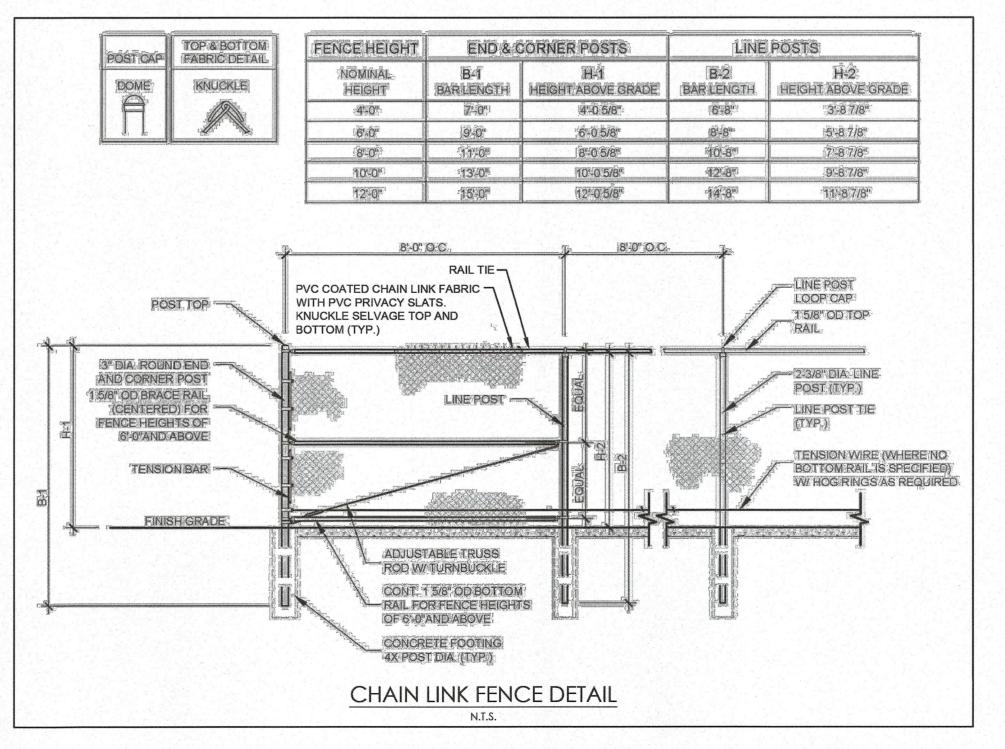




PS1704

DETAIL- 8' HIGH CHAINLINK FENCE SLIDING GATE

NOT TO SCALE

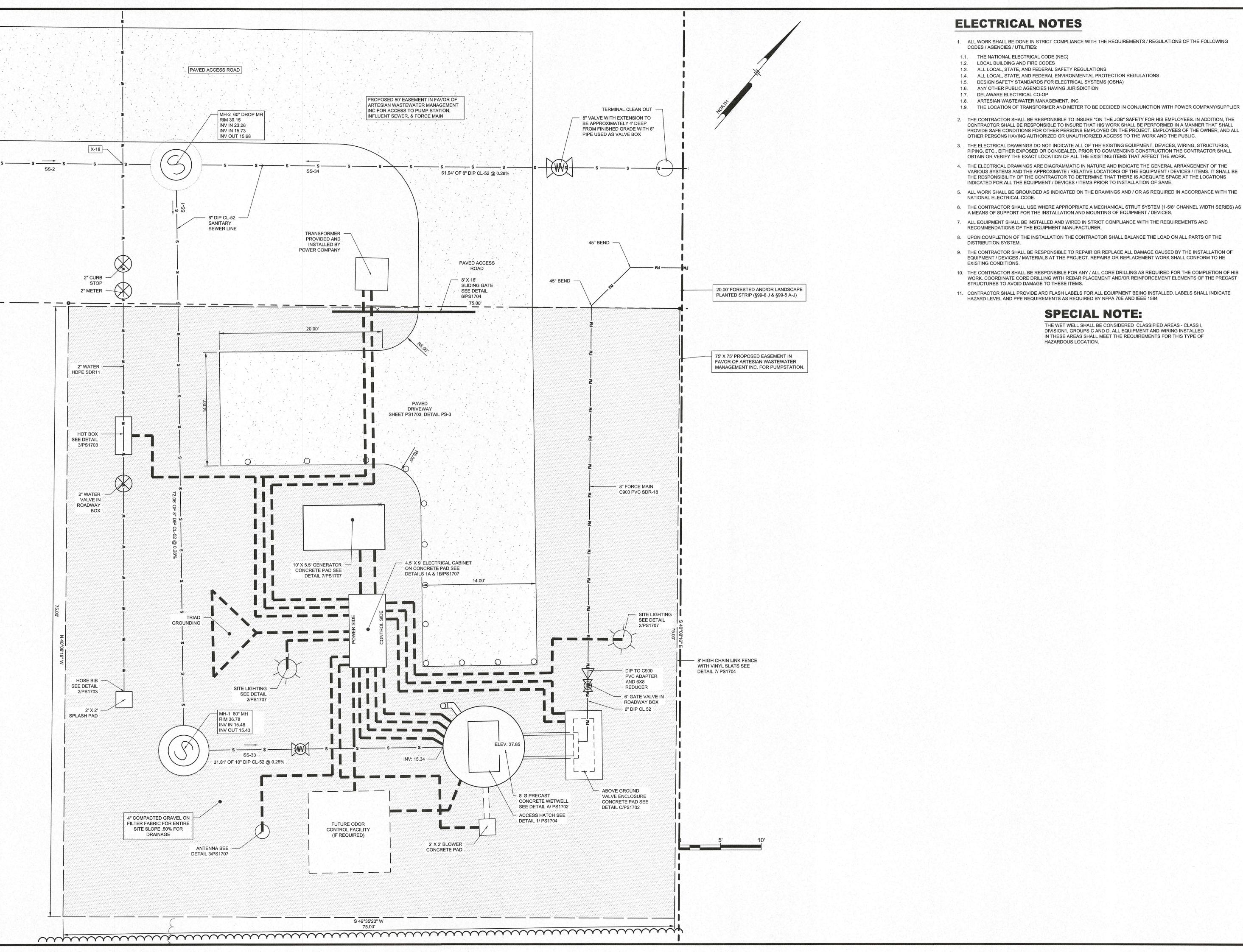




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ARISING OUT OF OR RESULTING THEREFROM. **RIBER22001** PROJECT 03/03/2025 DRAWING SCALE AS SHOWN TOU APPROVED BY

PS1704

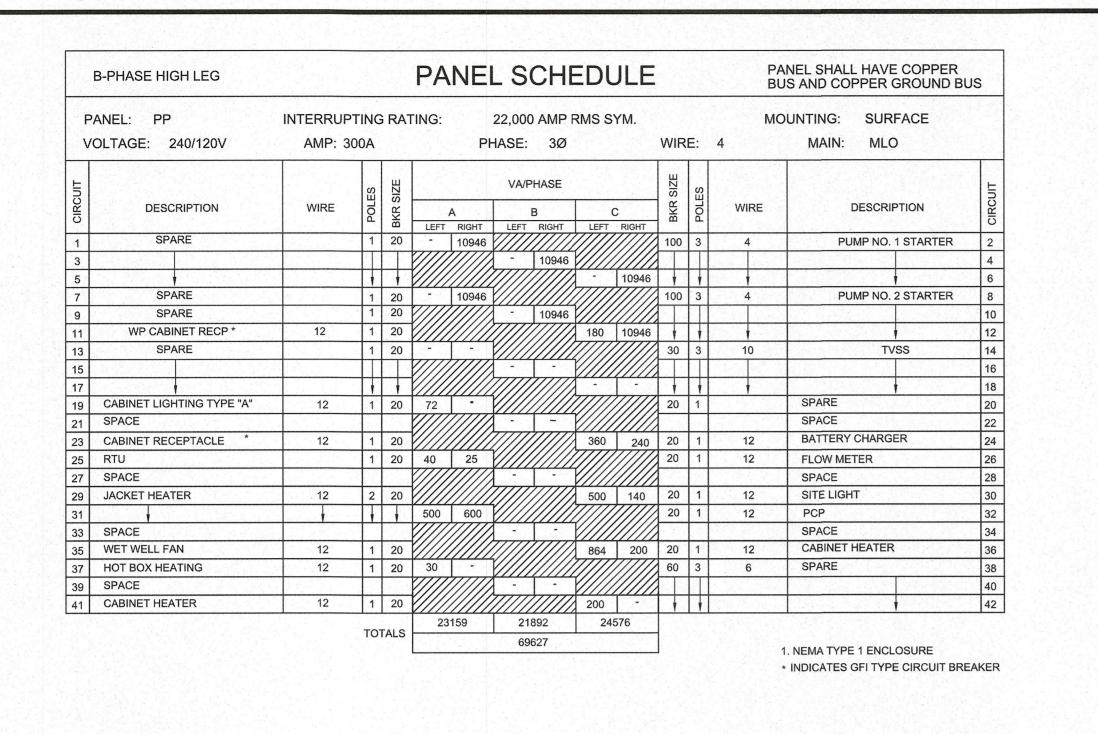
SHEET 63 OF 74





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RIBER22001 03/03/2025 DRAWING SCALE AS SHOWN TOU APPROVED BY



CR1

FAULT (FROM PCP) -

TOPCP

NOT TO SCALE

- RUN (FROM PCP)

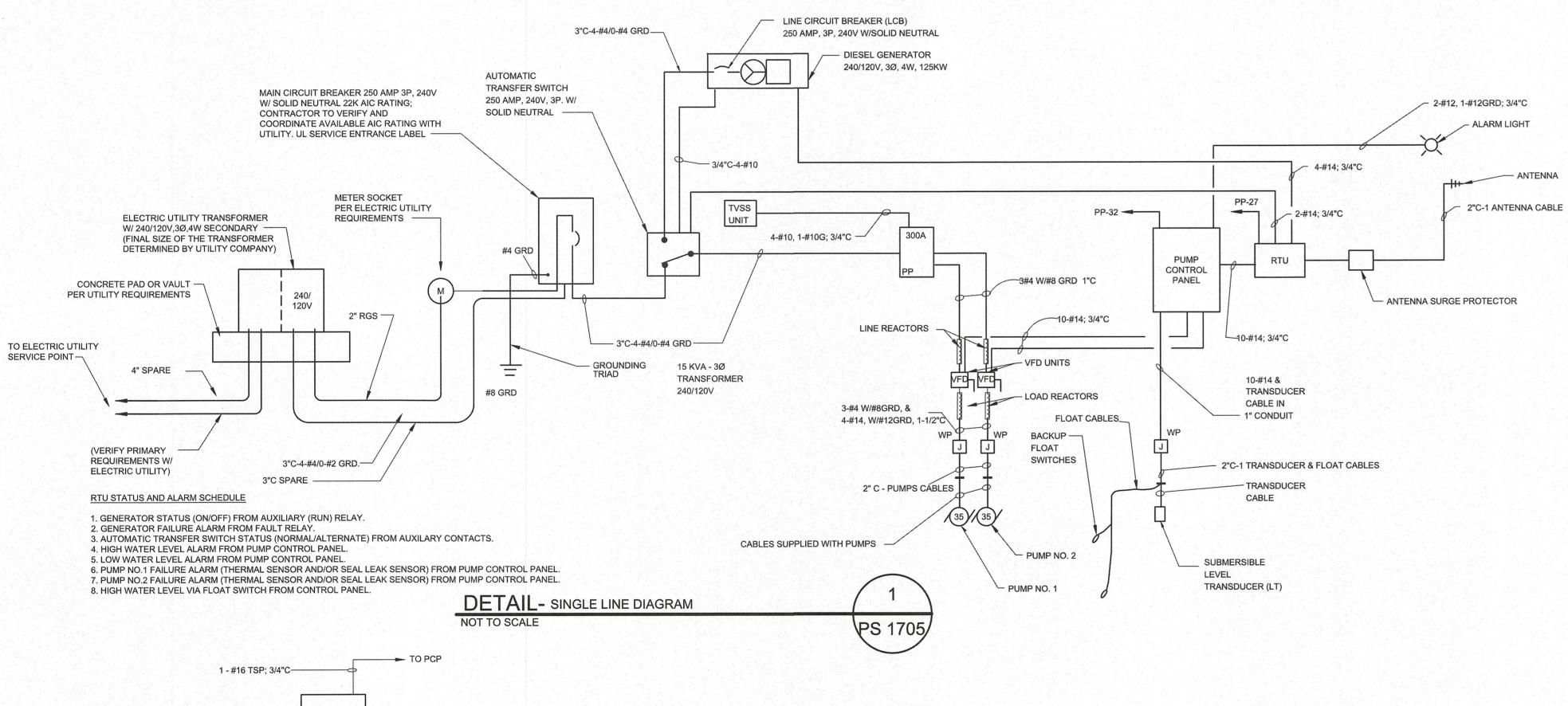
DETAIL- PUMP ENCLOSED VFD UNIT ELEMENTARY DIAGRAM

VARIABLE FREQUENCY DRIVE (VFD) 35 HP, 240V, 3Ø

R2 (ON SOFT STARTER)

R1 (ON SOFT STARTER)

Ø FAULT



		LIGHTI	NG FIXTURE	: AND POLE	SCHEDULE		
TVDE	MANUFACTURER/CATALOG NO.	LAMP			MOUNTING		REMARKS
TYPE		NO.	TYPE	WATT	TYPE	HEIGHT	THE WITH CO
Α	COLUMBIA FEM L48 MD MVOLT 35K E10WMCP	4	LED	18	SURFACE	TOP OF CABINET	120 VOLT ONE IN EACH FOR POWER AND CONTROL CABINET
В	HUBBELL/ SPAULDING RAR1-160L-70-4K7-4W-UNV-ASQU-DBT-7PR-TL SSA-S-14-40-A-1-S2-DB	2	LED	70	POLE	14'-0"	MOUNTING ARM; ALL ITEMS SHALL HAVE DARK BRONZE FINISH 120 VOLT
С	SPAULDING SSA-S-20-40-B-OT-DB	N/A	N/A	N/A	POLE	20'-0"	ANTENNA MTG POLE; DARK BRONZE FINISH W/ POLE CAP

