TOWNE LAKES SUBDIVISION CONSTRUCTION PLANS FOR WASTEWATER PUMPING STATION AND FORCE MAIN

TAX ID: TM: 233-5.00-122.00

TOWN OF MILLSBORO/ DAGSBORO HUNDRED, SUSSEX COUNTY

HANDY ROAD (SCR 337), MILLSBORO, DE 19966

PREPARED FOR:

DEVELOPER

ATAPCO TOWNE LAKES, LLC.

ONE SOUTH STREET, SUITE 2800

BALTIMORE, MD 21202-3335

(410)347-7174

GENERAL NOTES:

1. THIS PLAN AND APPROVAL IS FOR DOMESTIC WASTE WATER ONLY.
2. ALL FACILITIES TO MEET TOWN OF MILLSBORO STANDARDS AND SPECIFICATIONS.

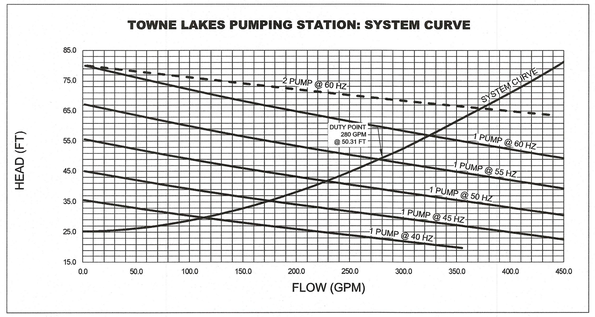
SITE NOTES:

1. THE PROPERTY LINES SHOWN ON THIS PLAT WAS TAKEN FROM DOCUMENTS OF PUBLIC RECORDS AS WELL AS ACTUAL FIELD SURVEY PREPARED BY PENNONI ASSOCIATES.
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 PROVIDED BY THE TOWN OF MILLSBORO.
4. WATER FOR THE SITE WILL BE PROVIDED BY TOWN OF MILLSBORO.
5. WASTE WATER WILL BE TREATED AT THE MILLSBORO WASTEWATER TREATMENT FACILITY.
6. WATER AND SEWER MAIN SHALL HAVE A MINIMUM OF 10 FEET OF HORIZONTAL AND A MINIMUM OF 18 INCHES VERTICAL CLEARANCE BETWEEN THEM.
7. 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.
8. THE SITE IS LOCATED IN ZONE X BASED ON THE FEMA FLOOD INSURANCE RATE MAPS NUMBER 10005C0458K AND 10005C0470K, MAP REVISED MARCH 16TH, 2015 AND IS DETERMINED TO NOT BE INSIDE THE 100 YEAR FLOODPLAIN OF MINIMAL FLOOD HAZARD.
9. THE SUSSEX CONSERVATION DISTRICT RESERVES THE RIGHT TO ADD, DELETE OR MODIFY ANY EROSION AND SEDIMENT CONTROL MEASURES AS THEY DEEM NECESSARY.
10. ALL DISTURBED AREAS WITHIN THE RIGHT-OF-WAY, BUT NOT IN PAVEMENT, SHALL BE TOPSOILED (6" MINIMUM), FERTILIZED AND SEEDED.
11. A 72 HOUR (MINIMUM) NOTICE SHALL BE GIVEN TO THE DISTRICT PERMIT SUPERVISOR PRIOR TO STARTING ENTRANCE CONSTRUCTION.
12. MISS UTILITY (811) OR 1-800-282-8555 SHALL BE NOTIFIED THREE (3) DAYS PRIOR TO EXCAVATION.
13. 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."
14. DAMAGE TO EXISTING SIGNS SHALL BE REPAIRED OR REPLACED AS PER THE "GUIDE FOR FABRICATION AND INSTALLATION OF TRAFFIC CONTROL DEVICES".
15. ALL PROPOSED FOREST BUFFERS ARE TO BE MAINTAINED BY THE CONTRACTOR.
16. ALL FIRE LANES, FIRE HYDRANTS AND FIRE DEPARTMENT CONNECTIONS SHALL BE MARKED IN ACCORDANCE WITH THE DELAWARE STATE FIRE PREVENTION REGULATIONS.

FLOW GENERATION	EDU	ADF
330 SINGLE FAMILY HOMES	330	79,200 GPD
85 TOWN HOMES	85	20,400 GPD
1 CLUB HOUSE	5	1,200 GPD
TOTAL AVERAGE DAILY FLOW		100,800 GPD
DESIGN FLOW		280 GPM

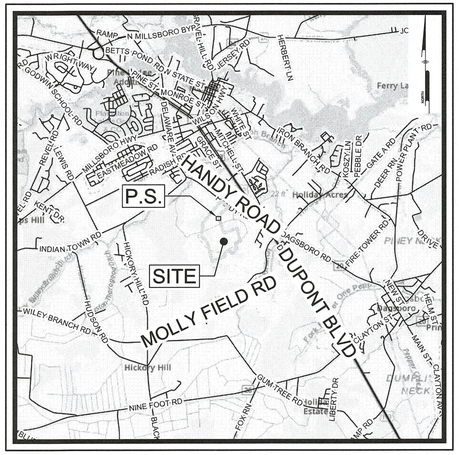
DESIGN CRITERIA	
1 EDU	240 GPD
HAZEN-WILLIAMS "C" PVC	140
HAZEN-WILLIAMS "C" DIP	110

SYSTEM CURVE:



EMERGENCY STORAGE OF WASTEWATER

Wastewater Elevation	Accumulated wetwell storage	Cum MH Vol	Accumulated pipe vol gal	Total vol. stored	Time (hours)
8	0	0	0	0	0
9	376	0	0	376	0.09
10	752	0	0	752	0.18
11	1128	0	0	1128	0.27
12	1504	94	16	1614	0.38
13	1880	564	832	3276	0.78
14	2256	1128	2096	5480	1.30
15	2632	1786	3033	7451	1.77
16	3008	2444	3506	8958	2.13
17	3384	3760	4891	12035	2.87
18	3760	5358	7194	16312	3.88
19	4136	7896	11157	23189	5.52
20	4512	11186	16320	32018	7.62
21	4888	15228	20666	40782	9.71
22	5264	19834	25153	50251	11.96
23	5640	25756	30558	61954	14.75
24	6016	32430	35954	74400	17.71
25	6392	40420	41556	88368	21.04
26	6768	48598	45167	100533	23.94
27	7144	56870	45547	109561	26.09



LOCATION MAP

Scale: 1" = 5000'

LEGEND

EXISTING	PROPOSED	DESCRIPTION
		CURB
		EDGE OF PAVEMENT
		PAVEMENT
		EDGE OF GRAVEL
		EASEMENT
		FENCE
		PROPERTY LINE/ RIGHT OF WAY
		BUILDING RESTRICTION LINE
		PROPERTY, CORNER FOUND
		PROPERTY, ADJOINING LINED
		SITE, MAIL BOX
		SITE, TRAFFIC SIGN
		SOIL BOUNDARY
WaC		SOIL LABEL
		STORM SEWER, INLET
		STORM SEWER,HEADWALL
		STORM SEWER, MANHOLE
D D		STORM SEWER, UNDERGROUND
101	101	MINOR CONTOUR
100	100	MAJOR CONTOUR
X 100.5	35.00	SPOT ELEVATION
		TREE LINE
W W	W W	WATER, UNDERGROUND
		WATER VALVE
		FIRE HYDRANT
		CLEAN OUT
S S	S S	SANITARY SEWER, UNDERGROUND
FM FM	FM FM	SANITARY SEWER, FORCE MAIN
		SANITARY SEWER, MANHOLE
UE UE	E	POWER-UNDERGROUND ELECTRIC
		POWER, UTILITY POLE
		STREET LIGHT
		BOUNDARY OF FEDERALLY REGULATED WETLANDS (USACOE)
		BOUNDARY OF DNREC (STATE) REGULATED TIDAL WETLAND
		LANDSCAPE BUFFER
		ROADWAY CENTERLINE
		FEDERALLY REGULATED NON-TIDAL WETLANDS (USACOE)
		WETLAND BUFFER
		CONCRETE SIDEWALK

SITE DATA COLUMN:

1.	TAX MAP NUMBER:	233-5.00-122.00 [DEED REF. PARCEL BOOK 6325, PG. 145
2.	DEVELOPER NAME:	ATAPCO TOWNE LAKES, LLC.
3.	DEVELOPER ADDRESS:	ONE SOUTH STREET, SUITE 2800 BALTIMORE, MD 21202-3335
4.	SITE ADDRESS:	HANDY ROAD MILLSBORO, DE 19966 BROADKILL HUNDRED, SUSSEX COUNTY
5.	CURRENT ZONING:	MR (MEDIUM DENSITY RESIDENTIAL)
6.	LATITUDE AND LONGITUDE STATE PLAN COORDINATES:	LATITUDE: N -38° 33' 52", LONGITUDE: W -75° 17' 22"
7.	GROSS ACREAGE:	131.23 ACRES
8.	PROPOSED USE:	RESIDENTIAL
9.	PROPOSED UNITS:	DOMESTIC: 415 EDU'S & 5 EDU'S FOR CLUBHOUSE 1 EDU = 240 GPD
10.	SEWER DISTRICT	TOWN OF MILLSBORO
11.	RECEIVING WASTE WATER PLANT:	MILLSBORO WASTEWATER TREATMENT FACILITY
12.	100 YEAR FLOOD PLAIN:	0 ACRES

Sheet List Table		
Sheet Number	Sheet	Sheet Title
1	PS1700	PUMP STATION COVER SHEET
2	PS1701	PUMP STATION SITE PLAN
3	PS1702	PUMP STATION SECTIONS
4	PS1703	ELECTRICAL SITE PLAN
5	PS1704	ELECTRICAL DETAILS
6	PS1705	ELECTRICAL DETAILS
7	PS1706	ELECTRICAL NOTES
8	PS1707	SEWER FORCE MAIN PLAN AND PROFILE
9	PS1708	SEWER FORCE MAIN PLAN AND PROFILE
10	PS1709	SEWER FORCE MAIN PLAN AND PROFILE
11	PS1710	PUMP STATION DETAILS
12	PS1711	PS. AND FM. NOTES AND DETAILS
13	PS1712	PS. AND FM. NOTES AND DETAILS
14	PS1713	PS. AND FM. NOTES AND DETAILS

CALL BEFORE YOU DIG
Call Miss Utility of Delmarva
800-282-8555
Ticket Number(s): 241840222, 241840223, 241840224, 241840225, 241840230, 241840235, 262870673

PREPARED BY:

PENNONI ASSOCIATES INC.