GENERATOR LOAD CALCULATIONS

PENNONI ASSOC	IATES, I	NC.			JOB NO	RIBER2200	1		
CONSULTING ENGINEE			•						
		50000000000000000000000000000000000000			SHEET NO.	1	of	1	
PROJECT	PECK F	ARM	\$-,c	annana anennenananna ankerokar	s 4.67 Backet Art (Park Brien with Activities with Activities (Inc.)	######################################		<u> </u>	
					DATE:	24-Apr-25		eter et a de a transfer et a de actuelle et de actuelle et a de actuelle et de actuelle et de actuelle et de a	
SUBJECT	PECK FAI	RM SUBDIV	ISION	keerdi van is van di seerden een een van de van de van de van de van de van de verdeere een de verdeere een de			g and an invade and anging the first		
	20.000.000.000.000.000.000.000.000.000.				BY:	SPS			
ida kanangan dan kanangan kangangan penganak menjada da pengangan pengan dan mengangan pengan berapa dan			" 1.732=3 "						
<u>ITEM</u>	VOLTS	AMPS	PHASE	<u>VA</u>	<u></u>	QTY	NOTE	TOTAL	
	700 Marie Marie St. 500 St. 500 St. 500 St.	W. COL COL SIL HAMMON W. W. W. PR. PR.							
Pump 1&2	240	79	1.732	32838	35 HP	2	NEMA-J	65676	
Lights "A"	120	0.15	1	18.0		4	Cabinets	72	
Lights "B"	120	0.58	1::	69.6		2	Site	140	
Receptacles	120	1.5	1	180.0		3		540	
PCP	120	5.0	1	600.0		1		600	
RTU	120	0.33		40.0		1		40	
Jkt Htr	240	4.17	1	1000.0	1KW	1	Genset	1000	
Batt Chgr	120	2.0	1	240.0		1	Genset	240	
FM/SC	120	0.21	1	25.0		1	Flowmeter	25	
Cabinet Heater	120	1.67	1	200.0	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	2	Cabinets	400	
WW Supply Fan	120	7.2	1	864.0	1/3HP	1	Wet Well	864	
Hot Box Heat Trace	120	0.25		30.0		1		30	
olivas jaivas las aras valvas paras elementar	Connect	ted Load	in VA					69627	
transport of the control to invasion and an elementary to the design of the control to the contr	Santone and the second	group, accessors of a popularity of bigging being	V-3Phase		ioni anglesioni antara				45
Base Load=	3951	9.5A	***************************************				*****		***************************************
Pump 1 Load=	32838		387.30LRA	airi ini kanada kan					***************************************
Pump 2 Load=	32838	Barrier and the science of the science of	387.30LRA		ante proprieta en la carracte anta ante a ser ante ante ante ante ante ante ante ante				
Generator Size	125KW	156KVA	at 0.8PF	AMP			*******************************		

ELECTRICAL ABBREVIATIONS

A, AMP	AMPERE	MFR	MANUFACTURER
ATD	AUTOMATIC TELEPHONE DIALER	MLO	MAIN LUG ONLY
ATS	AUTOMATIC TRANSFER SWITCH	ОС	ON CENTER
BC	BATTERY CHARGER	Р	POLE
C, CND	CONDUIT	PCP	PUMP CONTROL PANEL
CCR	CIRCULAR CHART RECORDER	PF	POWER FACTOR
СКТ	CIRCUIT	PP	POWER PANEL
CONC	CONCRETE	RECP	RECEPTACLE
CPT	CONTROL POWER TRANSFORMER	RTM	RUNNING TIME METER
ELEC	ELECTRICAL	RTU	REMOTE TELEMETRY UNIT
FLUOR	FLUORESCENT	sc	SIGNAL CONVERTER
G, GRD	GROUND GEN GENERATOR	Т	TRANSFORMER
GFI	GROUND FAULT CIRCUIT INTERRUPTER	TSP	TWISTED SHIELDED PAIR
НОА	HAND-OFF-AUTOMATIC	TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
HP	HORSEPOWER HP	UL	UNDERWRITERS LABORATORIES
HPS	HIGH PRESSURE SODIUM	V	VOLT
J, JB	JUNCTION BOX	VA	VOLT AMPERES
KVA	KILOVOLT AMPERES	VFD	VARIABLE FREQUENCY DRIVE
KW	KILOWATT	W	WATT, WIRE
LP	LIGHTING PANELBOARD	W/	WITH
М	METER	W/W	WIREWAY
MCB	MAIN CIRCUIT BREAKER	WP	WEATHERPROOF
		XP	EXPLOSION PROOF

ELECTRICAL LEGEND

	ELECTRICAL	LEGEND	
Aa	LED LIGHTING FIXTURE UPPER CASE LETTER DENOTES TYPE IN SCHEDULE, LOWER CASE LETTER DENOTES SWITCH LEG		EXPOSED CONDUIT
⊖WP GFI	DUPLEX RECEPTACLE, 120V, 20A	1	CONDUIT SEAL
\$ k	TOGGLE SWITCH, 120V, 20A, LOWER CASE LETTER DENOTES FIXTURES TO BE SWITCHED	•	GROUND ROD
/10/	MOTOR, NUMBER DENOTES HP		GROUND CONDUCTOR
JB	JUNCTION BOX	(FE)	FIRE EXTINGUISHER
ØE	DIESEL GENERATOR	Ţ	GROUND CONNECTION
<u> </u>	WIRING, ARROW INDICATES HOMERUN TO PANEL	K	TELEPHONE OUTLET
8	NUMBER "8" INDICATES CIRCUIT	\boxtimes_{1}	COMBINATION MOTOR STARTER
	CIRCUIT BREAKER		DISCONNECT SWITCH
	METER		ELECTRIC LINES
7.	AUTOMATIC TRANSFER SWITCH		TELEPHONE LINES
Ø	PHASE, DIAMETER	—— нт ——	HEAT TRACE
	CONTACT	VFD	VARIABLE FREQUENCY DRIVE
Q	PILOT LIGHT; R = RED, G = GREEN		
8	EXTERNAL WIRING TERMINAL		



PENNONI ASSC 18072 David

BAEME LAST THINKS OF THE STATE OF THE STATE

RILTON, DE 19968

RICAL DETAILS

DEVELOPMENT, LLC

ELECTRICAL C RIBERA DEVELOPN 8684 VETERANS HIGHWAY

ASM

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PROJECT. THEY ARE NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR REUSE BY OWNER OR OTHERS ON THE EXTENSIONS OF THE PROJECT OR ON ANY OTHER PROJECT. ANY REUSE WITHOUT WRITTEN VERIFICATION OR ADAPTATION BY PENNONI ASSOCIATES FOR THE SPECIFIC PURPOSE INTENDED WILL BE AT OWNERS SOLE RISK AND WITHOUT LIABILITY OR LEGAL EXPOSURE TO PENNONI ASSOCIATE; AND OWNER SHALL INDEMNIFY AND HOLD HARMLESS PENNONI ASSOCIATES FROM ALL CLAIMS, DAMAGES, LOSSES AND EXPENSES ARISING OUT OF OR RESULTING THEREFROM.

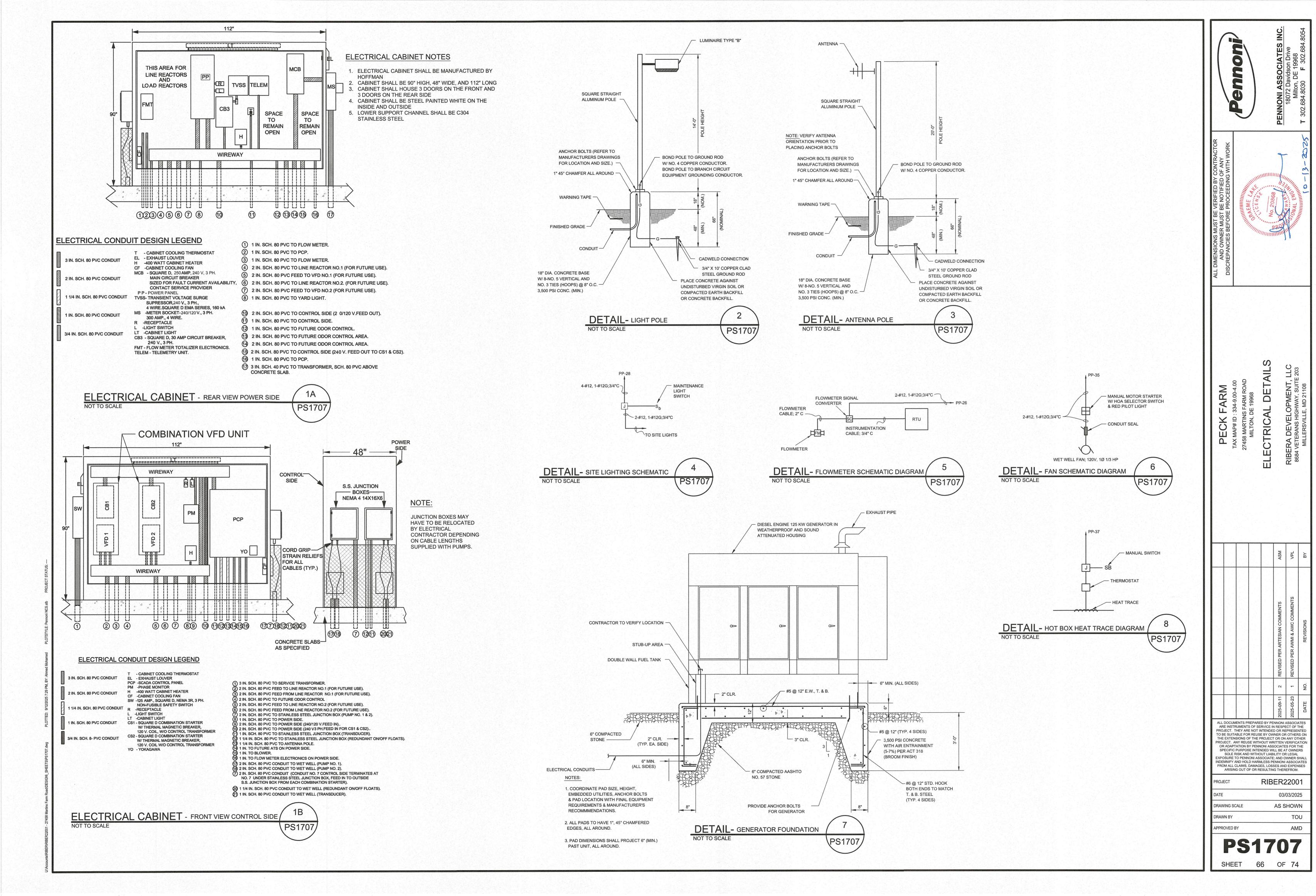
PROJECT

RIBER22001

DATE 03/03/2025
DRAWING SCALE AS SHOWN
DRAWN BY TOU

PS1706

APPROVED BY



ELECTRICITY SPECIFICATIONS:

A. CONDUIT AND FITTINGS

- 2. PVC EXTERNALLY-COATED CONDUIT: NEMA RN 1; RIGID STEEL CONDUIT WITH EXTERNAL 40 MIL PVC COATING AND INTERNAL GALVANIZED
- PVC SCHEDULE 80 CONDUIT
- FITTINGS AND CONDUIT BODIES: ANSI/NEMA FB1; MATERIALS TO MATCH CONDUIT, ALL CONNECTIONS SHALL BE THREADED. LIQUIDTIGHT FLEXIBLE METAL CONDUIT: FLEXIBLE METAL CONDUIT WITH PVC JACKET.
- CONDUIT CLAMPS, STRAPS, AND SUPPORTS: STEEL OR MALLEABLE IRON, FINISH TO MATCH CONDUIT. SIZE CONDUIT FOR CONDUCTOR TYPE INSTALLED OR FOR TYPE THWN CONDUCTORS, WHICHEVER INCH MINIMUM SIZE. 3/4 IS LARGER; ARRANGE CONDUIT TO MAINTAIN ACCESSIBILITY AND PRESENT A NEAT APPEARANCE.
- 9. ROUTE EXPOSED CONDUIT PARALLEL AND PERPENDICULAR TO ELECTRICAL EQUIPMENT RACK AND ADJACENT CABINETS/ENCLOSURES. 10. MAINTAIN MINIMUM 6 INCH CLEARANCE BETWEEN CONDUIT AND PIPING. MAINTAIN 12 INCH CLEARANCE BETWEEN CONDUIT AND HEAT SOURCES SUCH AS FLUES, STEAM PIPES, AND HEATING APPLIANCES.
- 11. ARRANGE CONDUIT SUPPORTS TO PREVENT DISTORTION OF ALIGNMENT BY WIRE PULLING OPERATIONS. FASTEN CONDUIT USING GALVANIZED SPACERS AND STRAPS, LAY-IN ADJUSTABLE HANGERS, CLEVIS HANGERS, OR BOLTED SPLIT STAMPED GALVANIZED
- 12. SUPPORT CONDUIT AT A MAXIMUM OF 7 FEET ON CENTER. 13. LIQUIDTIGHT FLEXIBLE METAL CONDUIT SHALL NOT EXCEED 24 INCHES IN LENGTH AND ALL RUNS SHALL BE PROVIDED WITH AN
- APPROPRIATE LENGTH OF GROUND CONDUCTOR. 14. USE CONDUIT HUBS FOR FASTENING CONDUIT TO CAST BOXES, AND FOR FASTENING CONDUIT TO CABINETS/ENCLOSURES IN DAMP OR
- 15. INSTALL NO MORE THAN THE EQUIVALENT OF THREE 90° BENDS BETWEEN BOXES.
- 16. USE SUITABLE CONDUIT CAPS TO PROTECT INSTALLED CONDUIT AGAINST ENTRANCE OF DIRT AND MOISTURE. 17. PROVIDE NO. 12 AWG INSULATED CONDUCTOR OR SUITABLE PULL STRING IN EMPTY CONDUIT, EXCEPT SLEEVES AND NIPPLES.
- 18. INSTALL EXPANSION JOINTS WHERE CONDUIT CROSSES STRUCTURAL EXPANSION JOINTS. 19. ALL UNDERGROUND CONDUIT SHALL BE CONCRETE ENCASED. THE THICKNESS OF CONCRETE COVERING THE CONDUIT ON ALL SIDES
- AND BETWEEN CONDUITS SHALL NOT BE LESS THAN THREE (3) INCHES.
- 20. INSTALL TOP OF UNDERGROUND CONDUIT A MINIMUM OF 36 INCHES BELOW FINISHED GRADE. 21. STAGGER CONDUIT JOINTS IN CONCRETE ENCASEMENT 6 INCHES MINIMUM, HORIZONTALLY.
- 22. USE SUITABLE SEPARATORS AND CHAIRS INSTALLED NOT GREATER THAN 4 FEET ON CENTERS, BAND CONDUIT TOGETHER WITH SUITABLE BANDING DEVICES. SECURELY ANCHOR CONDUIT TO PREVENT MOVEMENT DURING CONCRETE PLACEMENT.
- 23. PROVIDE MINIMUM 3 INCH CONCRETE COVER AT BOTTOM, TOP, AND SIDES OF CONDUIT 24. PROVIDE TWO NO. 4 STEEL REINFORCING BARS IN TOP OF CONCRETE ENCASEMENT.
- 25. ALL RIGID STEEL CONDUIT WHICH IS UNDERGROUND OR ENCASED IN CONCRETE SHALL BE COATED WITH TWO (2) COATS OF BITUMINOUS MASTIC PAINT OR SHALL BE PVC EXTERNALLY-COATED CONDUIT. THE BITUMINOUS OR PVC COATING SHALL BE CARRIED NO LESS THAN
- 26. A PLASTIC WARNING TAPE SHALL BE INSTALLED OVER ALL BURIED CONDUIT. THE TAPE SHALL HAVE THE WARNING "CAUTION-BURIED ELECTRIC LINE" CONTINUOUSLY IMPRINTED ON A RED BACKGROUND OR "BURIED TELEPHONE LINE" ON AN ORANGE BACKGROUND, THE CAUTION TAPE SHALL BE POSITIONED ABOVE THE CONDUIT AT A POINT TWELVE INCHES (12") BELOW FINISHED GRADE.