18072 Davidson Drive
Milton, DE 19968
T 302.684.8030
F 302.684.8054

TOWN OF MILLSBORO STAMP APPROVAL AREA

ENGINEER CERTIFICATION:
IT IS HEREBY CERTIFIED THAT I AM A REGISTERED ENGINEER IN THE STATE OF DELAWARE, THAT THE INFORMATION SHOWN HEREON HAS BEEN PREPARED UNDER MY SUPERVISION, AND TO MY BEST KNOWLEDGE COMPLIES WITH APPLICABLE STATE AND LOCAL REGULATIONS AND ORDINANCES. THE DESIGN REPRESENTS GOOD ENGINEERING PRACTICES AS REQUIRED BY THE APPLICABLE LAWS OF THE STATE OF DELAWARE.

GRAEME K. LAKE, PE No. 20868, STATE OF DELAWARE, PROFESSIONAL ENGINEER

SIGNATURE 10/15/2026 DATE

GRAEME LAKE, PE (DE PE#20868)
PENNONI ASSOCIATES, INC
18072 DAVIDSON DRIVE
MILTON, DE 19968
OFFICE (302) 684-8229
GLAKE@@PENNONI.COM

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

ALL DIMENSIONS MUST BE VERIFIED BY CONTRACTOR AND OWNER MUST BE NOTIFIED OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK

TOWNE LAKES
TM: 233-5.00-122.00
TOWN OF MILLSBORO/ DAGSBORO HUNDRED, SUSSEX COUNTY
MILLSBORO, DE 19966 MILLSBORO, DE 19966

PUMP STATION COVER SHEET

ATAPCO TOWNE LAKES, LLC.
ONE SOUTH STREET, SUITE 2800
BALTIMORE, MD 21202-3335

NO.	DATE	REVISIONS	BY
2	2026-10-13	REVISED PER TOWN OF MILLSBORO COMMENTS	ASM
1	2026-08-05	REVISED PER TOWN OF MILLSBORO COMMENTS	ASM

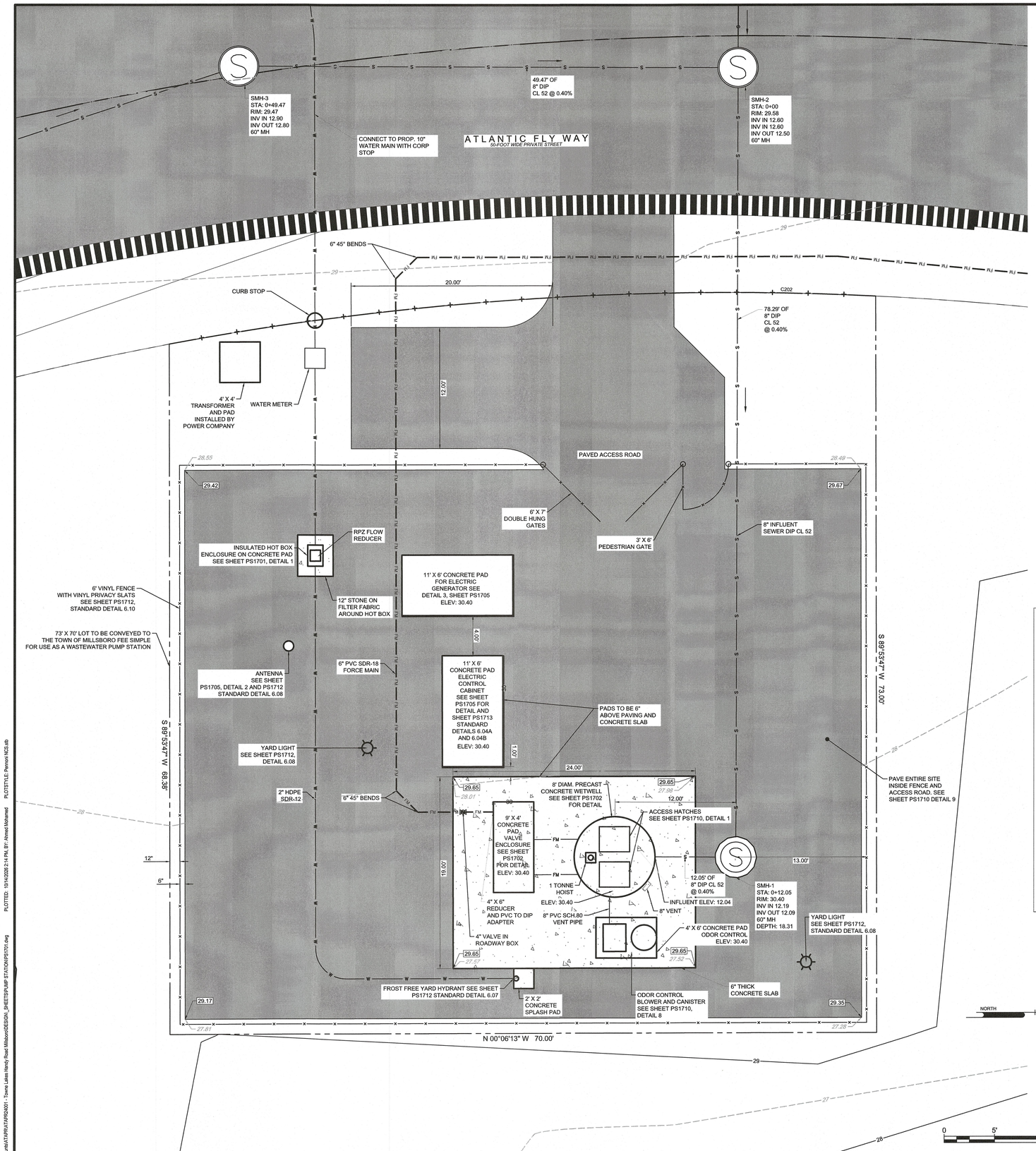
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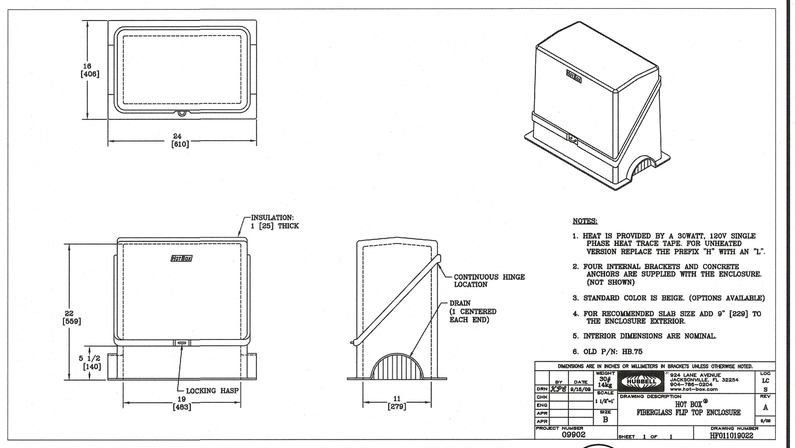
PROJECT	ATAPR24001
DATE	2025-11-20
DRAWING SCALE	AS SHOWN
DRAWN BY	CC
APPROVED BY	GCL

PS1700

SHEET 1 OF 14

U:\Accounts\ATAPR\ATAPR24001 - Towne Lakes Handy Road Millsboro\DESIGN_SHEETS\PUMP STATION\PS1700.dwg PLOTTED: 10/14/2026 2:51 PM, BY: Ahmed Mohamed PLOTSTYLE: Pennoni.NCS.stb





DETAIL- HEATED HOT BOX
NOT TO SCALE

1
PS1701

GENERAL NOTES FOR PUMP STATION CONSTRUCTION:

1. ALL CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH TOWN OF MILLSBORO STANDARDS AND SPECIFICATIONS LATEST EDITION.
2. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970 AND ALL AMENDMENTS THERETO. THESE DRAWINGS DO NOT INCLUDE THE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY.
3. NO DEBRIS SHALL BE BURIED ON SITE. DEBRIS ENCOUNTERED DURING CONSTRUCTION SHALL BE REMOVED AT THE CONTRACTORS EXPENSE, TO AN AREA OR SITE WITH AN APPROVED DRY WASTE FILL PLAN AND EROSION AND SEDIMENT CONTROL PLAN.
4. EXISTING UTILITIES, AS OF THIS DATE ARE SHOWN IN ACCORDANCE WITH THE BEST AVAILABLE INFORMATION. COMPLETENESS AND CORRECTNESS THEREOF IS NOT GUARANTEED. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CONFER WITH THE UTILITY COMPANIES INVOLVED IN ORDER TO SECURE THE MOST ACCURATE INFORMATION AVAILABLE AS TO UTILITY LOCATION. THE FAILURE TO SHOW ON THE DRAWINGS ANY EXISTING UTILITIES SHALL NOT RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITY OF DETERMINING THE LOCATION OF THESE UTILITIES. NO CONSTRUCTION AROUND OR ADJACENT TO UTILITIES SHALL BE DONE WITHOUT FIRST CALLING "MISS UTILITY" (1-800-282-8555) 72 HOURS PRIOR TO EXCAVATION TO HAVE UNDERGROUND UTILITY CABLES LOCATED AND MARKED.
5. THE CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND MAINTAIN UNINTERRUPTED SERVICE, AND ANY DAMAGE DONE TO THEM DUE TO THEIR NEGLIGENCE SHALL BE IMMEDIATELY AND COMPLETELY REPAIRED TO THE OWNERS SATISFACTION AT THE CONTRACTORS SOLE EXPENSE. IF THE CONTRACTOR RELIES ON THE UTILITY LOCATIONS SHOWN HEREON, HE DOES SO AT HIS OWN RISK AND WILL NOT BE ENTITLED TO ADDITIONAL COMPENSATION DUE TO TIME DELAYS FROM SAID RELIANCE.
6. CONTRACTOR SHALL COORDINATE WITH THE UTILITY OWNER WHEN PERMANENT OR TEMPORARY RELOCATION OF THE EXISTING UTILITY IS REQUIRED. THIS SHALL INCLUDE BUT NOT BE LIMITED TO STORM DRAINS, INLETS, PAVEMENT, SIGNALS, CONDUITS, CABLES, PIPING, GUY WIRES, POLES, AND OVERHEAD FACILITIES, ETC., REGARDLESS OF OWNERSHIP.
7. THE CONTRACTOR SHALL PROTECT ALL ADJOINING AND NEARBY BUILDINGS, EQUIPMENT, ALL UTILITIES, STRUCTURES, FENCES, TREES, SHRUBBERY, ETC., FROM DAMAGE DUE TO EXCAVATION, DEMOLITION, AND CONSTRUCTION, DURING THE ENTIRE CONSTRUCTION PERIOD. ANY DAMAGE CAUSED DIRECTLY OR INDIRECTLY WILL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
8. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROTECT ALL INSTALLED UTILITIES UNTIL THE COMPLETION OF CONSTRUCTION. PIPES WITH SHALLOW COVER SHALL BE PROTECTED FROM DAMAGE BY CONSTRUCTION MACHINERY WITH ADEQUATE TEMPORARY COVER. PIPING, MANHOLE AND VAULT OPENINGS SHALL BE PROTECTED TO PREVENT SEDIMENT, DEBRIS AND WATER FROM ENTERING THE FACILITIES. THE CONTRACTOR SHALL CLEAN AND DISPOSE OF ALL MATERIAL TO THE SATISFACTION OF THE CITY SHOULD THESE MATERIALS BE ALLOWED TO ENTER THE INSTALLED FACILITIES OR EXISTING FACILITIES WHERE CONNECTIONS EXIST.
9. ALL EXCAVATION FOR STRUCTURES AND PIPE TRENCHES SHALL BE KEPT FREE OF WATER UNTIL BACKFILL IS PROPERLY TAMPED IN PLACE TO FINISH GRADE. SPECIAL ATTENTION IS CALLED TO THE NEED TO PROPERLY REMOVE SEDIMENT FROM DEWATERING ACTIVITIES WITHOUT THE USE OF EXCAVATED SEDIMENT PITS. THE CONTRACTORS ATTENTION IS CALLED TO THE NEED TO ACHIEVE DEWATERING ACTIVITY AND SEDIMENT REMOVAL WITH PORTABLE DEWATERING BOXES OR OTHER SIMILAR DEVICES WHILE MINIMIZING THE DISRUPTION TO BUSINESSES AND ADJACENT GROUND AREAS. WATER DISCHARGED FROM DEWATERING / SEDIMENT REMOVAL DEVICES SHALL BE CONVEYED TO EXISTING DRAINAGE FACILITIES SUCH AS INLETS AND DRAINAGE DITCHES SO AS TO PREVENT HAZARDOUS CONDITIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DAMAGE AND INJURY WHICH OCCURS AS A RESULT OF IMPROPER DEWATERING / SEDIMENT REMOVAL ACTIVITIES.
10. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN THE APPROVAL AND ACCEPTANCE OF THE PUMP STATION, BY THE TOWN OF MILLSBORO, UPON COMPLETION OF CONSTRUCTION.
11. SANITARY SEWER SEPARATION FROM WATER MAINS SHALL BE 10 FEET HORIZONTAL, 18 INCH VERTICAL MINIMUM AT ALL WATER AND SEWER CROSSINGS, UNLESS OTHERWISE NOTED.
12. CONTRACTOR TO DISPOSE OF ALL HAZARDOUS WASTE ENCOUNTERED DURING EXCAVATION IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS. THE DISPOSAL SITE MUST BE A PERMITTED SITE.
13. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DISPOSE OF ALL EXCAVATED MATERIAL NOT USED IN THE PROJECT CONSTRUCTION AT AN APPROVED UPLAND DISPOSAL SITE HAVING AN APPROVED EROSION AND SEDIMENT CONTROL PLAN.

NOTE:

1. INFLUENT GRAVITY SEWER SHOWN ON SITE DEVELOPMENT PLANS
2. EQUIPMENT PAD & WETWELL SLAB TO BE MINIMUM 5" ABOVE ADJACENT GRAVEL SURFACE
3. CONCRETE PAD SIZE TO BE MATCHED TO EQUIPMENT ON PAD, PLUS 6" CLEARANCE ON EACH SIDE

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

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10/9/2026

TOWNE LAKES
TM: 233-5.00-122.00
TOWN OF MILLSBORO/ DAGSBORO HUNDRED, SUSSEX COUNTY
MILLSBORO, DE 19966

PUMP STATION SITE PLAN

ATAPCO TOWNE LAKES, LLC.
ONE SOUTH STREET, SUITE 2800
BALTIMORE, MD 21202-3335

NO.	DATE	BY	REVISIONS
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1	2026-08-05	ASM	REVISED PER TOWN OF MILLSBORO COMMENTS

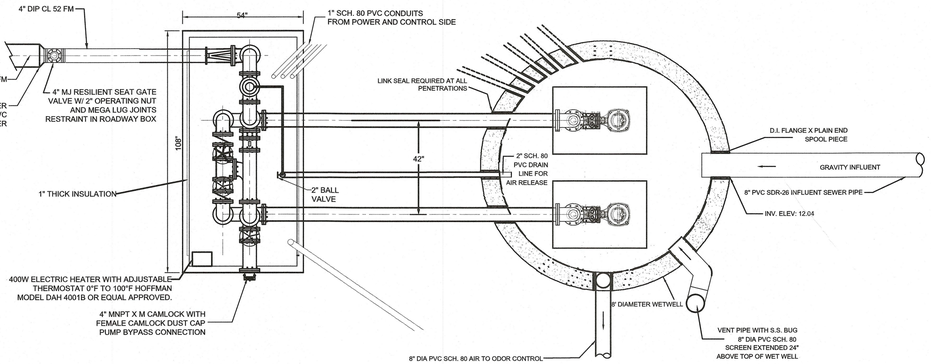
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PROJECT	ATAPR24001
DATE	2025-11-20
DRAWING SCALE	1" = 5'
DRAWN BY	CC / LAC
APPROVED BY	GCL

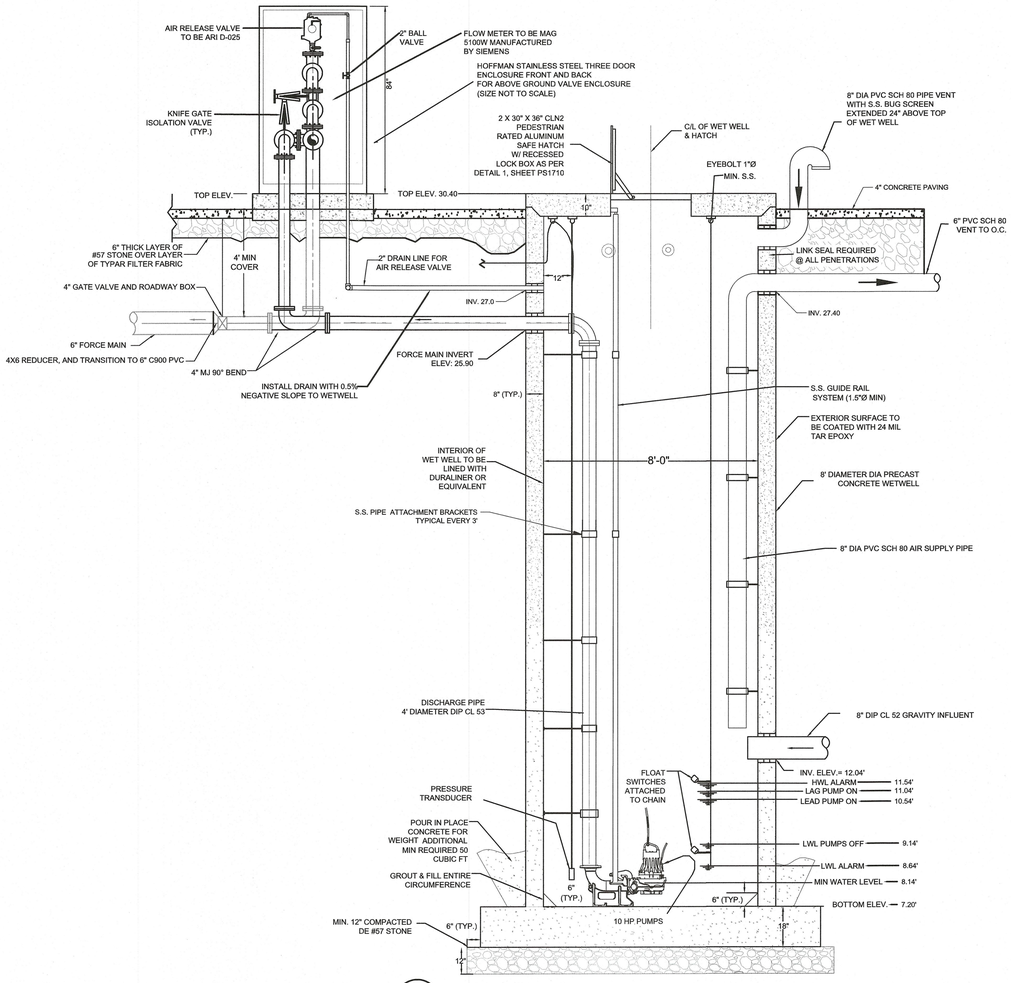
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SHEET 2 OF 14