B. CONDUIT INSTALLATION SCHEDULE

- 1. OUTDOOR LOCATIONS: PVC EXTERNALLY-COATED RIGID STEEL CONDUIT UNDERGROUND: SCHEDULE 80 PVC
- FLEXIBLE CONNECTIONS: LIQUIDTIGHT FLEXIBLE METAL CONDUIT.
- 4. INSTALLATIONS WITHIN WET WELL OR VALVE VAULT: PVC EXTERNALLY-COATED RIGID STEEL CONDUIT
- 5. INSTALLATION WITHIN CABINETS: EMT.

C. WIRE AND CABLE

- BUILDING WIRE: SINGLE COPPER CONDUCTOR INSULATED WIRE, 600 VOLTS INSULATION VOLTAGE RATING TYPE THHN/THWN-2 2. INSTRUMENTATION CABLE: MULTICONDUCTOR TYPE HAVING STRANDED TINNED COPPER CONDUCTORS INDIVIDUALLY INSULATED. THE CABLE SHALL HAVE ALUMINUM-POLYESTER SHIELDING TAPE PROVIDING 100% COVERAGE, A STRANDED TINNED COPPER DRAIN WIRE, AND A CHROME PVC JACKET. THE CABLE SHALL HAVE A NOMINAL CAPACITANCE OF 24 PF/FT. AND VOLTAGE RATING OF 300 VOLTS. THE
- CABLE SHALL BE UL LISTED AND LABELED. TELEPHONE CABLE: MULTICONDUCTOR TYPE HAVING SOLID 20 AWG TINNED COPPER CONDUCTORS INDIVIDUALLY INSULATED. THE CABLE SHALL HAVE ALUMINUM-POLYESTER SHIELDING PROVIDING 100% COVERAGE, A SOLID 22 AWG TINNED COPPER DRAIN WIRE, AND AN OVERALL HIGH DENSITY BLACK POLYETHYLENE JACKET. THE CABLE SHALL HAVE A NOMINAL CAPACITANCE OF 23 PF/FT AND A VOLTAGE RATING OF 300 VOLTS. THE CABLE SHALL BE UL LISTED AND LABELED. CONDUCTOR QUANTITY: SIX (6) SINGLE CONDUCTORS (3 PAIR);
- MINIMUM USE CONDUCTOR NOT SMALLER THAN 12 AWG FOR POWER AND LIGHTING CIRCUITS.
- USE CONDUCTOR NOT SMALLER THAN 14 AWG FOR CONTROL CIRCUITS.
- 6. USE SPLIT BOLT CONNECTORS FOR COPPER CONDUCTOR SPLICES AND TAPS, 6 AWG AND LARGER.
- USE SOLDERLESS PRESSURE CONNECTORS WITH INSULATING COVERS FOR COPPER CONDUCTOR SPLICES AND TAPS, 8 AWG AND
- 8. USE INSULATED SPRING WIRE CONNECTORS WITH PLASTIC CAPS FOR COPPER CONDUCTOR SPLICES AND TAPS, 10 AWG AND SMALLER.

D. OUTLET BOXES

1. CAST BOXES: NEMA FB 1, TYPE FD, CAST FERALLOY. PROVIDE GASKETED COVER BY BOX MANUFACTURER. PROVIDE THREADED HUBS

1. PROVIDE SURFACE-MOUNTED CAST METAL BOX: NEMA 250, TYPE 4; FLAT-FLANGED, SURFACE-MOUNTED JUNCTION BOX AND COVER: GROUND FLANGE, NEOPRENE GASKET, AND STAINLESS STEEL COVER SCREWS.

F. WIRING DEVICES

- 1. LIGHT SWITCHES: NEMA WD 1, HEAVY-DUTY, AC ONLY GENERAL-USE SNAP SWITCH, BROWN PLASTIC WITH TOGGLE HANDLE, 120-277
- VOLTS, AC, 20 AMPERES. RECEPTACLES: NEMA WD 1; HEAVY-DUTY GENERAL-USE RECEPTACLE, BROWN PLASTIC, NEMA WD 6, TYPE 5-20.
- 3. GFCI RECEPTACLE: CONVENIENCE RECEPTACLE WITH INTEGRAL CLASS A GROUND FAULT CIRCUIT INTERRUPTER. 4. INTERIOR COVER PLATE: SMOOTH STAINLESS STEEL, TO MATCH TYPE FD BOXES.
- 5. WEATHERPROOF COVER PLATE: GASKETED CAST METAL WITH HINGED GASKETED DEVICE COVER AND SUITABLE FOR USE IN "WET LOCATIONS".
- 6. INSTALL LIGHT SWITCHES 48 INCHES ABOVE FINISHED FLOOR.
- 7. IN GENERAL, INSTALL INTERIOR CONVENIENCE RECEPTACLES 18 INCHES ABOVE FINISHED FLOOR, UNLESS INDICATED OTHERWISE 8. INSTALL EXTERIOR CONVENIENCE RECEPTACLES 36 INCHES ABOVE FINISHED GRADE.

G. GROUNDING AND BONDING

- PROVIDE ALL GROUNDING AND BONDING IN ACCORDANCE WITH THE NEC
- GROUND THE ELECTRICAL SERVICE SYSTEM NEUTRAL AT SERVICE ENTRANCE EQUIPMENT TO METALLIC WATER PIPING AND TO SUPPLEMENTARY GROUNDING ELECTRODES. BOND TOGETHER SYSTEM NEUTRALS, SERVICE EQUIPMENT ENCLOSURES, EXPOSED NON-CURRENT CARRYING METAL PARTS OF ELECTRICAL EQUIPMENT, METAL RACEWAY SYSTEMS, GROUNDING CONDUCTOR IN
- RACEWAYS AND CABLES, RECEPTACLE GROUND CONNECTORS, AND METALLIC PIPING SYSTEMS. ALL GROUNDING AND BONDING CONNECTIONS BELOW GRADE SHALL BE OF THE EXOTHERMIC (CADWELD) WELDED TYPE.
- GROUND RODS: COPPER-ENCASED STEEL, 3/4 INCH DIAMETER, MINIMUM LENGTH TEN (10) FEET. 5. PROVIDE A SEPARATE INSULATED EQUIPMENT GROUNDING CONDUCTOR IN FEEDER AND BRANCH CIRCUITS. TERMINATE EACH END ON A
- GROUNDING LUG, BUS, OR BUSHING 6. CONNECT GROUNDING ELECTRODE CONDUCTORS TO METAL WATER PIPE USING A SUITABLE GROUND CLAMP. MAKE CONNECTIONS TO FLANGED PIPING AT STREET SIDE OF FLANGE. PROVIDE BONDING JUMPER AROUND METERS.

H. NAMEPLATES AND LABELS

- NAMEPLATES AND LABELS: ENGRAVED TWO-LAYER LAMINATED PLASTIC, WHITE LETTERS ON A BLACK BACKGROUND.
- 2. NAMEPLATES AND LABELS SHALL BE AFFIXED TO ITEMS USING BRASS OR STAINLESS STEEL SCREWS. NO ADHESIVE TYPES WILL BE ALLOWED
- WIRE AND CABLE MARKERS: CLOTH MARKERS, SPLIT SLEEVE OR TUBING TYPE.
- PROVIDE WIRE MARKERS ON EACH CONDUCTOR IN PANELBOARD GUTTERS, EQUIPMENT CABINETS AND ENCLOSURES, PULL BOXES, OUTLET AND JUNCTION BOXES, AND AT LOAD CONNECTION. IDENTIFY WITH BRANCH CIRCUIT OR FEEDER NUMBER FOR POWER AND LIGHTING CIRCUITS, AND WITH CONTROL WIRE NUMBER AS INDICATED ON EQUIPMENT MANUFACTURER'S SHOP DRAWINGS FOR CONTROL

I. SUPPORTS

- 1. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY HANGARS AND SUPPORTS FOR EQUIPMENT AND MATERIALS. EQUIPMENT AND
- MATERIALS SHALL BE ADEQUATELY SUPPORTED TO PROVIDE A STRUCTURALLY SOUND INSTALLATION. 2. WIRING/RACEWAYS AND/OR EQUIPMENT FASTENED TO CONCRETE AND/OR MASONRY CONSTRUCTION SHALL BE SECURED THERETO
- USING APPROVED CLAMPS AND/OR FITTINGS WITH EXPANSION ANCHORS AND MACHINE SCREWS OR CONCRETE INSERTS WITH APPROVED FASTENERS. WOOD PLUGS AND PLASTIC ANCHORS SHALL NOT BE PERMITTED. WHERE APPLICABLE, ALL RACEWAY, DEVICES, EQUIPMENT, ETC. MAY BE SUPPORTED AND HUNG BY THE USE OF ONE AND FIVE-EIGHTS INCH (1-5/8") SIZE CHANNEL STRUT SYSTEM. INTERIOR CHANNELS SHALL BE CONSTRUCTED OF MILD STRIP STEEL, WHICH HAS BEEN HOT
- FOLLOWING THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. EXTERIOR CHANNELS SHALL BE STAINLESS STEEL 4. ALL SCREWS AND NUTS USED TO FASTEN DEVICE COVERS, ENCLOSURE COVERS, AND SIMILAR APPLICATIONS WHERE SCREWS MUST BE USED FOR SERVICING OR REPLACEMENT OF EQUIPMENT SHALL BE STAINLESS STEEL. ALL OTHER SCREWS AND BOLTS SHALL BE ZINC OR CADMIUM PLATED OR HOT-DIPPED GALVANIZED.

DIPPED GALVANIZED CONFORMING TO ASTM SPECIFICATIONS A-386 OR A-153. THE SUPPORT AND HANGER SYSTEM SHALL BE INSTALLED

- 5. CONDUIT STRAPS SHALL BE OF MALLEABLE IRON CONSTRUCTION, HOT-DIPPED GALVANIZED, SIZE AND FINISH TO MATCH RACEWAY. 6. FASTEN HANGER RODS, CONDUIT CLAMPS, AND OUTLET AND JUNCTION BOXES TO BUILDING STRUCTURE USING EXPANSION ANCHORS.
- DO NOT USE SPRING STEEL CLIPS AND CLAMPS. USE TOGGLE BOLTS OR HOLLOW WALL FASTENERS IN HOLLOW MASONRY, PLASTER, OR GYPSUM BOARD PARTITIONS AND WALLS;
- EXPANSION ANCHORS OR PRESET INSERTS IN SOLID MASONRY WALLS. 8. DO NOT FASTEN SUPPORTS TO PIPING, DUCTWORK, MECHANICAL EQUIPMENT, OR CONDUIT.