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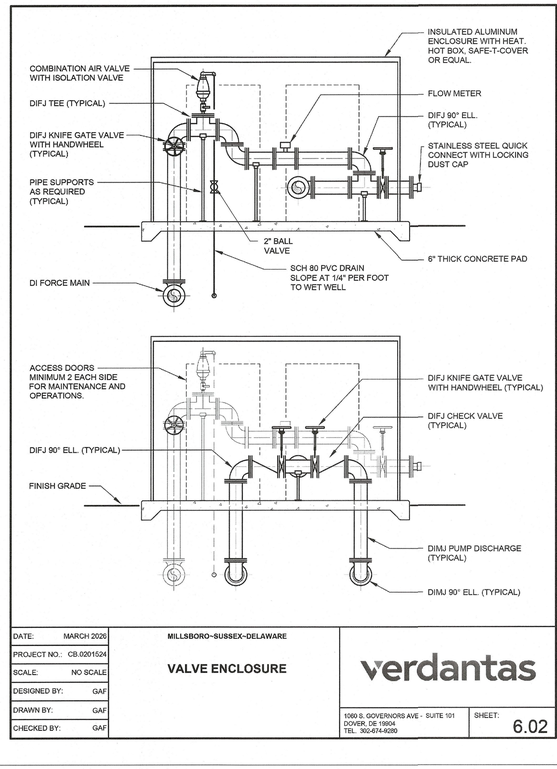
B PUMP STATION - WET WELL AND VALVE ENCLOSURE
3/8" = 1'-0" SCALE



A PUMP STATION - WET WELL AND VALVE ENCLOSURE SECTION
3/8" = 1'-0" SCALE

GENERAL NOTES FOR PUMP STATION (CIVIL MECHANICAL):

1. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH TOWN OF MILLSBORO STANDARDS AND SPECIFICATIONS. THE TOWN OF MILLSBORO STANDARD SPECIFICATIONS AND DETAILS FOR UTILITIES DESIGN AND CONSTRUCTION SECTION 6 WASTEWATER PUMPING STATIONS LISTS THE PREFERRED MANUFACTURER AND THE MECHANICAL, ELECTRICAL, AND SITE/CIVIL MATERIALS. MANUFACTURERS AND SUPPLIERS LISTED IN THE SPECIFICATIONS TAKE PREFERENCE TO MANUFACTURERS AND SUPPLIERS DEPICTED ON THE CONSTRUCTION PLANS.
2. THE STRUCTURAL DESIGN OF THE WET WELL, INCLUDING ANTI-FLOATATION CALCULATIONS, SHALL BE PROVIDED BY THE PRECAST CONCRETE MANUFACTURER AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF DELAWARE. ADDITIONAL CONCRETE MAY BE PLACED IN THE FIELD TO OVERCOME BUOYANCY.
3. CONCRETE EDGES ABOVE FINISHED GRADE SHALL HAVE 1" CHAMFER.
4. WET WELL SHALL HAVE A MINIMUM WALL THICKNESS OF 8" AND THE TOP SLAB SHALL BE A MINIMUM OF 10", THE BOTTOM SHALL HAVE A MINIMUM THICKNESS OF 18" OR AS INDICATED ON PLAN AND SHALL BE DESIGNED FOR A LIVE LOAD OF 300 PSF, UNLESS OTHERWISE NOTED.
5. WET WELL TO BE A MINIMUM OF 6" ABOVE FINISHED GRADE.
6. ALUMINUM LADDERS, ACCESS DOORS, ETC. IN CONTACT WITH CONCRETE SHALL BE COATED WITH AN 24 MIL TAR EPOXY.
7. ALL EXTERIOR PRECAST CONCRETE SHALL RECEIVE A COATING OF EPOXY WATERPROOFING COMPOUND.
8. INTERIOR OF WET WELL SHALL LINED WITH DURALINER OR EQUIVALENT.
9. EXACT DIMENSIONS FOR LOCATION OF PUMPS, GUIDERAILS, ACCESS DOORS, ETC. SHALL BE OBTAINED FROM PUMP MANUFACTURER'S APPROVED SHOP DRAWINGS.
10. FORCE MAIN PIPING SHALL BE ANCHORED WITH THRUST BLOCKS AT ALL BENDS, IF FUSED HDPE OR FUSIBLE PVC IS NOT USED.
11. ALL PIPING WORK SHALL INCLUDE MISCELLANEOUS PIPING MATERIALS AND FITTINGS, INCLUDING, BUT NOT LIMITED TO, FLANGE FILLERS, BEVELED AND PLAIN SPACERS, SPOOLS, UNI-FLANGES, COUPLINGS AND ALL OTHER MATERIALS AS REQUIRED FOR A COMPLETE AND OPERABLE SYSTEM.
12. ALL PIPING SHALL BE INSTALLED WITH PIPE SUPPORTS, INCLUDING, BUT NOT LIMITED TO, HANGERS AND FLOOR STANDS. ALL HARDWARE SHALL BE STAINLESS STEEL.
13. ALL STAINLESS STEEL SUCH AS GUIDERAILS, BRACKETS, AND BOLTS IN THE WETWELL AND VALVE ENCLOSURE SHALL BE 316 STAINLESS STEEL.



DATE:	MARCH 2026
PROJECT NO.:	CB.0201524
SCALE:	NO SCALE
DESIGNED BY:	GAF
DRAWN BY:	GAF
CHECKED BY:	GAF

MILLSBORO-SUSSEX-DELAWARE

VALVE ENCLOSURE

verdantas

1060 S. GOVERNORS AVE - SUITE 101
DOVER, DE 19904
TEL. 302-674-9280

SHEET: 6.02

C PUMP STATION - VALVE ENCLOSURE DETAILS
SCALE: NTS

PUMP STATION DESIGN SUMMARY:

DESIGN FLOW

330 SINGLE FAMILY DWELLING UNIT (240GPD) =	79,200 GPD
85 TOWN HOUSES (240GPD)=	20,400 GPD
CLUB HOUSE = 5 EDU	1,200 GPD

AVERAGE DAILY FLOW

TOTAL DAILY FLOW =	100,800 GPD
OR	70 GPM

PEAK FLOW

PEAK FACTOR (PF) =	4.00
PEAK DAILY FLOW =	403,200 GPD
DESIGN FLOW =	280 GPM

PUMP CYCLE TIME

WET WELL DIAMETER (FT) :	8 FT
CROSS SECTIONAL AREA (SF):	50.27 SF
VOLUME PER V.F. (GAL):	376.02 GAL
PUMP RATE (GPM):	280 GPM
TDH:	49.47 FT
AVERAGE FLOW IN (GPM):	70.0 GPM
PUMP DOWN TIME (MIN.):	7.50
PUMP RUN TIME (MIN.):	2.50
TOTAL CYCLE TIME (MIN.):	10.00
NUMBER STARTS PER HOUR:	6.00

FORCE MAIN VELOCITY (MINIMUM)

MINIMUM VELOCITY REQUIRED (FPS):	2.50 FPS
ACTUAL VELOCITY: 6" C900 PVC SDR 18	3.05 FPS
ACTUAL VELOCITY: 4" DIP CL 52	6.00 FPS

HORSEPOWER REQUIRED

DESIGN OPERATING POINT:	280 GPM @ 50.31 FT
PUMP EFFICIENCY @ D.O.P.	46.4%
REQUIRED HORSEPOWER =	10.0 HP.

PUMP STATION DATA

ACTUAL PUMP RATE =	280.0 GPM
VELOCITY 6" C900 PVC:	3.05 FPS
STATIC HEAD =	26.11 FT
TOTAL HEAD (TDH) =	50.31 FT
WET WELL DIAMETER =	8 FT
TOP OF PUMP STATION ELEVATION (10" SLAB) =	30.40 FT
INFLUENT PIPE ELEV. =	12.04 FT
HIGH LEVEL ALARM ELEV.=	11.54 FT
LAG PUMP ON ELEV. =	11.04 FT
LEAD PUMP ON =	10.54 FT
PUMP OFF ELEVATION =	9.14 FT
LOW LEVEL ALARM ELEV.=	8.64 FT
MINIMUM WATER ELEVATION =	8.14 FT
BOTTOM OF WET WELL ELEVATION =	7.20 FT
TOTAL DEPTH OF WET WELL =	22.37 FT

PUMPS:

PUMP:	FLYGT NP 3127 HT3 488
CONTROL PANEL:	PROVIDED BY FLYGT
MOTORS:	3 PHASE, 240 VOLT, 1745 RPM MAX, 10 HORSEPOWER N 3127 21-12-4AL
IMPELLER:	211MM PSTXZ
VARIABLE FREQUENCY DRIVERS:	SHALL BE ALTIVAR 660 BY SCHNIDER ELECTRIC
PUMP MONITORING & CONTROL:	SENTINEL PRO BY SENSAPHONE WITH 4G/LTE HIGH GAIN OMNI DIRECTIONAL ANTENNA
POWER:	STANDBY GENERATOR KOHLER 60 KW
PUMP CONTROLS:	SCADA SCHNEIDER SCADAPACK WITH HM1GT05310 TOUCHSCREEN
OC BLOWER & FAN:	220 CFM 0.5 HP 208 V 3 PHASE (MIN 12 AIR EXCHANGES PER HOUR
LEVEL CONTROLLERS:	MERCOID PRESSURE TRANSDUCER WITH MEGAMASTER BACKUP FLOAT SWITCHES FOR HIGH WATER AND LOW WATER ALARMS

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

ALL DIMENSIONS MUST BE VERIFIED BY CONTRACTOR AND OWNER MUST BE NOTIFIED OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK

GABRIELLE C. LEWIS STATE OF DELAWARE PROFESSIONAL ENGINEER No. 25868 10/15/2026

TOWNE LAKES
TM: 233-5.00-122.00
TOWN OF MILLSBORO/ DAGSBORO HUNDRED, SUSSEX COUNTY
MILLSBORO, DE 19966 MILLSBORO, DE 19966

PUMP STATION SECTIONS

ATAPCO TOWNE LAKES, LLC.
ONE SOUTH STREET, SUITE 2800
BALTIMORE, MD 21202-3335

NO.	DATE	REVISIONS	BY
2	2026-10-13	REVISED PER TOWN OF MILLSBORO COMMENTS	ASM
1	2026-08-05	REVISED PER TOWN OF MILLSBORO COMMENTS	ASM

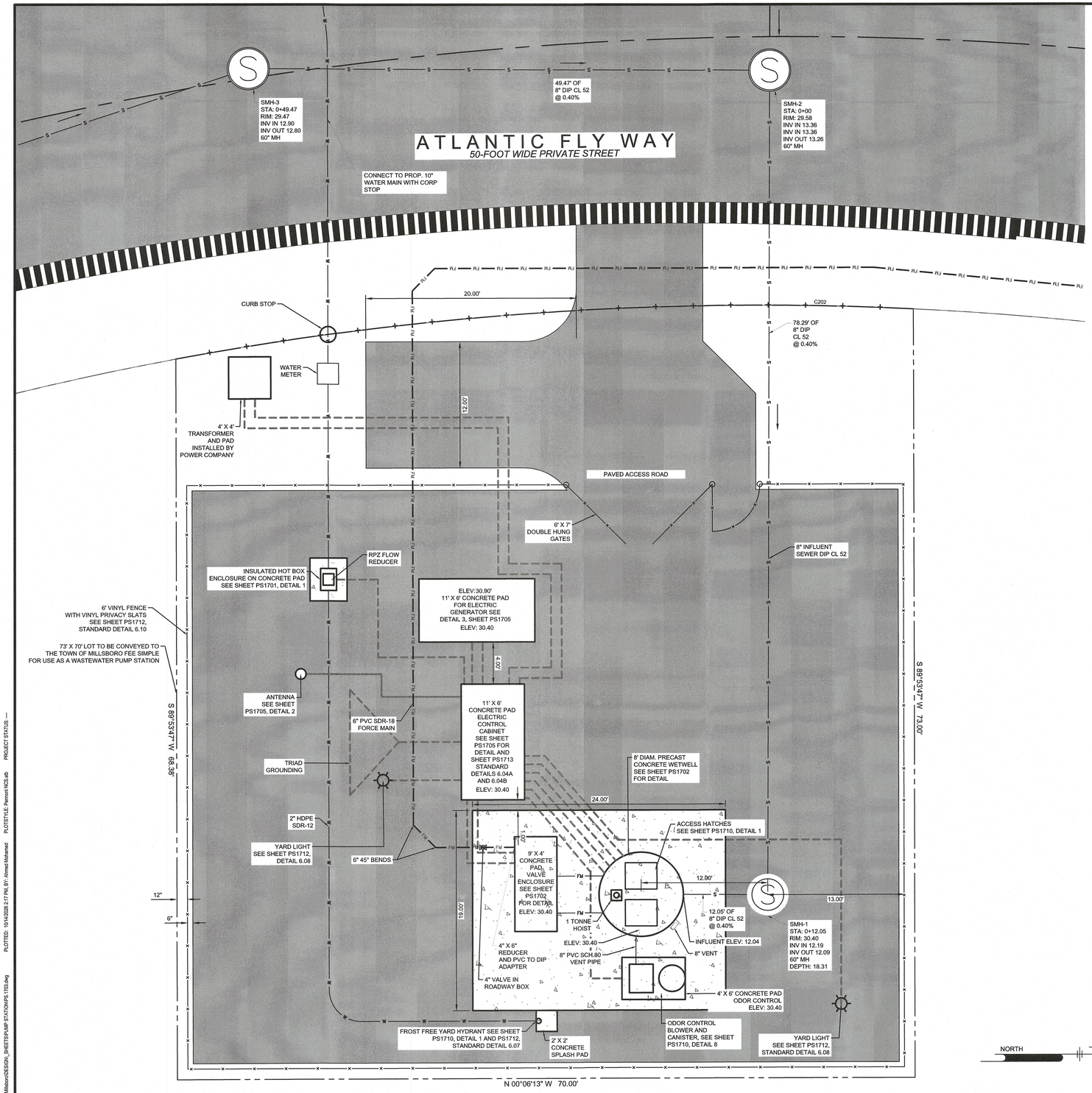
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PROJECT	ATAPR24001
DATE	2026-10-14
DRAWING SCALE	AS SHOWN
DRAWN BY	CC
APPROVED BY	GCL

PS1702

SHEET 3 OF 14

U:\Accounts\ATAPR\ATAPR24001 - Towne Lakes Hardy Road Millsboro\DESIGN_SHEETS\PUMP STATION\PS1702.dwg PLOTTED: 10/15/2026 12:58 PM, BY: Ahmed Mohamed PLOTSTYLE: Pennoni MCS.stb PROJECT STATUS: —



ELECTRICAL NOTES:

1. ALL WORK SHALL BE DONE IN STRICT COMPLIANCE WITH THE REQUIREMENTS / REGULATIONS OF THE FOLLOWING CODES / AGENCIES / UTILITIES:
   - 1.1. THE NATIONAL ELECTRICAL CODE (NEC)
   - 1.2. LOCAL BUILDING AND FIRE CODES
   - 1.3. ALL LOCAL, STATE, AND FEDERAL SAFETY REGULATIONS
   - 1.4. ALL LOCAL, STATE, AND FEDERAL ENVIRONMENTAL PROTECTION REGULATIONS
   - 1.5. DESIGN SAFETY STANDARDS FOR ELECTRICAL SYSTEMS (OSHA)
   - 1.6. ANY OTHER PUBLIC AGENCIES HAVING JURISDICTION
   - 1.7. DELMARVA POWER COMPANY
   - 1.8. THE LOCATION OF TRANSFORMER AND METER TO BE DECIDED IN CONJUNCTION WITH POWER COMPANY/SUPPLIER
2. THE CONTRACTOR SHALL BE RESPONSIBLE TO INSURE "ON THE JOB" SAFETY FOR HIS EMPLOYEES. IN ADDITION, THE CONTRACTOR SHALL BE RESPONSIBLE TO INSURE THAT HIS WORK SHALL BE PERFORMED IN A MANNER THAT SHALL PROVIDE SAFE CONDITIONS FOR OTHER PERSONS EMPLOYED ON THE PROJECT. EMPLOYEES OF THE OWNER, AND ALL OTHER PERSONS HAVING AUTHORIZED OR UNAUTHORIZED ACCESS TO THE WORK AND THE PUBLIC.
3. THE ELECTRICAL DRAWINGS DO NOT INDICATE ALL OF THE EXISTING EQUIPMENT, DEVICES, WIRING, STRUCTURES, PIPING, ETC., EITHER EXPOSED OR CONCEALED. PRIOR TO COMMENCING CONSTRUCTION THE CONTRACTOR SHALL OBTAIN OR VERIFY THE EXACT LOCATION OF ALL THE EXISTING ITEMS THAT AFFECT THE WORK.
4. THE ELECTRICAL DRAWINGS ARE DIAGRAMMATIC IN NATURE AND INDICATE THE GENERAL ARRANGEMENT OF THE VARIOUS SYSTEMS AND THE APPROXIMATE / RELATIVE LOCATIONS OF THE EQUIPMENT / DEVICES / ITEMS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE THAT THERE IS ADEQUATE SPACE AT THE LOCATIONS INDICATED FOR ALL THE EQUIPMENT / DEVICES / ITEMS PRIOR TO INSTALLATION OF SAME.
5. ALL WORK SHALL BE GROUNDED AS INDICATED ON THE DRAWINGS AND / OR AS REQUIRED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE.
6. THE CONTRACTOR SHALL USE WHERE APPROPRIATE A MECHANICAL STRUT SYSTEM (1-5/8" CHANNEL WIDTH SERIES) AS A MEANS OF SUPPORT FOR THE INSTALLATION AND MOUNTING OF EQUIPMENT / DEVICES.
7. ALL EQUIPMENT SHALL BE INSTALLED AND WIRED IN STRICT COMPLIANCE WITH THE REQUIREMENTS AND RECOMMENDATIONS OF THE EQUIPMENT MANUFACTURER.
8. UPON COMPLETION OF THE INSTALLATION THE CONTRACTOR SHALL BALANCE THE LOAD ON ALL PARTS OF THE DISTRIBUTION SYSTEM.
9. THE CONTRACTOR SHALL BE RESPONSIBLE TO REPAIR OR REPLACE ALL DAMAGE CAUSED BY THE INSTALLATION OF EQUIPMENT / DEVICES / MATERIALS AT THE PROJECT. REPAIRS OR REPLACEMENT WORK SHALL CONFORM TO HE EXISTING CONDITIONS.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY / ALL CORE DRILLING AS REQUIRED FOR THE COMPLETION OF HIS WORK. COORDINATE CORE DRILLING WITH REBAR PLACEMENT AND/OR REINFORCEMENT ELEMENTS OF THE PRECAST STRUCTURES TO AVOID DAMAGE TO THESE ITEMS.
11. CONTRACTOR SHALL PROVIDE ARC FLASH LABELS FOR ALL EQUIPMENT BEING INSTALLED. LABELS SHALL INDICATE HAZARD LEVEL AND PPE REQUIREMENTS AS REQUIRED BY NFPA 70E AND IEEE 1584

SPECIAL NOTE:

THE WET WELL SHALL BE CONSIDERED CLASSIFIED AREAS - CLASS I, DIVISION1, GROUPS C AND D. ALL EQUIPMENT AND WIRING INSTALLED IN THESE AREAS SHALL MEET THE REQUIREMENTS FOR THIS TYPE OF HAZARDOUS LOCATION.

SEE SHEET PS1706 FOR SYSTEM CONTROL NOTES

NOTE:

ELECTRICAL AND INSTRUMENTATION CONDUIT IS SHOWN DIAGRAMMATICALLY. CONTRACTOR TO PROVIDE DETAILED SKETCH INDICATING LOCATION OF ALL CONDUIT FOR RECORD PURPOSES.

NORTH

0 5' 10'

0 5' 10'

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

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GREGORY C. LAKE — No. 20868 — PROFESSIONAL ENGINEER — DELAWARE — 10/15/2026

TOWNE LAKES
TM: 233.5.00-122.00
TOWN OF MILLSBORO/ DAGSBORO HUNDRED, SUSSEX COUNTY
MILLSBORO, DE 19966

ELECTRICAL SITE PLAN

ATAPCO TOWNE LAKES, LLC.
ONE SOUTH STREET, SUITE 2800
BALTIMORE, MD 21202-3335

BY	REVISIONS	NO.	DATE
ASM	REVISED PER TOWN OF MILLSBORO COMMENTS	2	2026-10-13
ASM	REVISED PER TOWN OF MILLSBORO COMMENTS	1	2026-06-05

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PROJECT	ATAPR24001
DATE	2026-10-13
DRAWING SCALE	1"=5'
DRAWN BY	CC / LAC
APPROVED BY	GCL

PS1703

SHEET 4 OF 14

U:\Accounts\ATAPR\ATAPR24001 - Towne Lake Hardy Road Millsboro\DESIGN_SHEETS\PUMP STATION\PS-1703.dwg PLOTTED: 10/14/2026 2:17 PM BY: Ahmed Mohamed PLOTSTYLE: Pennoni HCB.ctb PROJECT STATUS: —

B-PHASE HIGH LEG

PANEL SCHEDULE

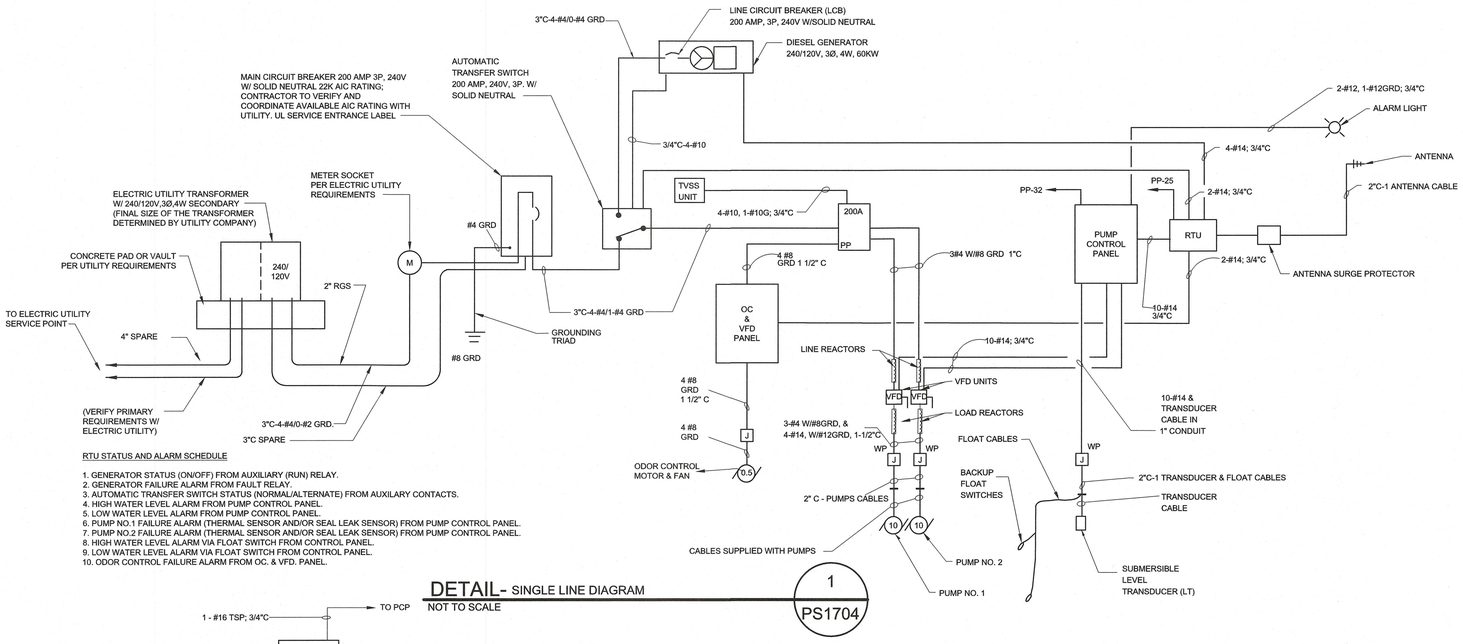
PANEL SHALL HAVE COPPER BUS AND COPPER GROUND BUS

PANEL: PP INTERRUPTING RATING: 22,000 AMP RMS SYM. MOUNTING: SURFACE

VOLTAGE: 240/120V AMP: 200A PHASE: 3Ø WIRE: 4 MAIN: MLO

CIRCUIT	DESCRIPTION	WIRE	POLES	BKR SIZE	VA/PHASE A LEFT	A RIGHT	B LEFT	B RIGHT	C LEFT	C RIGHT	BKR SIZE	POLES	WIRE	DESCRIPTION	CIRCUIT
1	SPARE		1	20	-	2151.8					70	3	4	PUMP NO. 1 STARTER	2
3								-	2151.8						4
5										- 2151.8					6
7	SPARE		1	20	-	2151.8					70	3	4	PUMP NO. 2 STARTER	8
9	SPARE		1	20			-	2151.8							10
11	WP CABINET RECP *	12	1	20					180	2151.8					12
13	OC MOTOR	8	3	50	124.28	-					30	3	10	TVSS	14
15							124.28	-							16
17									124.28	-					18
19	CABINET LIGHTING TYPE "A"	12	1	20	100	200					20	1		VALVE ENCLOSURE HEATER	20
21	SPACE						-	-						SPACE	22
23	CABINET RECEPTACLE *	12	1	20					360	240	20	1	12	BATTERY CHARGER	24
25	RTU	12	1	20	40	25					20	1	12	FLOW METER	26
27	SPACE						-	-						SPACE	28
29	JACKET HEATER	12	2	20					500	160	20	1	12	SITE LIGHT	30
31					500	600					20	1	12	PCP	32
33	SPACE						-	-						SPACE	34
35	CABINET FAN	12	1	20					40	200	20	1	12	CABINET HEATER	36
37	HOT BOX HEATING	12	1	20	30	40					20	1	12	CABINET FAN	38
39	SPACE						-	-							40
41	CABINET HEATER	12	1	20					200	-					42
	TOTALS				5962.88		4427.88		6307.88						
					16698.64										

1. NEMA TYPE 1 ENCLOSURE
* INDICATES GFI TYPE CIRCUIT BREAKER



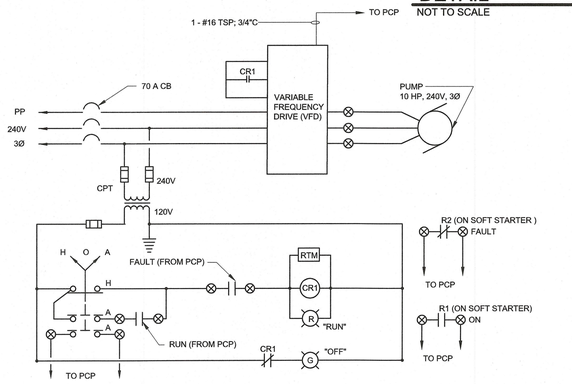
RTU STATUS AND ALARM SCHEDULE

1. GENERATOR STATUS (ON/OFF) FROM AUXILIARY (RUN) RELAY.
2. GENERATOR FAILURE ALARM FROM FAULT RELAY.
3. AUTOMATIC TRANSFER SWITCH STATUS (NORMAL/ALTERNATE) FROM AUXILIARY CONTACTS.
4. HIGH WATER LEVEL ALARM FROM PUMP CONTROL PANEL.
5. LOW WATER LEVEL ALARM FROM PUMP CONTROL PANEL.
6. PUMP NO.1 FAILURE ALARM (THERMAL SENSOR AND/OR SEAL LEAK SENSOR) FROM PUMP CONTROL PANEL.
7. PUMP NO.2 FAILURE ALARM (THERMAL SENSOR AND/OR SEAL LEAK SENSOR) FROM PUMP CONTROL PANEL.
8. HIGH WATER LEVEL ALARM VIA FLOAT SWITCH FROM CONTROL PANEL.
9. LOW WATER LEVEL ALARM VIA FLOAT SWITCH FROM CONTROL PANEL.
10. ODOR CONTROL FAILURE ALARM FROM OC. & VFD. PANEL.