J. ELECTRIC SERVICE

- 1. THE CONTRACTOR SHALL BE RESPONSIBLE TO MAKE ALL ARRANGEMENTS WITH THE UTILITY COMPANY FOR PERMANENT ELECTRIC SERVICE, FOR THE PUMP STATION, INCLUDING ALL COST AND WORK REQUIRED FOR SAME.
- 2. UTILITY COMPANY (DELAWARE ELECTRIC COOPERATIVE) HAS CONFIRMED THAT 240 V POWER WILL BE AVAILABLE AT SITE, EVERY BIDDER SHALL BE RESPONSIBLE TO CONTACT THE UTILITY COMPANY TO VERIFY ALL ELECTRIC SERVICE REQUIREMENTS. ADDITIONAL EQUIPMENT, MATERIALS AND LABOR REQUIRED THROUGH FAILURE TO FOLLOW THESE INSTRUCTIONS SHALL BE PROVIDED BY THE
- CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER. 3. INSTALL SERVICE ENTRANCE IN ACCORDANCE WITH THE UTILITY COMPANY RULES AND REGULATIONS.
- 4. METERS: FURNISHED BY UTILITY COMPANY, INSTALLED BY CONTRACTOR, PER UTILITY COMPANY REQUIREMENTS. METER BOX AND CONDUIT: PROVIDED BY CONTRACTOR, PER UTILITY COMPANY REQUIREMENTS.
- UNDERGROUND SERVICE ENTRANCE CONDUIT: PROVIDED BY CONTRACTOR, PER UTILITY COMPANY REQUIREMENTS.
- PRIMARY AND SECONDARY CABLE: PROVIDED BY CONTRACTOR, PER UTILITY COMPANY REQUIREMENTS. 8. CONCRETE TRANSFORMER VAULT/PAD: PROVIDED BY CONTRACTOR, PER UTILITY COMPANY REQUIREMENTS.
- 9. BOLLARDS: PROVIDED BY CONTRACTOR, PER UTILITY COMPANY REQUIREMENTS.

10. ON SITE TRANSFORMER: FURNISHED AND INSTALLED BY UTILITY COMPANY 11. GROUND RING, PROTECTIVE BARRIERS, AND APPURTENANCES: PROVIDED BY CONTRACTOR, PER UTILITY COMPANY REQUIREMENTS.

K. GENERATOR SET

1. ENGINE

- a. TYPE: RADIATOR COOLED, INLINE, FOUR STROKE CYCLE, COMPRESSION IGNITION DIESEL COMBUSTION ENGINE
- b. FUEL SYSTEM: APPROPRIATE FOR USE OF NO. 2 DIESEL FUEL OIL.
- d. ELECTRONIC GOVERNOR: ISOCHRONOUS TYPE TO MAINTAIN ENGINE SPEED WITHIN 0.5 PERCENT, STEADY STATE, AND 5 PERCENT, NO LOAD TO FULL LOAD, WIT RECOVERY TO STEADY STATE WITHIN 2 SECONDS FOLLOWING SUDDEN LOAD CHANGES. EQUIP
- GOVERNOR WITH MEANS FOR MANUAL OPERATION AND ADJUSTMENT. e. SAFETY DEVICES: ENGINE SHUTDOWN ON HIGH COOLANT TEMPERATURE, LOW COOLANT LEVEL, LOW OIL PRESSURE, OVERSPEED,
- AND ENGINE OVERCRANK. LIMITS AS SELECTED BY MANUFACTURER ENGINE STARTING: DC STARTING SYSTEM WITH POSITIVE ENGAGEMENT, NUMBER AND VOLTAGE OF STARTER MOTORS IN
- ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. INCLUDE REMOTE STARTING CONTROL CIRCUIT, WITH MANUAL-OFF-REMOTE SELECTOR SWITCH ON ENGINE-GENERATOR CONTROL PANEL. a. ENGINE JACKET HEATER: THERMAL CIRCULATION TYPE HEATER WITH INTEGRAL THERMOSTATIC CONTROL, NOMINAL RATING 1000
- WATTS, AND SUITABLE FOR OPERATION ON 240 VOLTS AC, 1-PHASE. RADIATOR: RADIATOR USING GLYCON COOLANT, WITH BLOWER TYPE FAN, SIZED TO MAINTAIN SAFE DEGREES F. RADIATOR AIR
- FLOW ENGINE TEMPERATURE IN AMBIENT TEMPERATURE OF 110 RESTRICTION: 0.50 INCHES OF WATER, MAXIMUM. ENGINE ACCESSORIES: FUEL FILTER, LUBE OIL FILTER, INTAKE AIR FILTER, FLEXIBLE FUEL LINES. LUBE OIL COOLER. AND GEAR DRIVEN COOLANT PUMP, INCLUDE COOLANT TEMPERATURE GAGE, OIL TEMPERATURE GAGE, AND OIL PRESSURE GAGE ON
- **ENGINE-GENERATOR CONTROL PANEL** j. MOUNTING: PROVIDE UNIT WITH SUITABLE PAD-TYPE VIBRATION ISOLATORS AND MOUNT ON STRUCTURAL STEEL BASE.

2. GENERATOR

- a. GENERATOR: ANSI/NEMA MG 1; THREE PHASE, FOUR POLE, RECONNECTIBLE BRUSHLESS SYNCHRONOUS GENERATOR WITH PMG
- **EXCITATION** b. RATING: 125 KW, 125 KVA, AT 0.8 POWER FACTOR, 240/120 VOLTS, 3 PHASE, 4 WIRE, 60 HZ AT 1800 RPM. c. MOTOR STARTING KVA SHALL BE 46 KVA, BASED ON SUSTAINED RMS VOLTAGE DROP OF NO MORE THAN 10% OF NO LOAD VOLTAGE WITH THE SPECIFIED LOAD KVA AT NEAR ZERO POWER MONITOR. FACTOR APPLIED TO THE ENGINE-GENERATOR SET.

GENERATOR CHARACTERISTICS, WITH VOLTAGE REGULATIONS +/- TWO PERCENT FROM NO LOAD TO FULL LOAD. INCLUDE MANUAL

INSULATION: ANSI/NEMA MG 1 CLASS H. e. TEMPERATURE RISE: 125 DEGREES C. ENCLOSURE: WEATHER PROOF SOUND ATTENUATED HOUSING WITH CRITICAL SILENCER; 66 dB (A) AT 23 FT. (MAX.).

3. VOLTAGE REGULATION: INCLUDE GENERATOR-MOUNTED VOLTS PER HERTZ EXCITER-REGULATOR TO MATCH ENGINE AND

CONTROLS TO ADJUST VOLTAGE DROP +/- 5 PERCENT VOLTAGE LEVEL, AND VOLTAGE GAIN.

3. ACCESSORIES

- a. SUB-BASE FUEL TANK: 160 GALLON (NOMINAL) UL DOUBLE WALL TANK UNIT COMPATIBLE WITH GENERATOR SET. INCLUDE LOW LEVEL SWITCH, FLEXIBLE FUEL LINE CONNECTIONS, FUEL GAGE, CHECK VALVE, AND ALL REQUIRED FILL AND VENT PIPING (SCHEDULE 40
- BLACK STEEL), INCLUDING EMERGENCY RELIEF VENT FITTING b. BATTERIES: HEAVY DUTY STARTING TYPE LEAD-ACID STORAGE BATTERIES, MATCH BATTERY VOLTAGE TO STARTING SYSTEM. INCLUDE NECESSARY CABLES AND CLAMPS.
- c. BATTERY TRAY: PLASTIC COATED METAL OR WOODEN TRAY TREATED FOR ELECTROLYTE RESISTANCE, CONSTRUCTED TO CONTAIN SPILLAGE OF ELECTROLYTE.
- d. BATTERY CHARGER: RATED TO MATCH BATTERY (6 AMP, 12 VOLT) WITH CHARGE RATE AMMETER AND VOLTMETER, MOUNTED WITHIN GENERATOR ENCLOSURE. INPUT POWER: 120V, 60 HZ EXTERNAL SOURCE. e. LINE CIRCUIT BREAKER: NEMA AB 1; MOLDED CASE CIRCUIT BREAKER ON GENERATOR OUTPUT WITH INTEGRAL THERMAL AND
- INSTANTANEOUS MAGNETIC TRIP IN EACH POLE; 100% RATING AS INDICATED. MOUNT UNIT IN ENCLOSURE TO MEET ANSI/NEMA 250; TYPE 12 REQUIREMENTS. ENGINE-GENERATOR CONTROL PANEL: ANSI/NEMA 250; TYPE 12 GENERATOR MOUNTED CONTROL PANEL ENCLOSURE WITH ENGINE AND GENERATOR CONTROLS AND INDICATORS. INCLUDE PROVISION FOR PADLOCK AND THE FOLLOWINGS EQUIPMENT AND
- FREQUENCY METER: 45-65 HZ RANGE.
- AC OUTPUT VOLTMETER. AC OUTPUT AMMETER
- OUTPUT VOLTAGE ADJUSTMENT.
- RUN LIGHT; GREEN. COOLANT TEMPERATURE GAUGE.
- **FAULT RESET SWITCH** ENGINE RUN/STOP/REMOTE SELECTOR SWITCH
- ENGINE RUNNING TIME METER OIL PRESSURE GAUGE.
- OIL TEMPERATURE GAUGE BATTERY VOLTMETER.
- INDICATOR LAMPS; RED, ONE EACH FOR LOW OIL PRESSURE, HIGH COOLANT TEMPERATURE, LOW COOLANT LEVEL, LOW FUEL LEVEL. OVERSPEED, AND OVERCRANK
- AUXILIARY RELAY; 3 PDT, OPERATES WHEN ENGINE RUNS, WITH CONTACTS PRE-WIRED TO TERMINAL STRIP.
- FAULT RELAY; 3 PDT, OPERATES WHEN SAFETY DEVICES SHUTDOWN ENGINE, WITH CONTACTS PRE-WIRED TO TERMINAL STRIP. AUXILIARY RELAY; DPDT, OPERATES WHEN FUEL IN SUB-BASE STORAGE TANK REACHES LOW LEVEL
- g. THE CONTRACTOR SHALL BE RESPONSIBLE TO SUPPLY ONE (1) LOAD OF DIESEL FUEL TO FILL THE SUB-BASE FUEL TANK

a. A. PROVIDE MANUFACTURER'S TWO (2) YEAR WARRANTY FOR GENERATOR SET.

- A FURNISH SERVICE AND MAINTENANCE AGREEMENT BETWEEN THE SUPPLIER OF PACKAGED ENGINE GENERATOR SYSTEM AND THE OWNER FOR ONE YEAR FROM DATE OF SUBSTANTIAL COMPLETION. MAINTENANCE SERVICES SHALL CONSIST OF NOT LESS THAN TWO (2) SERVICE OR MAINTENANCE CALLS/VISITS. PROVIDE FULL LOAD TEST UTILIZING PORTABLE RESISTIVE TEST BANK RATED AT THE NAMEPLATE OF THE GENERATOR, FOR FOUR (4) HOURS MINIMUM. DURING TEST, RECORD PARAMETERS AT 20 MINUTE
- b. CLEAN ENGINE AND GENERATOR SURFACES. REPLACE ALL OIL AND FUEL FILTERS AFTER FULL LOAD TESTING. PROVIDE MANUFACTURER'S FIELD SERVICES AS FOLLOWS: 1. SERVICES OF QUALIFIED TECHNICIAN TO SUPERVISE INSTALLATIONS, ADJUSTMENTS, FINAL CONNECTIONS, AND SYSTEM STARTUP AND TESTING. 2. MANUFACTURER'S LETTER CERTIFYING THAT THE SYSTEM'S INSTALLATION, START-UP, AND TESTING ARE ACCEPTABLE AND THAT THE SYSTEM IS OPERATING PROPERLY.
- d. THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS WITH THE MANUFACTURER AND PAY ALL CHARGES MADE BY THE MANUFACTURER FOR FIELD SERVICES INVOLVED WITH THE PROJECT. THE CONTRACTOR'S BID SHALL INCLUDE ALL MANUFACTURER'S

L. AUTOMATIC TRANSFER SWITCH

DESCRIPTION: NEMA ICS 10; AUTOMATIC TRANSFER SWITCH. CONFIGURATION: ELECTRICALLY-OPERATED, MECHANICALLY-HELD TRANSFER SWITCH.

INTERVALS. SUBMIT FULL LOAD TEST RESULTS FOR REVIEW.

- MANUFACTURER: THE AUTOMATIC TRANSFER SWITCH SHALL BE FROM THE SAME MANUFACTURER AS THE GENERATOR SET.
- a. RATINGS: NEMA ICS 10; AS FOLLOWS:
- b. VOLTAGE: 240 VOLTS, THREE PHASE, FOUR WIRE, 60 HZ., SOLID NEUTRAL. SWITCHED POLES: 3.
- d. LOAD INRUSH RATING: COMBINATION; MOTORS, ELECTRIC DISCHARGE LIGHTING, AND RESISTIVE LOADS. e. CONTINUOUS RATING: 100 AMPERES.
- INTERRUPTING CAPACITY: 100 PERCENT OF CONTINUOUS RATING g. WITHSTAND CURRENT RATING: 22,000 RMS SYMMETRICAL AMPERES, WHEN USED WITH MOLDED CASE CIRCUIT BREAKER.

5. AUTOMATIC SEQUENCE OF OPERATION

- a. A. INITIATE TIME DELAY TO START ALTERNATE SOURCE ENGINE GENERATOR: UPON INITIATION BY NORMAL SOURCE MONITOR. b. TIME DELAY TO START ALTERNATE SOURCE ENGINE GENERATOR: 0 TO 10 SECONDS, ADJUSTABLE.
- c. INITIATE TRANSFER LOAD TO ALTERNATE SOURCE: UPON INITIATION BY NORMAL SOURCE MONITOR AND PERMISSION BY ALTERNATE
- d. TIME DELAY BEFORE TRANSFER TO ALTERNATE POWER SOURCE: 2 TO 120 SECONDS, ADJUSTABLE.
- . INITIATE RETRANSFER LOAD TO NORMAL SOURCE: UPON PERMISSION BY NORMAL SOURCE MONITOR. TIME DELAY BEFORE TRANSFER TO NORMAL POWER: 0 TO 30 MINUTES, ADJUSTABLE; BYPASS TIME DELAY IN EVENT OF ALTERNATE
- TIME DELAY BEFORE ENGINE SHUT DOWN: 0 TO 10 MINUTES, ADJUSTABLE, OF UNLOADED OPERATION. ENGINE EXERCISER: START ENGINE EVERY 7 DAYS; RUN FOR 30 MINUTES BEFORE SHUTTING DOWN. BYPASS EXERCISER CONTROL IF

6. ENCLOSURE A. ENCLOSURE: NEMA ICS 6; TYPE 1, UNLESS INDICATED OTHERWISE. . ACCESSORIES

NORMAL SOURCE FAILS DURING EXERCISING PERIOD

- a. INDICATING LIGHTS: MOUNT IN COVER OF ENCLOSURE TO INDICATE NORMAL SOURCE AVAILABLE, ALTERNATE SOURCE AVAILABLE,
- b. TEST SWITCH: MOUNT IN COVER OF ENCLOSURE TO SIMULATE FAILURE OF NORMAL SOURCE.
- c. RETURN TO NORMAL SWITCH: MOUNT IN COVER OF ENCLOSURE TO INITIATE MANUAL TRANSFER FROM ALTERNATE TO NORMAL SOURCE BY PASSING TYPICAL TIME DELAY.
- d. TRANSFER SWITCH AUXILIARY CONTACTS: 2 NORMALLY OPEN; 2 NORMALLY CLOSED. e. NORMAL SOURCE MONITOR: MONITOR EACH LINE OF NORMAL SOURCE VOLTAGE; INITIATE TRANSFER WHEN VOLTAGE DROPS BELOW 85 PERCENT FROM RATED NOMINAL VALUE, ADJUSTABLE. ALTERNATE SOURCE MONITOR: MONITOR ALTERNATE SOURCE VOLTAGE AND FREQUENCY; ALLOW TRANSFER WHEN VOLTAGE IS 90 PERCENT FREQUENCY AND 2 HERTZ FROM RATED NOMINAL. ADJUSTABLE.