DETAIL- SINGLE LINE DIAGRAM

NOT TO SCALE

1 / PS1704



DETAIL- PUMP ENCLOSED VFD UNIT ELEMENTARY DIAGRAM

NOT TO SCALE

2 / PS1704

LIGHTING FIXTURE AND POLE SCHEDULE							
TYPE	MANUFACTURER/CATALOG NO.	LAMP NO.	LAMP TYPE	LAMP WATT	MOUNTING TYPE	MOUNTING HEIGHT	REMARKS
A	COLUMBIA FEM L48 MD MVOLT 35K E10WMCP	4	LED	18	SURFACE	TOP OF CABINET	120 VOLT ONE IN EACH FOR POWER AND CONTROL CABINET
B	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
C	4GLTE HIGH GAIN OMNI ANTENNA	N/A	N/A	N/A	POLE	12'-0"	ANTENNA VALMONT RTA ON PIVOTING POLE; DARK BRONZE FINISH W/ POLE CAP

GENERATOR LOAD CALCULATIONS

PENNONI ASSOCIATES, INC. JOB NO. ATAPR24001

CONSULTING ENGINEERS SHEET NO. 1 of 1

PROJECT TOWN LAKES DATE 26-Jan-26

SUBJECT TOWN LAKES SUBDIVISION BY: SPS

" 1.732=3 "

ITEM	VOLTS	AMPS	PHASE	VA	HP	QTY	NOTE	TOTAL
Pump 1&2	240	15.53	1.732	6455.50	10 HP	2	NEMA-J	12911.00
Lights "A"	120	0.21	1	25.0		4	Cabinets	100.00
Lights "B"	120	0.67	1	80.0		2	Site	160.08
Receptacles	120	1.5	1	180.0		3	Cabinets	540.00
PCP	120	5.0	1	600.0		1	Cabinets	600.00
RTU	120	0.33	1	40.0		1	Cabinets	40.01
Jkt Htr	240	4.17	1	1000.0	1KW	1	Genset	1000.01
Batt Chgr	120	2.0	1	240.0		1	Genset	240.00
FM/SC	120	0.21	1	25.0		1	Flowmeter	25.00
Cabinet Heater	120	1.67	1	200.0		3	Cabinets	600.12
OC. Motor & Fan	208	1.035	1.732	372.86	0.5HP	1	Odor Fan	372.86
Hot Box Heat Trace	120	0.25	1	30.0		1		30.00
Cabinet Fan	120	0.33	1	40		2	Cabinets	80
	Connected Load:		in VA					16699.0752
	40.2	A at 240V-3Phase						
Base Load=	22142	65A						
Pump 1 Load=	6455.50	52RLA	387.30LRA					
Pump 2 Load=	6455.50	52RLA	387.30LRA					
Generator Size	60KW	75KVA	at 0.8PF	180.4A				

ELECTRICAL ABBREVIATIONS

A, AMP	AMPERE	MFR	MANUFACTURER
ATD	AUTOMATIC TELEPHONE DIALER	MLO	MAIN LUG ONLY
ATS	AUTOMATIC TRANSFER SWITCH	OC	ON CENTER
BC	BATTERY CHARGER	P	POLE
C, CND	CONDUIT	PCP	PUMP CONTROL PANEL
CCR	CIRCULAR CHART RECORDER	PF	POWER FACTOR
CKT	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	T	TRANSFORMER
GFI	GROUND FAULT CIRCUIT INTERRUPTER	TSP	TWISTED SHIELDED PAIR
HOA	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
M	METER	W/W	WIREWAY
MCB	MAIN CIRCUIT BREAKER	WP	WEATHERPROOF
		XP	EXPLOSION PROOF

ELECTRICAL LEGEND

A a	LED LIGHTING FIXTURE UPPER CASE LETTER DENOTES TYPE IN SCHEDULE, LOWER CASE LETTER DENOTES SWITCH LEG		EXPOSED CONDUIT
			CONCEALED CONDUIT
WP GFI	DUPLEX RECEPTACLE, 120V, 20A		CONDUIT SEAL
k	TOGGLE SWITCH, 120V, 20A, LOWER CASE LETTER DENOTES FIXTURES TO BE SWITCHED		GROUND ROD
10	MOTOR, NUMBER DENOTES HP	G	GROUND CONDUCTOR
J JB	JUNCTION BOX	FE	FIRE EXTINGUISHER
E	DIESEL GENERATOR		GROUND CONNECTION
8	WIRING, ARROW INDICATES HOMERUN TO PANEL NUMBER "8" INDICATES CIRCUIT		TELEPHONE OUTLET
	CIRCUIT BREAKER		COMBINATION MOTOR STARTER
M	METER		DISCONNECT SWITCH
	AUTOMATIC TRANSFER SWITCH	E	ELECTRIC LINES
	PHASE, DIAMETER	T	TELEPHONE LINES
	CONTACT	HT	HEAT TRACE
C	PILOT LIGHT; R = RED, G = GREEN	VFD	VARIABLE FREQUENCY DRIVE
	EXTERNAL WIRING TERMINAL		

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

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DELAWARE LICENSED PROFESSIONAL ENGINEER NO. 20868 GARY C. LAMMEY TOWNE LAKE 10/15/2025

TOWNE LAKES
TM: 233-5.00-122.00
TOWN OF MILLSBORO/ DAGSBORO HUNDRED, SUSSEX COUNTY
MILLSBORO, DE 19966 MILLSBORO, DE 19966

ELECTRICAL DETAILS

ATAPCO TOWNE LAKES, LLC.
ONE SOUTH STREET, SUITE 2800
BALTIMORE, MD 21202-3335

NO.	DATE	REVISIONS	BY
2	2026-10-13	REVISED PER TOWN OF MILLSBORO COMMENTS	ASM
1	2026-08-05	REVISED PER TOWN OF MILLSBORO COMMENTS	ASM

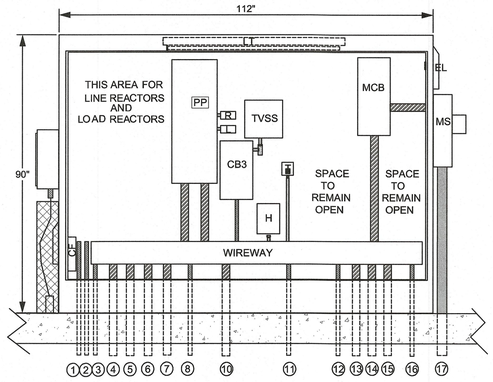
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PROJECT	ATAPR24001
DATE	2026-10-14
DRAWING SCALE	AS SHOWN
DRAWN BY	CC
APPROVED BY	GCL

PS1704

SHEET 5 OF 14

PROJECT STATUS: —
PLOTTED: 10/14/2026 4:08 PM, BY: Ahmed Mohamed
PLOTSTYLE: Pennoni NCS.stb
U:\Accounts\ATAPR\ATAPR24001 - Towne Lakes Handy Road Millsboro\DESIGN_SHEETS\PUMP STATION\PS-1704.dwg



ELECTRICAL CONDUIT DESIGN LEGEND

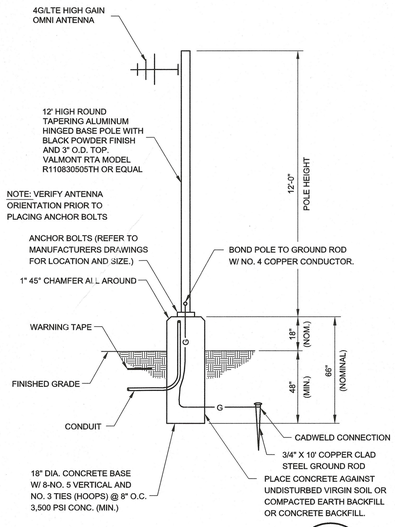
- 3 IN. SCH. 80 PVC CONDUIT
- 2 IN. SCH. 80 PVC CONDUIT
- 1 1/4 IN. SCH. 80 PVC CONDUIT
- 1 IN. SCH. 80 PVC CONDUIT
- 3/4 IN. SCH. 80 PVC CONDUIT

T - CABINET COOLING THERMOSTAT
EL - EXHAUST LOUVER
H -400 WATT CABINET HEATER
CF -CABINET COOLING FAN
MCB - SQUARE D, 200 AMP, 240/120 V., MAIN CIRCUIT BREAKER SIZED FOR FAULT CURRENT AVAILABILITY, CONTACT SERVICE PROVIDER
P P - POWER PANEL
TVSS- TRANSIENT VOLTAGE SURGE SUPRESSOR,240/120 V., 3 PH., 4 WIRE,SQUARE D EMA SERIES, 160 kA
MS -METER SOCKET-240/120 V., 3 PH. 200 AMP., 4 WIRE.
R -RECEPTACLE
L -LIGHT SWITCH
LT -CABINET LIGHT
CB3 - SQUARE D, 30 AMP CIRCUIT BREAKER, 240 V., 3 PH.

1. 1 IN. SCH. 80 PVC TO FLOW METER.
2. 1 IN. SCH. 80 PVC TO PCP.
3. 1 IN. SCH. 80 PVC TO FLOW METER.
4. 2 IN. SCH. 80 PVC TO LINE REACTOR NO.1.
5. 2 IN. SCH. 80 PVC FEED TO VFD NO.1.
6. 2 IN. SCH. 80 PVC TO LINE REACTOR NO.2.
7. 2 IN. SCH. 80 PVC FEED TO VFD NO.2.
8. 1 IN. SCH. 80 PVC TO YARD LIGHT.
10. 2 IN. SCH. 80 PVC TO CONTROL SIDE (240 / 120 V.FEED OUT).
11. 1 IN. SCH. 80 PVC TO CONTROL SIDE.
12. 1 IN. SCH. 80 PVC TO FUTURE ODOR CONTROL.
13. 2 IN. SCH. 80 PVC TO FUTURE ODOR CONTROL AREA.
14. 2 IN. SCH. 80 PVC TO FUTURE ODOR CONTROL AREA.
15. 2 IN. SCH. 80 PVC TO CONTROL SIDE (240 V. FEED OUT TO CS1 & CS2).
16. 1 IN. SCH. 80 PVC TO PCP.
17. 3 IN. SCH. 40 PVC TO TRANSFORMER, SCH. 80 PVC ABOVE CONCRETE SLAB.