PROGRAMMED TRANSITION: SWITCH TO AN OPEN POSITION, THEN INHIBIT TRANSFER FOR AN ADJUSTABLE TIME DELAY PERIOD (1 TO

MANUFACTURER FOR FIELD SERVICES INVOLVED WITH THE PROJECT. THE CONTRACTOR'S BID SHALL INCLUDE ALL MANUFACTURER'S

- PROVIDE MANUFACTURER'S FIELD SERVICES AS FOLLOWS:
- SERVICES OF QUALIFIED TECHNICIAN TO SUPERVISE INSTALLATIONS, ADJUSTMENTS, FINAL CONNECTIONS, AND SYSTEM STARTUP AND TESTING MANUFACTURER'S LETTER CERTIFYING THAT THE SYSTEM'S INSTALLATION, START-UP, AND TESTING ARE ACCEPTABLE AND THAT THE

THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS WITH THE MANUFACTURER AND PAY ALL CHARGES MADE BY THE

SYSTEM IS OPERATING PROPERLY.

1. NFPA 10 DRY CHEMICAL TYPE: STEEL TANK WITH PRESSURE GAGE AND UPRIGHT SQUEEZE GRIP OPERATION, NOMINAL CAPACITY: SIX (6) POUNDS, MONO AMMONIUM PHOSPHATE POWDER WITH UL RATING: 3A - 40B: C. PROVIDE WALL/SURFACE MOUNTING BRACKET.

N. PUMP CONTROL PANEL (PCP) AND REMOTE TELEMETRY UNIT (RTU)

PCP/RTU PANELS AND CONTROLS SHALL BE PROVIDED BY XYLEM/FLYGT AND THE SYSTEM INTEGRATOR SHALL CONFORM TO ALL ARTESIAN WASTEWATER MANAGEMENT SPECIFICATIONS REQUIREMENTS.

SYSTEM CONTROL NOTES:

- THE WORK SHALL INCLUDE ALL LABOR, MATERIALS, EQUIPMENT AND SERVICES NECESSARY FOR AND INCIDENTAL TO THE COMPLETE AND SATISFACTORY INSTALLATION OF THE PUMP CONTROL PROGRAMMABLE LOGIC CONTROLLER (PLC), OPERATOR INTERFACE, AND SUPERVISORY CONTROL AND DATA ACQUISITION COMPONENTS (SCADA) INCLUDING BUT NOT LIMITED TO THE RADIO TRANSCEIVER, MODEMS, ANTENNA, CABLES, SOFTWARE, ETC. ARTESIAN WASTEWATER MANAGEMENT, INC. WILL ADVISE WHICH SYSTEM SHOULD BE
- 2. THE SYSTEM SHALL PROVIDE ALARM ANNUNCIATION, SYSTEM MONITORING, DATA COLLECTION, HISTORICAL TRENDING, AND REMOTE AUTOMATIC MODE OVERRIDE.
- UPDATING THE SYSTEM AT THE CENTRAL MONITORING STATION WILL BE BY OTHERS.
- 4. A SYSTEMS INTEGRATOR EXPERIENCED IN PLC SYSTEMS SHALL BE UTILIZED TO PERFORM ALL THE WORK PERTAINING TO THE INSTALLATION AND PROPER FUNCTIONING OF THE PUMP CONTROL PLC SYSTEM, PROVIDING TECHNICAL SUPERVISION FOR THE INSTALLATION AND CONNECTIONS TO EQUIPMENT, AND SHALL BE RESPONSIBLE FOR THE PREPARATION OF SUBMITTAL DATA, CONDUCTING ALL TESTS AND OPERATIONAL DEMONSTRATIONS, AND EQUIPMENT CALIBRATIONS. IT SHALL BE THE SYSTEMS INTEGRATOR'S RESPONSIBILITY TO FURNISH A COMPLETE AND FUNCTIONAL, FULLY INTEGRATED PUMP CONTROL PLC SYSTEM, INCLUDING ALL SOFTWARE AND HARDWARE DEVICES NECESSARY TO INTERFACE THE COMPONENTS OF THE PUMPING STATION. THIS INTEGRATOR MUST BE LISTED ON THE SUBCONTRACTORS LIST ON THE BID FORM. THE ACCEPTED SYSTEMS INTEGRATOR SHALL BE CONTRACTED BY THE GENERAL CONTRACTOR TO PROVIDE ALL CONTROL SYSTEM PROGRAMMING AND DESIGN TO ACCOMMODATE THE FUNCTIONING OF PLC BASED SCADA SYSTEM.
- THE SYSTEM INTEGRATOR SHALL PROVIDE SCADA FUNCTION PROGRAMMING IN THE PUMP CONTROL PLC AND COMPONENTS FOR RADIO COMMUNICATIONS AND BACK UP POWER, UNINTERRUPTIBLE POWER SUPPLY (UPS) AND SURGE PROTECTION, SYSTEM INSTALLATION CD ROM OR DISKS FOR ALL SOFTWARE, OPERATOR INTERFACE SCREENS AT THE PUMPING STATION HMI (HUMAN MACHINE INTERFACE), AND ALL INCIDENTAL EQUIPMENT NECESSARY FOR A PROPERLY FUNCTIONING FACILITY.
- 6. RADIO INSTALLATIONS SHALL BE COORDINATED WITH ARTESIAN WASTEWATER MANAGEMENT, INC. REQUIREMENTS.
- SUBMITTALS FOR APPROVAL SHALL INCLUDE AND NOT BE LIMITED TO MANUFACTURERS DESCRIPTIVE LITERATURE AND DATA SHEETS FOR OPERATOR INTERFACE SCREENS SOFTWARE, PLC'S, RADIO EQUIPMENT, UPS AND SURGE PROTECTION DEVICES, WIRING SCHEMATICS, SOFTWARE PROGRAMS AND PROGRAMMING, PROGRESS SCHEDULES. AND SHOP DRAWINGS SHOWING DIMENSIONS, MOUNTING DETAILS, ENCLOSURES, AND EXTERNAL CONNECTION DETAILS. EQUIPMENT SHALL BE HOUSED IN THE EQUIPMENT CONTROL CABINET. THE EXACT SIZE OF THE CABINET SHALL BE COORDINATED WITH THE PUMP/PUMP CONTROL MANUFACTURER(S) AND SIZED TO MOUNT THE EQUIPMENT FOR EASE OF OPERATION AND MAINTENANCE.
- 8. THE WARRANTY SHALL PROVIDE FOR A MINIMUM OF NEXT-DAY, ON-SITE SERVICE FOR EMERGENCY FAILURES, A FIVE DAY RESPONSE FOR NON-CRITICAL FAILURES, AND REPLACEMENT OF DEFECTIVE COMPONENTS WITHIN ONE WEEK.
- 9. INTEGRATED OPERATION AND MAINTENANCE MANUALS AND OPERATING TRAINING SHALL BE PROVIDED.
- 10. THE SYSTEMS INTEGRATOR SHALL BE FURNISHED AS PER ARTESIAN WASTEWATER MANAGEMENT, INC. REQUIREMENTS WITH A MANUFACTURERS CERTIFICATE CERTIFYING THAT THE PUMP CONTROL PLC AND SCADA SYSTEM AND ASSOCIATED COMPONENTS HAVE BEEN INSTALLED UNDER THE SUPERVISION OF THE MANUFACTURER'S AUTHORIZED REPRESENTATIVES AND ARE OPERATING IN ACCORDANCE WITH THE SPECIFIED REQUIREMENTS TO THE MANUFACTURERS SATISFACTION.
- 11. ALL PUMP CONTROL PLC SYSTEM COMPONENTS SHALL BE PROVIDED BY PUMP MANUFACTURER (FLYGT) OR APPROVED EQUAL, AND HAVE DUPLEX CONTROLS WITH PUMP RUNNING AND ALARM LIGHTS, PUMP ELAPSED TIME METERS, AND BACKUP FLOAT SYSTEM WITH HIGH LEVEL ALARM.
- 12. OPERATOR INTERFACE SHALL BE SUPPLIED BY PUMP MANUFACTURER OR APPROVED EQUAL
- 13. RADIO SHALL BE DATA LINC SRM6210E; ANTENNA SHALL BE YAGI BROADBAND TYPE 6 DB GAIN.
- 14. SURGE PROTECTOR SHALL BE LEVITON CATALOGUE No. 51020-WM; UPS SHALL BE PULSAR ES AS MANUFACTURED BY MGE UPS SYSTEMS CATALOGUE PART No. 89363.
- 15. A TEST PROCEDURE SHALL BE DEVELOPED BY THE SYSTEM INTEGRATOR FOR ARTESIAN WASTEWATER MANAGEMENT, INC. APPROVAL NO LATER THAN 14 DAYS PRIOR TO THE TEST DATE. ALL COMPONENTS SHALL BE TESTED AND WITNESSED BY ARTESIAN WASTEWATER MANAGEMENT, INC. AND OWNER'S REPRESENTATIVE INCLUDING FACTORY TESTING OF THE PUMP CONTROL PLC SYSTEM.
- 16. THE SYSTEM INTEGRATOR SHALL PROVIDE SPARE PARTS AS RECOMMENDED BY THE MANUFACTURER AS WELL AS THE FOLLOWING: A SPARE BOARD FOR EACH TYPE USED IN THE PLC INCLUDING I/O BOARDS, PLC PROCESSOR, AND COMMUNICATIONS, ETC., A RADIO MODEM, AND A PLC POWER SUPPLY WITH BATTERY BACKUP.
- 17. THE PUMP CONTROL PROGRAMMABLE LOGIC CONTROLLER (PLC) SHALL 17.1. BE OF MODULAR DESIGN, CAPABLE OF SUPPORTING REMOTE I/O, OPERATOR INTERFACE, ADDITIONAL PLC PROCESSORS, AND REMOTE COMMUNICATIONS.
- PROVIDE ALL HARDWARE, SOFTWARE, COMMUNICATION DRIVERS, AND CABLES NECESSARY TO FACILITATE COMMUNICATIONS WITH THE CENTRAL PLC. ALLOW FOR FUTURE I/O EXPANSION BY ADDING I/O MODULES.
- OPERATE FROM A 120V AC/24 VDC UPS WITH A CHARGER AND BATTERIES TO SUPPLY UP TO ONE HOUR OF BACKUP POWER. USE PROGRAMS HAVING RELAY LADDER LOGIC FORMAT. INCLUDE THE FOLLOWING FUNCTIONS: EVENT SEQUENCER, DOWN COUNTING TIMER (UP TO 30 MINUTES BY SECONDS), AVERAGING OF INPUT SIGNAL TOTALIZING OF INPUT
- SIGNAL, COMPARATOR, AND PID CONTROLLER. \

ASCO, MODEL SSP02SBA 16D OR AN ACCEPTABLE EQUIVALENT

AND SPECIFICATIONS DATED MARCH 5TH, 2019 OR LATEST VERSION.

- BE SUITABLE FOR BACK PANEL OR RACK MOUNTING OPERATE IN AN INDUSTRIAL ENVIRONMENT, 0°C TO 60°C, 5 TO 95% RELATIVE HUMIDITY, WITH NO EXTERNAL FORCED VENTILATION
- BE PROVIDED WITH THE MINIMUM NUMBER OF I/O's AS REQUIRED BY THE I/O LISTS, AND SPARE I/O's FOR AN ADDITIONAL (8) RELAY CONTACT OUTPUTS, (4) 4-20 mADC ANALOG INPUTS, AND (4) 4-20 mADC ANALOG OUTPUTS.

EQUIPMENT LIST:

1AIN CIRCUIT BREAKER (MCB): 250A-3P MOLDED CASE CIRCUIT BREAKER WITH NEMA TYPE 1 ENCLOSURE, SERVICE ENTRANCE RATED; MANUFACTURER - SQUARE-D, MODEL

NO. HJL36126 WITH ENCLOSURE MODEL NO. J250S OR AN ACCEPTABLE EQUIVALENT. POWER PANEL (PP): 300A, 240/120V, 3-PHASE, 4-WIRE, 42-POLE RATED, 250A-3P MAIN CIRCUIT BREAKER WITH NEMA TYPE 1 ENCLOSURE; MANUFACTURER - SQUARE D, MODEL NO. NF430L1C WITH ENCLOSURE MODEL NO. MH44 OR AN ACCEPTABLE EQUIVALENT. (SEE PANEL SCHEDULE FOR INDIVIDUAL CIRCUIT BREAKERS.)

PUMP CONTROL PANEL (PCP): PLC INTEGRATED AND SCADA COMPATIBILITY PUMP CONTROL PANEL SHALL BE MANUFACTURED BY TRIJAY SYSTEM INC. AS PER ARTESIAN WASTEWATER MANAGEMENT, INC. STANDARDS & SPECIFICATION SECTION 3.2. FRANSIENT VOLTAGE SURGE SUPPRESSOR (TVSS-SPD) UNIT: 160KA PER PHASE SURGE CAPACITY, 240/120V, 3-PHASE, 4-WIRE WITH NEMA TYPE 1 ENCLOSURE, ANUFACTURER;

PUMP MOTOR CONTROLLER: COMBINATION STYLE, VFD SIZED FOR 35HP, 240V, 3-PHASE SUBMERSIBLE PUMP MOTOR; FURNISHED WITH THERMAL-MAGNETIC CIRCUIT BREAKER DISCONNECT, 120V FUSED CONTROL POWER TRANSFORMER, HAND-OFF-AUTOMATIC SELECTOR SWITCH, RUN AND FAULT STATUS LIGHTS, 6-DIGIT RUNNING TIME METER, AND AUXILIARY CONTACTS IN NEMA TYPE 1 ENCLOSURE, MANUFACTURER - SQUARE-D, MODEL NO. ATV630U55M3 OR AN ACCEPTABLE EQUIVALENT... CABINET ELECTRIC HEATER: 200W, 120V, SINGLE-PHASE, NEMA TYPE 1 ENCLOSURE; MANUFACTURER - HOFFMAN MODEL NO. D-AH2001A OR AN ACCEPTABLE EQUIVALENT.

DIESEL GENERATOR SET: 125KW/125KVA, 240/120V, 3-PHASE, 4-WIRE, 60HZ AT 1800 RPM WITH PMG EXCITATION; MANUFACTURER - CUMMINS MODEL NO. C20D6 WITH 160

GALLON (NOMINAL) DUAL-WALL SUB-BASE FUEL TANK, AND LEVEL-2 SOUND-ATTENUATED, WEATHERPROOF ENCLOSURE OR AN ACCEPTABLE EQUIVALENT.

AUTOMATIC TRANSFER SWITCH (ATS): 250A-3P-SOLID NEUTRAL, 240/120V, 3-PHASE, 4-WIRE, NEMA TYPE 1 ENCLOSURE; MANUFACTURER - CUMMINS MODEL NO. OTEC OR AN

ELECTRICAL EQUIPMENT CABINETS: DOUBLE-DOOR, FREESTANDING, NEMA TYPE 4X STAINLESS STEEL CABINET WITH INTERIOR MOUNTING PANELS; MANUFACTURER - APX

SERVICE DISCONNECT SWITCH: 250A, 240V, 3-PHASE, 4 WIRE, NEMA 4 ENCLOSURE; MANUFACTURER- SQUARE D, HEAVY DUTY SAFETY SWITCH MODEL NUMBER VH364R OR AN ACCEPTABLE EQUIVALENT.

ALL MATERIALS, EQUIPMENT AND FITTINGS SHALL COMPLY WITH THE ARTESIAN WASTEWATER MANAGEMENT, INC. WASTEWATER STANDARDS



NDEMNIFY AND HOLD HARMLESS PENNONI ASSOCIAT FROM ALL CLAIMS, DAMAGES, LOSSES AND EXPENSE ARISING OUT OF OR RESULTING THEREFROM. RIBER22001 03/03/2025 DRAWING SCALE AS SHOWN APPROVED BY

ARE INSTRUMENTS OF SERVICE IN RESPECT OF TH

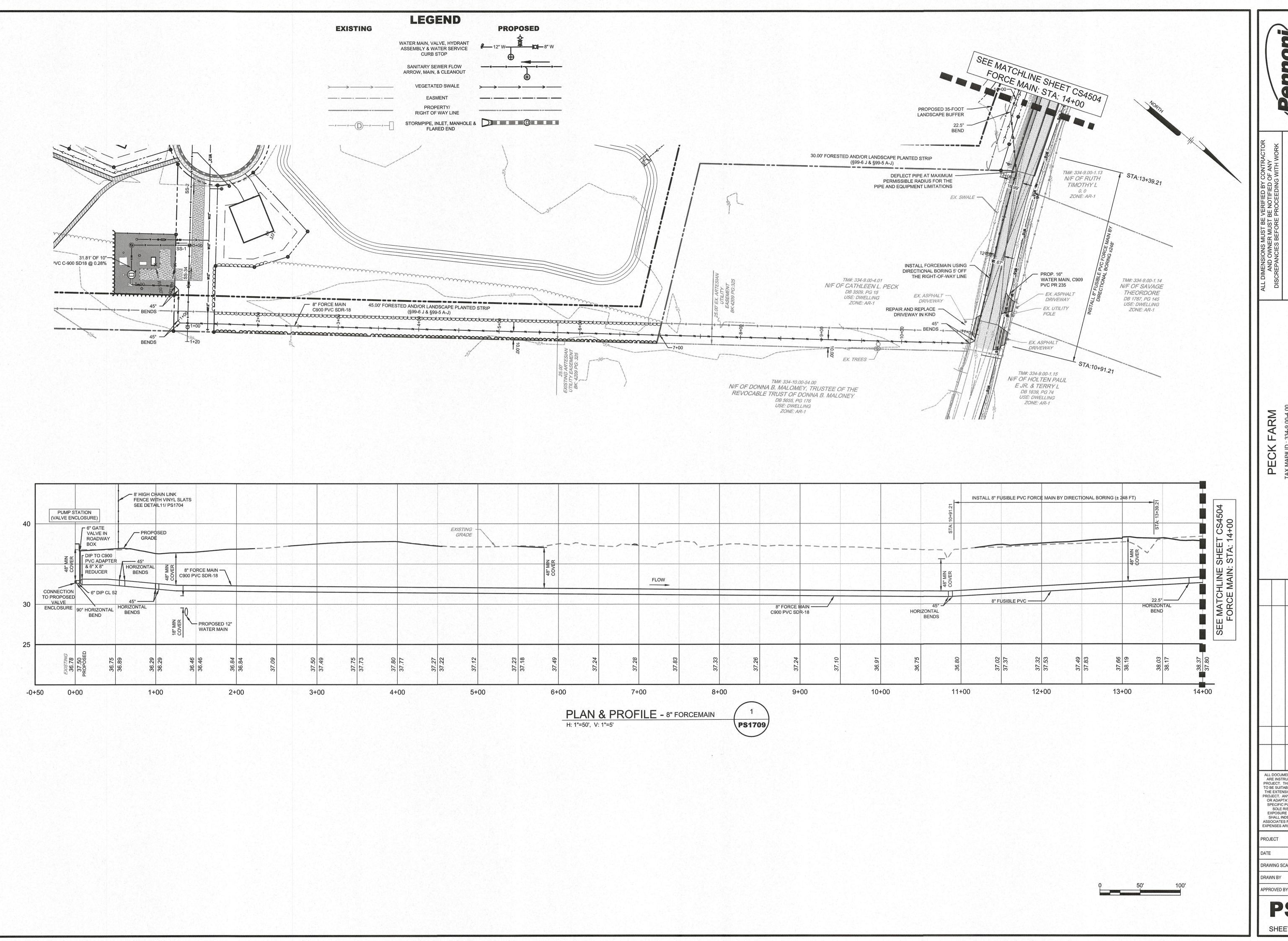
TO BE SUITABLE FOR REUSE BY OWNER OR OTHERS OF THE EXTENSIONS OF THE PROJECT OR ON ANY OTHER

PROJECT. ANY REUSE WITHOUT WRITTEN VERIFICATION OR ADAPTATION BY PENNONI ASSOCIATES FOR THE

SPECIFIC PURPOSE INTENDED WILL BE AT OWNERS

SOLE RISK AND WITHOUT LIABILITY OR LEGAL EXPOSURE TO PENNONI ASSOCIATE; AND OWNER SH

OJECT. THEY ARE NOT INTENDED OR REPRESENT



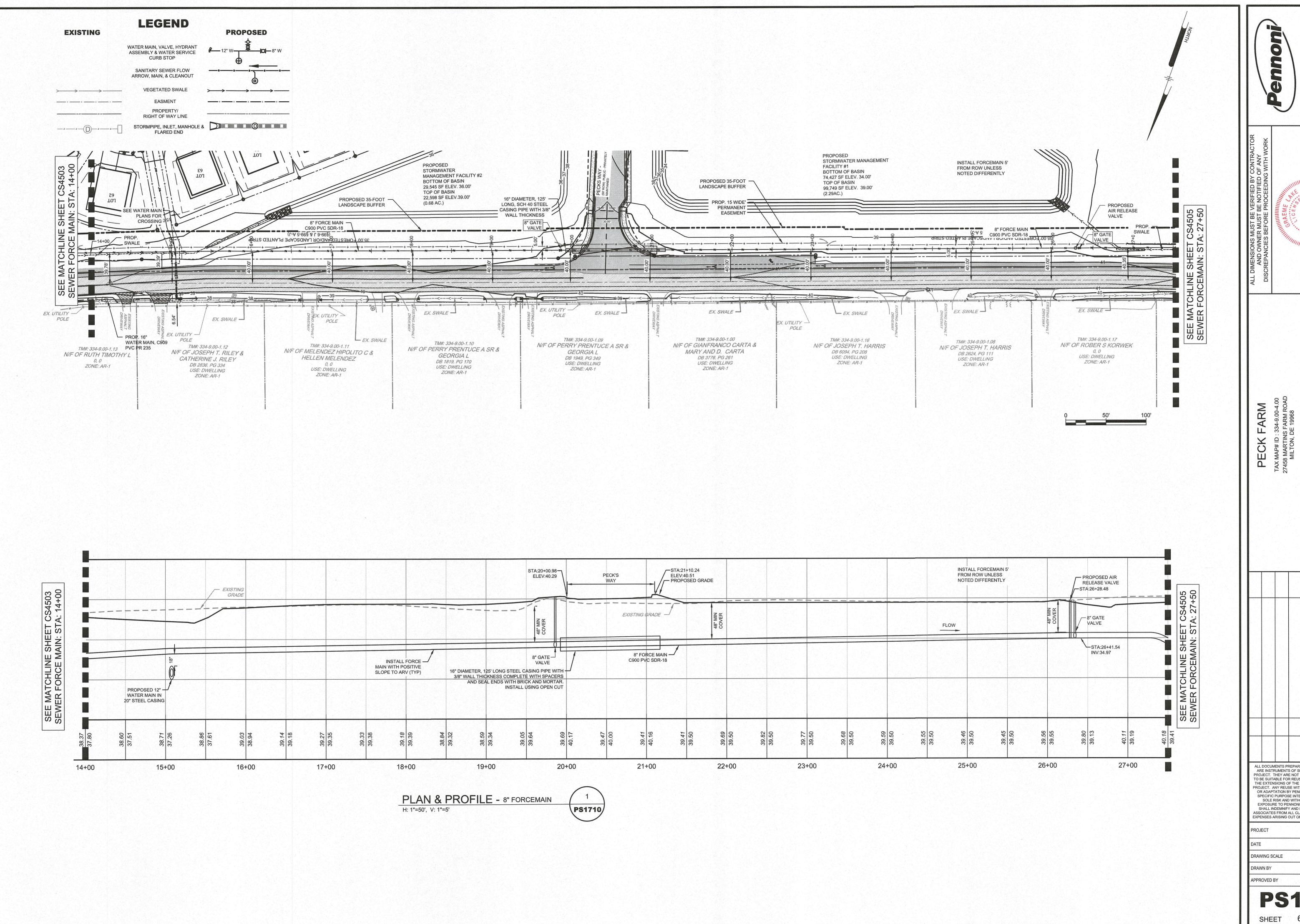


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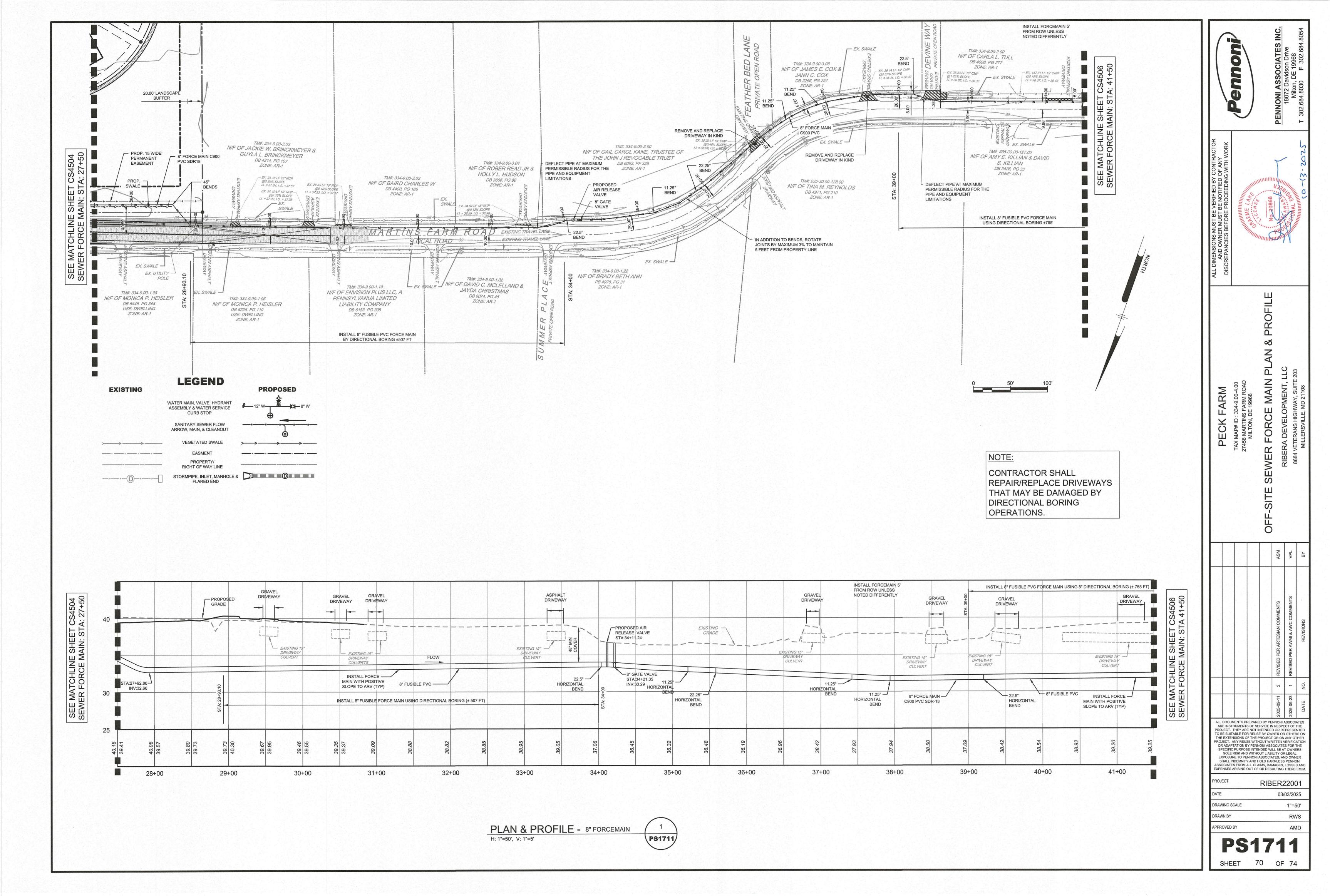
XPENSES ARISING OU	T OF OR RESULTING THEREFROM.
ROJECT	RIBER22001
NTE	03/03/2025
RAWING SCALE	1"=50'
RAWN BY	RWS
PROVED BY	AMD

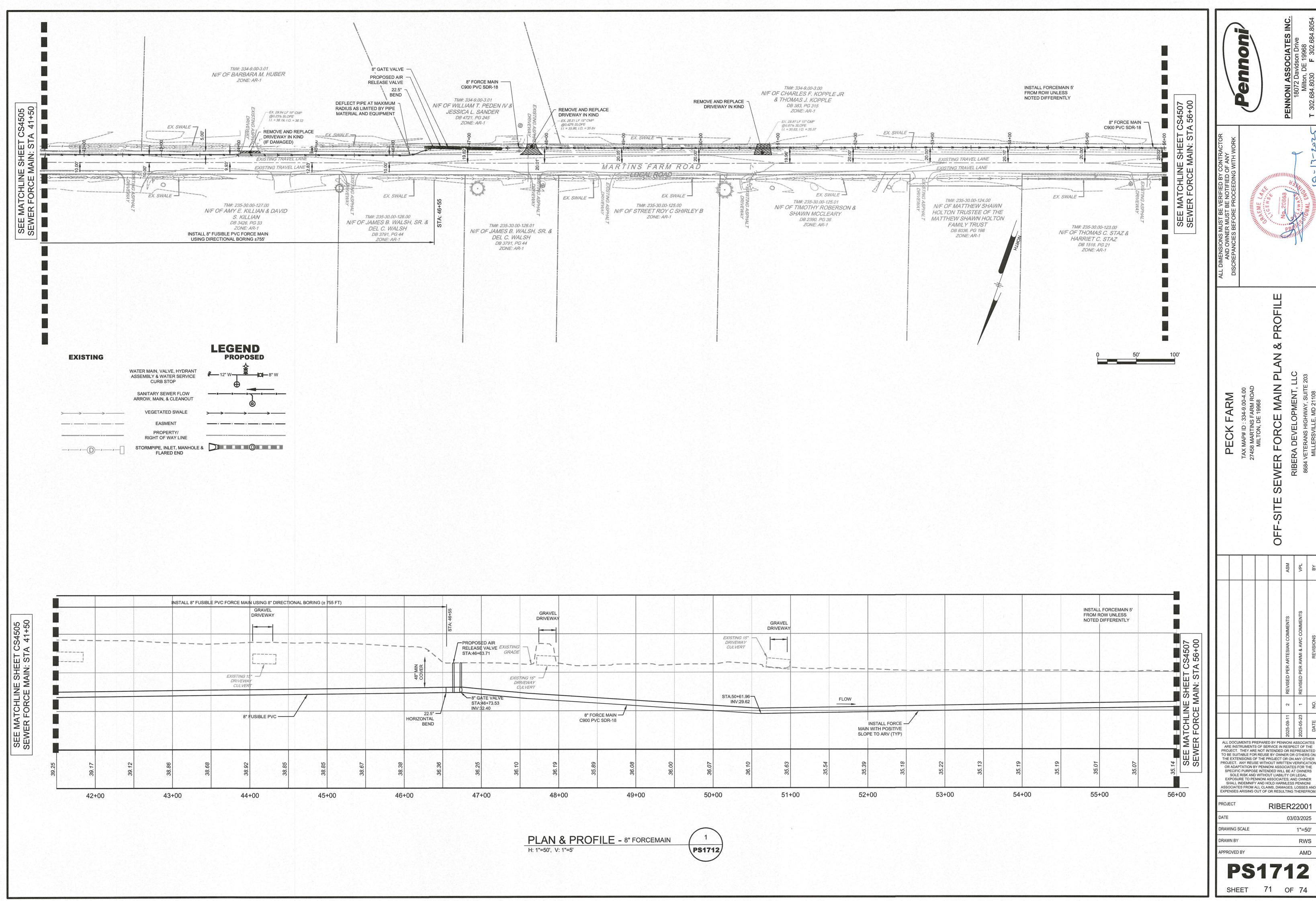


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RIBER22001 03/03/2025 1"=50'

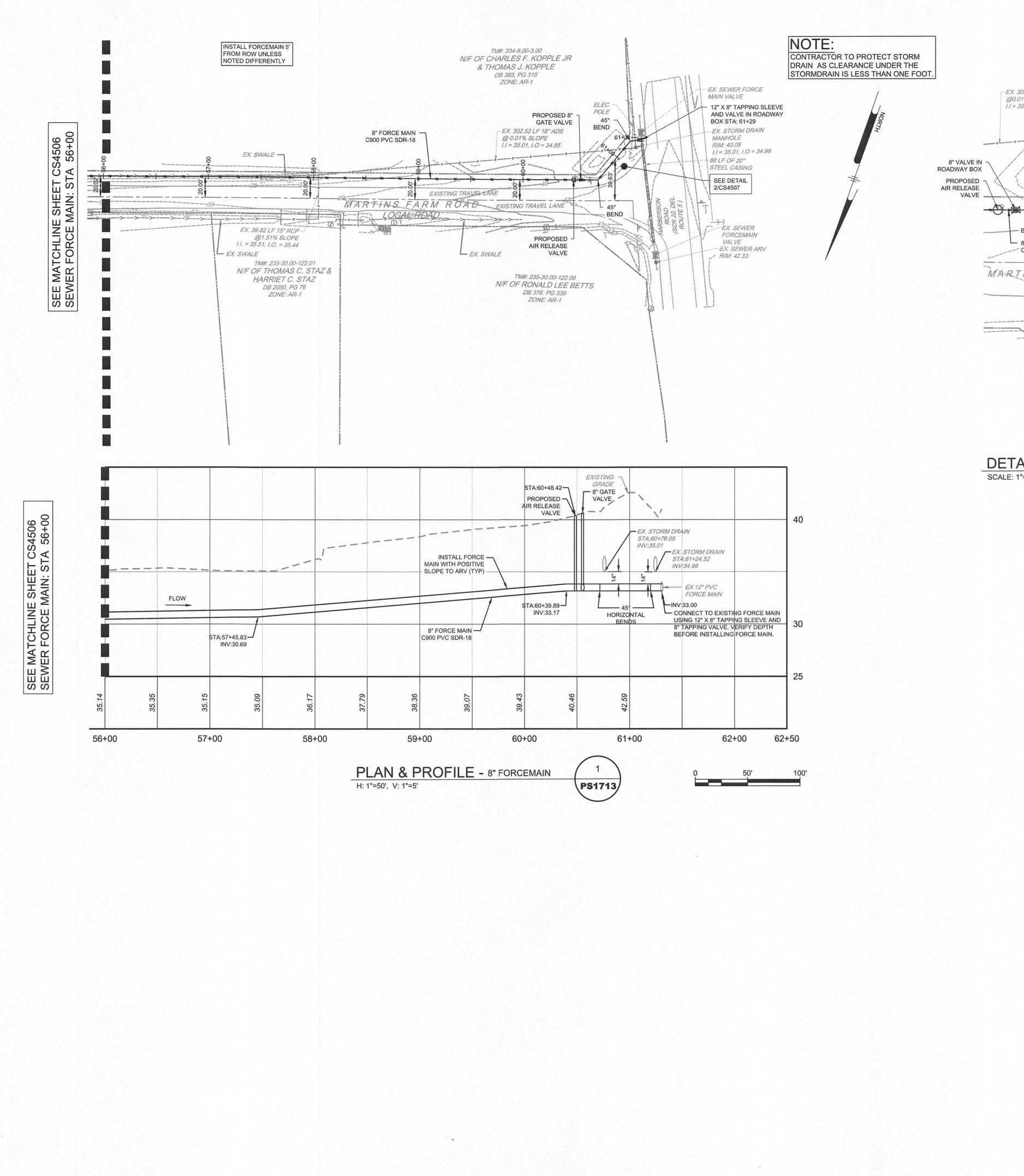
SHEET 69 OF 74

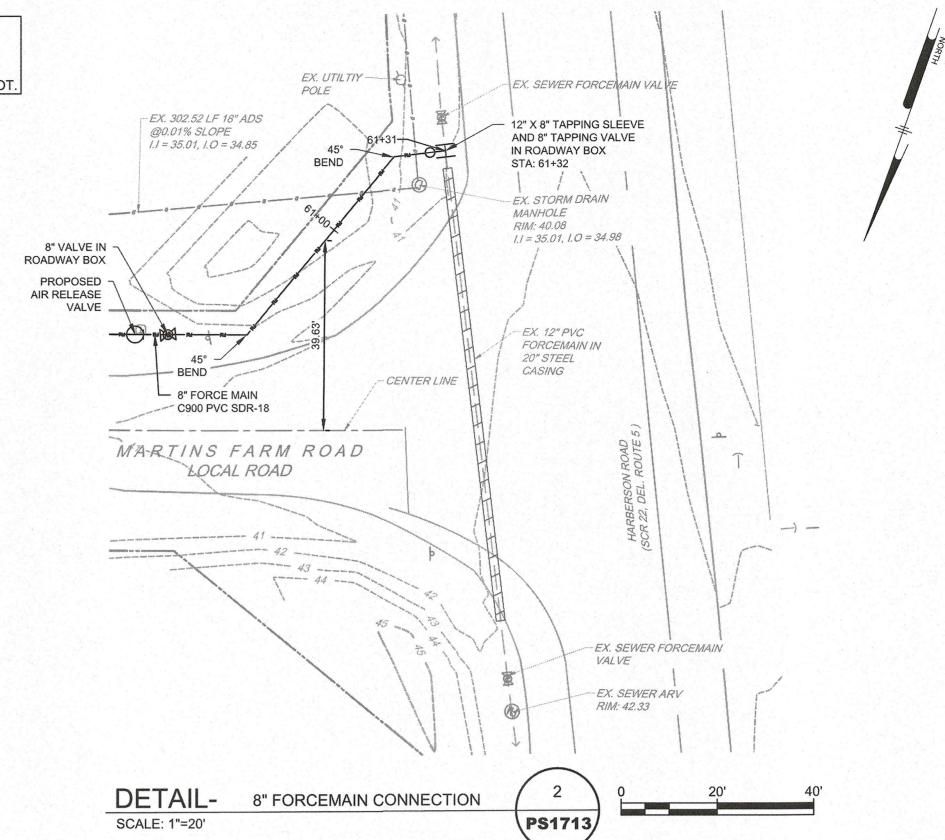


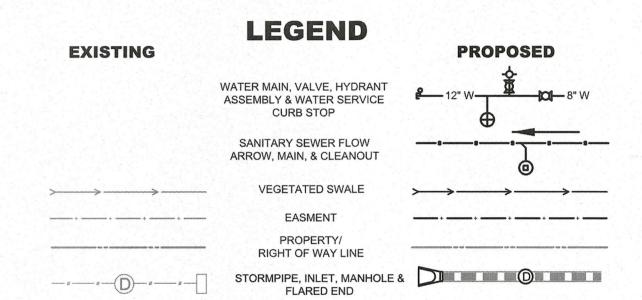


RIBER22001

03/03/2025 1"=50"







NOTES:

- 1. GENERALLY INSTALL FORCE MAIN 5 FOOT OFF RIGHT OF WAY LINE USING DIRECTIONAL BORING ALONG WEBB ROAD.
- 2. ROTATE PIPE JOINTS NO MORE THAN 1° PER JOINT TO ACHIEVE
- CHANGE OF VERTICAL AND HORIZONTAL DIRECTION
- 3. LOCATE FORCE MAIN TO AVOID DITCH LOW POINTS ALONG SHINGLE POINT ROAD
- 4. CONTRACTOR TO LOCATE ALL UTILITIES AT CROSSING AND VERIFY DEPTH PRIOR TO INSTALLATION OF FORCE MAIN.
- 5. JACK AND BORE DEPTH TO BE VERIFIED ONCE EDGES OF
- DRIVEWAYS AND ROAD PAVEMENT IDENTIFIED AND ALL UTILITIES DEPTH ARE IDENTIFIED.
- 6. ANY DAMAGE TO DRIVEWAYS, MAILBOXES, AND SIGNS TO BE
- REPAIRED AT CONTRACTORS COST. 7. CONTRACTOR TO INSTALL TRACER WIRE WITH THE FORCEMAIN
- PER ARTESIAN REQUIREMENTS

INSTALL STANDARD MARKERS FOR FORCE MAIN PER THE FOLLOWING LOCATIONS. REFER TO ARTESIAN DETAIL ON SHEET PS1710.

- 1. STATION: 1+05
- 2. STATION: 1+55
- 3. STATION: 10+55
- 4. STATION: 19+80
- 5. STATION: 21+80
- 6. STATION: 26+60
- 7. STATION: 33+72
- 8. STATION: 36+45
- 9. STATION: 37+35
- 10. STATION: 39+20
- 11. STATION: 39+75
- 12. STATION: 46+40 13. STATION: 52+50

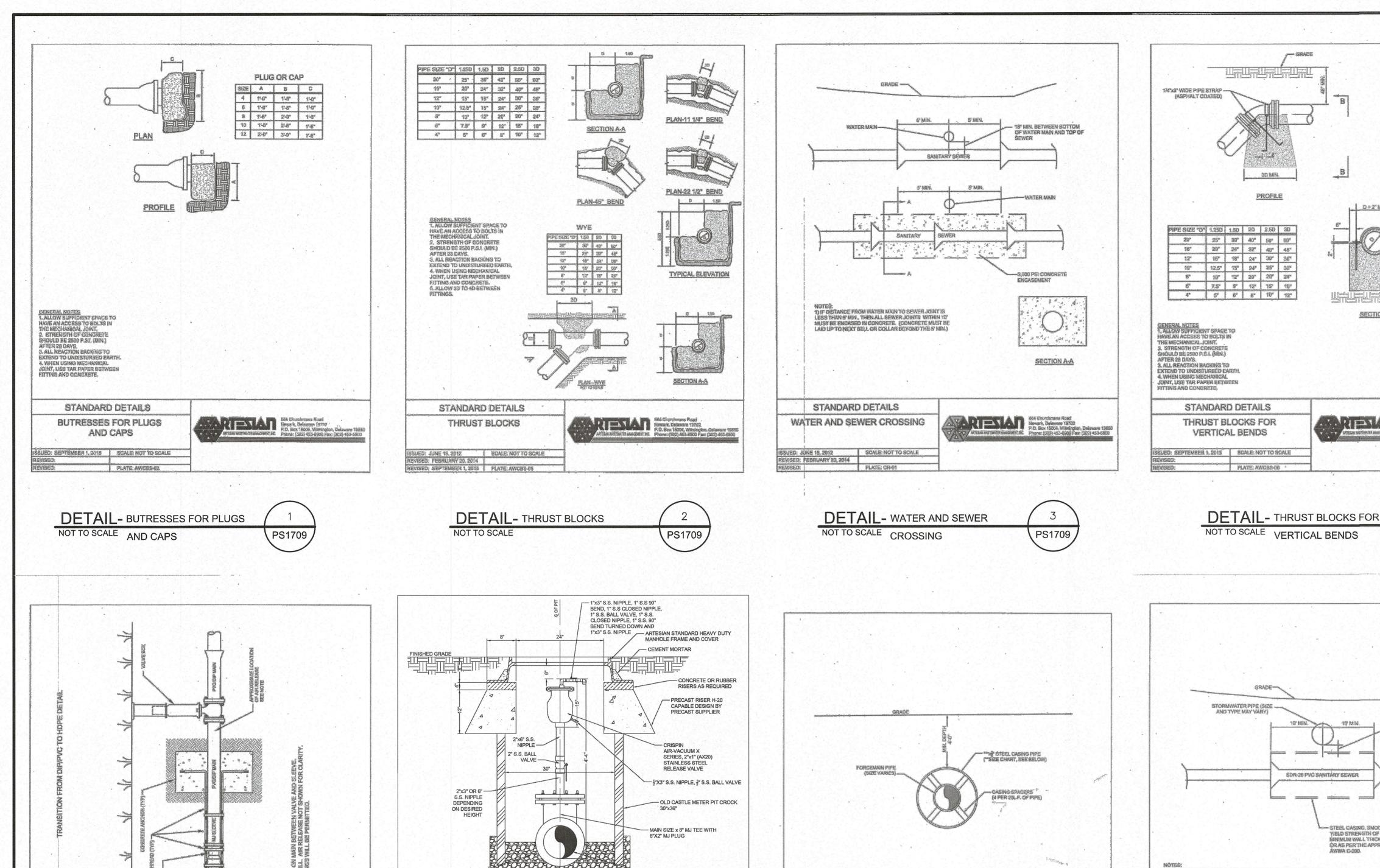
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PROJECT **RIBER22001** DATE 03/03/2025 DRAWING SCALE AS NOTED DRAWN BY RWS

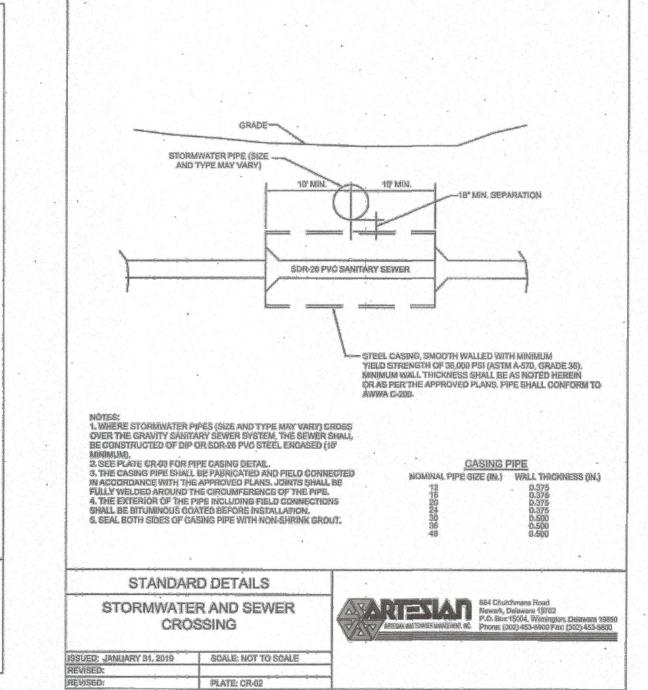
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SHEET 72 OF 74



(SIZE VARIES)

664 Churchmans Road
Newark, Delaware 19702
P.O. Box 15004, Wilmington, Delaware 19850
Phone: (302) 453-6900 Fax: (302) 453-5800



PROFILE

D+2"MIN. | 14"X3" WIDE PIPE STRAP

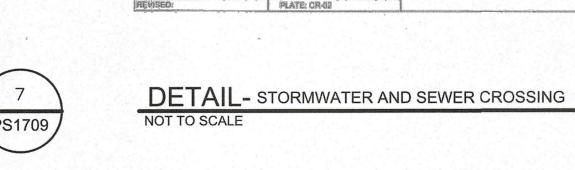
SECTION B-B

564 Citurchmans Road
Newark, Delaware 18707
P.G. Box 15004, Wilmington, Delaware 18868
Phone (302):453-45800 Faxt (302):453-5800

PS1709

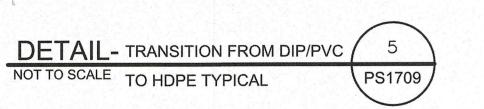
(ASPHALT COATED)

- 3H" ANCHOR BOLT



PS1709

TRANSITION FROM DIP/PVC TO HDPE DETAIL.	EMENTING GRADE WE CONTRINE ANCHOR (1779)— STAINA ESS STEEL ALL THREED (1779)— STAINA ESS STEEL ALL THREED (1779)— F Necessary	HOPE HAIN THE THE WAS SCIENCED TO AND THE PROPERTY OF THE PROP	NOTE: INSTALL AIR RELEASE ON MAIN BETWEEN VALVE AND SLEEVE. TYPICAL BOTH SIDES PER DRILL, AIR RELEASE NOT SHOWN FOR CLARITY. NO ELECTROFUSION COUPLINGS WILL BE PERMITTED.	
STANDARD				
TRANSITION FR		PLE	584 Churchmans Neverit, Delawa P.O. Box 15004, Phone (802) 35	Road 19702 Wilmington, Dalaware 19850 19900 Fax: 302) 452 5800 .
ISSUED: APRIL 20, 2011 REVISED: FEBRUARY 20, 2014	SCÁLE: NOT TO SCALE			



DETAIL- MODIFIED COMB. SEWERAGE AIR RELEASE/VACUUM NOT TO SCALE RELIEF VALVE NON-TRAFFIC AREAS PS1709

1. THIS PIT IS NOT DESIGNED FOR TRAFFIC LOADS. IF A TRAFFIC DUTY PIT IS REQUIRED, CALL
ARTESIAN WASTEWATER FOR MORE INFORMATION.
2. WHEN INSTALLING, BACKFILL CAREFULLY TO PREVENT DISTORTING OR CRACKING PIT.
3. DAMAGED PITS WILL NOT BE ACCEPTED!! ALTERING PIT IN ANY WAY REQUIRES PRIOR

AUTHORIZATION FROM ARTESIAN WSTEWATER FOR INSPECTION.

TO SPRING LINE OF PIPE

UNDISTURBED EARTH ----

STANDARD DETAILS

MODIFIED COMB. SEWERAGE AIR

RELEASE/VACUUM RELIEF VALVE

NON-TRAFFIC AREAS

ISSUED: AUGUST 6, 2019 SCALE: NOT TO SCALE
REVISED: NOV. 10, 2023

REVISED: DEC. 5, 2024 PLATE: MH-07

DETAIL- TYPICAL PIPE CASING CROSS-SECTION \PS1709

664 Cisureimans Road Newerk, Delaware 19702 P.C. Box 15004, Wilnington, Delaware 197 Phone: (302) 453-680 Pain (302) 453-581

FÓRCEMAIN PIPE SIZE/STEEL CASING SIZE

PIPE DIA, IN INCHES CASING DIA, IN INCHES

STANDARD DETAILS

TYPICAL PIPE CASING

CROSS-SECTION

ISSUED: PEBRUARY 28, 2014 SCALE: NOT TO SCALE
REVISED: SEPTEMBER 1, 2015
REVISED: JANUARY 31, 2019 PLATE: CR-03

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SITE SEWER FORCE NOTES & DETAILS

PECK AX MAP# ID

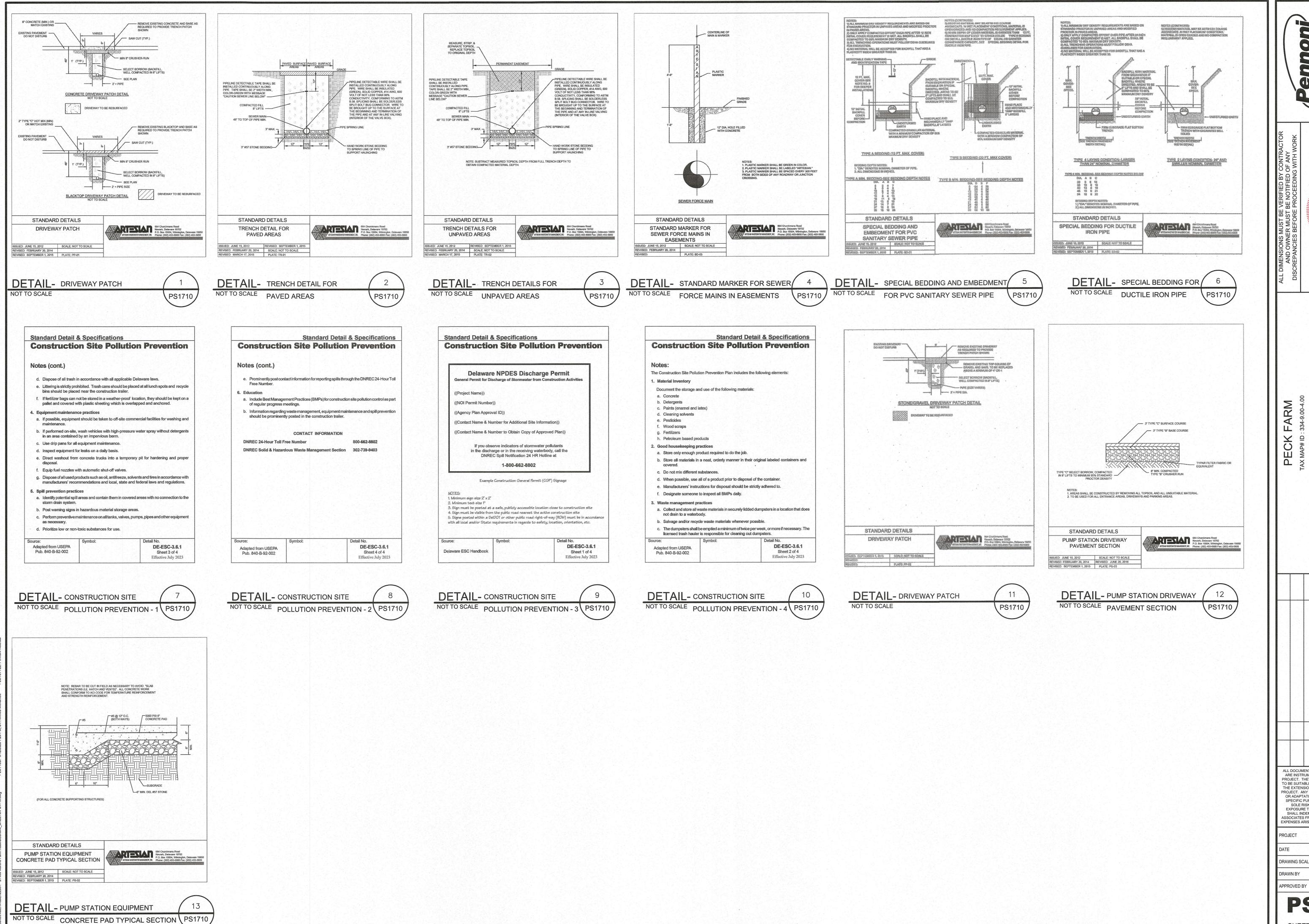
PENNONI ASSOCIATES INC.
18072 Davidson Drive
Milton, DE 19968
T 302.684.8030 F 302.684.8054

Pennon

PROJECT DRAWING SCALE AS NOTED DRAWN BY RWS

APPROVED BY

SHEET 73 OF 74



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WER F S & DE

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DRAWING SCALE AS NOTED

PS1715

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