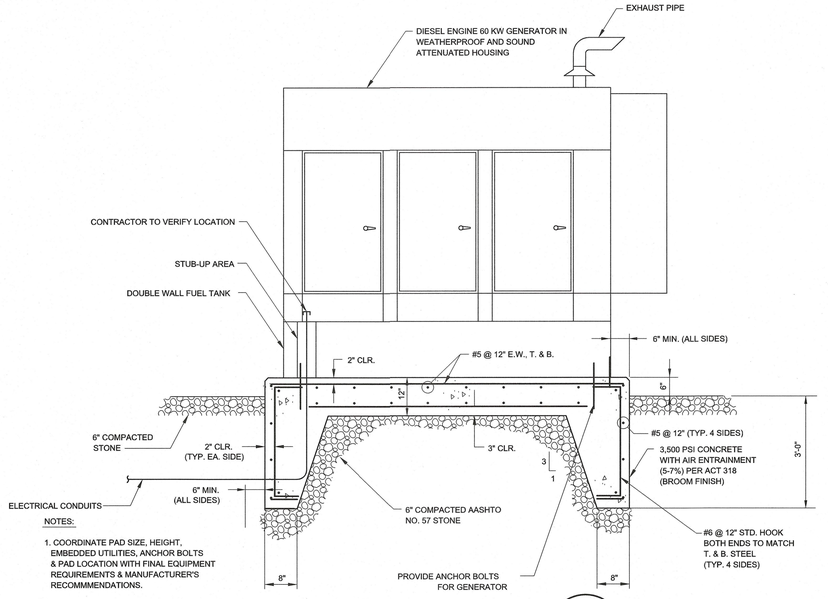
ELECTRICAL CABINET - REAR VIEW POWER SIDE

NOT TO SCALE — 1A / PS1705



DETAIL- ANTENNA POLE

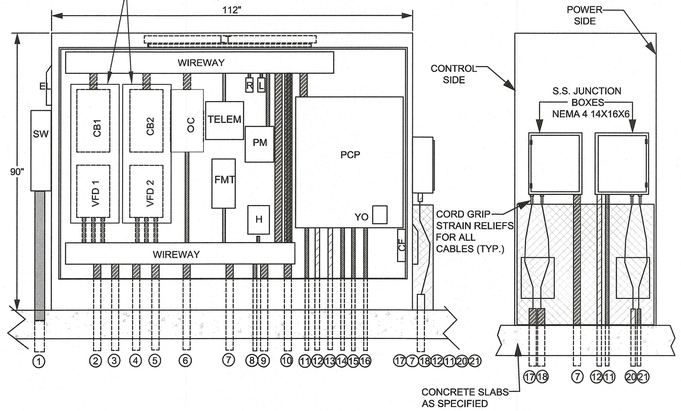
NOT TO SCALE — 2 / PS1705



DETAIL- GENERATOR FOUNDATION

NOT TO SCALE — 3 / PS1705

COMBINATION VFD UNIT



ELECTRICAL CONDUIT DESIGN LEGEND

- 3 IN. SCH. 80 PVC CONDUIT
- 2 IN. SCH. 80 PVC CONDUIT
- 1 1/4 IN. SCH. 80 PVC CONDUIT
- 1 IN. SCH. 80 PVC CONDUIT
- 3/4 IN. SCH. 8- PVC CONDUIT

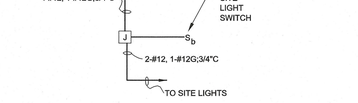
T - CABINET COOLING THERMOSTAT
EL - EXHAUST LOUVER
PCP -SCADA CONTROL PANEL
PM -PHASE MONITOR
H -400 WATT CABINET HEATER
CF -CABINET COOLING FAN
SW -200 AMP., SQUARE D, NEMA 3R, 3 PH. NON-FUSIBLE SAFETY SWITCH
R -RECEPTACLE
L -LIGHT SWITCH
LT -CABINET LIGHT
FMT - FLOW METER TOTALIZER ELECTRONICS.
TELEM - TELEMETRY UNIT.
CS1 - SQUARE D COMBINATION STARTER W/ THERMAL MAGNETIC BREAKER, 120 V. COIL, W/O CONTROL TRANSFORMER
CS2 - SQUARE D COMBINATION STARTER W/ THERMAL MAGNETIC BREAKER, 120 V. COIL W/O CONTROL TRANSFORMER
YO - YOKAGAWA

NOTE:
CABINET SHALL BE THREE-DOOR DOUBLE SIDED, SEE SHEET PS1713 STANDARD DETAILS 6.04A AND 6.04BFOR ADDITIONAL INFORMATION.

1. 3 IN. SCH. 80 PVC TO SERVICE TRANSFORMER.
2. 2 IN. SCH. 80 PVC FEED TO LINE REACTOR NO.1
3. 2 IN. SCH. 80 PVC FEED FROM LINE REACTOR NO.1
4. 2 IN. SCH. 80 PVC FEED TO LINE REACTOR NO.2
5. 2 IN. SCH. 80 PVC FEED FROM LINE REACTOR NO.2
6. 2 IN. SCH. 80 PVC TO ODOR CONTROL
7. 2 IN. SCH. 80 PVC TO STAINLESS STEEL JUNCTION BOX (PUMP NO. 1 & 2).
8. 1 IN. SCH. 80 PVC TO POWER SIDE.
9. 2 IN. SCH. 80 PVC TO POWER SIDE (240/120 V.FEED IN).
10. 2 IN. SCH. 80 PVC TO POWER SIDE (480 V. FEED IN FOR CS1 & CS2).
11. 1 IN. SCH. 80 PVC TO STAINLESS STEEL JUNCTION BOX (TRANSDUCER).
12. 1 1/4 IN. SCH. 80 PVC TO STAINLESS STEEL JUNCTION BOX (REDUNDANT ON/OFF FLOATS).
13. 1 1/4 IN. SCH. 80 PVC TO ANTENNA POLE.
14. 1 IN. TO FUTURE ATS ON POWER SIDE.
15. 1 IN. TO BLOWER.
16. 1 IN. TO FLOW METER ELECTRONICS ON POWER SIDE.
17. 2 IN. SCH. 80 PVC CONDUIT TO WET WELL (PUMP NO. 1).
18. 2 IN. SCH. 80 PVC CONDUIT TO WET WELL (PUMP NO. 2).
7. 2 IN. SCH. 80 PVC CONDUIT (CONDUIT NO. 7 CONTROL SIDE TERMINATES AT NO. 7 UNDER STAINLESS STEEL JUNCTION BOX, FEED IN TO OUTSIDE S.S. JUNCTION BOX FROM EACH COMBINATION STARTER).
20. 1 1/4 IN. SCH. 80 PVC CONDUIT TO WET WELL (REDUNDANT ON/OFF FLOATS).
21. 1 IN. SCH. 80 PVC CONDUIT TO WET WELL (TRANSDUCER).

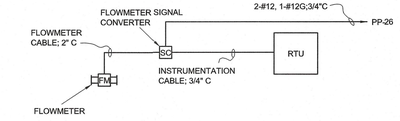
ELECTRICAL CABINET - FRONT VIEW CONTROL SIDE

NOT TO SCALE — 1B / PS1705



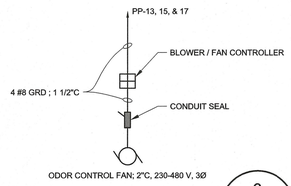
DETAIL- SITE LIGHTING SCHEMATIC

NOT TO SCALE — 4 / PS1705



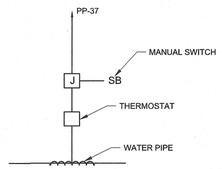
DETAIL- FLOWMETER SCHEMATIC DIAGRAM

NOT TO SCALE — 5 / PS1705



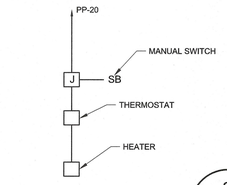
DETAIL- ODOR CONTROL FAN SCHEMATIC DIAGRAM

NOT TO SCALE — 6 / PS1705



DETAIL- HOT BOX HEAT TRACE DIAGRAM

NOT TO SCALE — 7 / PS1705



DETAIL- VALVE ENCLOSURE HEATER

NOT TO SCALE — 8 / PS1705

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

ALL DIMENSIONS MUST BE VERIFIED BY CONTRACTOR AND OWNER & MUST BE NOTIFIED OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK

GREATER LAKE VICINITY ENGINEER 30666 DELAWARE 10/15/2024

TOWNE LAKES

TM: 233-5.00-122.00
TOWN OF MILLSBORO/ DAGSBORO HUNDRED, SUSSEX COUNTY
MILLSBORO, DE 19966 MILLSBORO, DE 19966

ELECTRICAL DETAILS

ATAPCO TOWNE LAKES, LLC.
ONE SOUTH STREET, SUITE 2800
BALTIMORE, MD 21202-3335

NO.	DATE	REVISIONS	BY
2	2026-10-13	REVISED PER TOWN OF MILLSBORO COMMENTS	ASM
1	2026-09-05	REVISED PER TOWN OF MILLSBORO COMMENTS	ASM

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PROJECT	ATAPR24001
DATE	2026-10-14
DRAWING SCALE	AS SHOWN
DRAWN BY	CC
APPROVED BY	GCL

PS1705

SHEET 6 OF 14

PROJECT STATUS: —
PLOTSTYLE: Pennoni NCS.stb
PLOTTED: 10/14/2026 4:02 PM, BY: Ahmed Mohamed
U:\Accounts\ATAPR\ATAPR24001 - Towne Lakes Handy Road Millsboro\DESIGN_SHEETS\PUMP STATION\PS_1705.dwg

ELECTRICITY SPECIFICATIONS:

A. CONDUIT AND FITTINGS

1. RIGID STEEL CONDUIT: ANSI C80.1.
2. PVC EXTERNALLY-COATED CONDUIT: NEMA RN 1; RIGID STEEL CONDUIT WITH EXTERNAL 40 MIL PVC COATING AND INTERNAL GALVANIZED SURFACE.
3. PVC SCHEDULE 80 CONDUIT
4. FITTINGS AND CONDUIT BODIES: ANSI/NEMA FB1; MATERIALS TO MATCH CONDUIT, ALL CONNECTIONS SHALL BE THREADED.
5. LIQUIDTIGHT FLEXIBLE METAL CONDUIT: FLEXIBLE METAL CONDUIT WITH PVC JACKET.
6. CONDUIT CLAMPS, STRAPS, AND SUPPORTS: STEEL OR MALLEABLE IRON, FINISH TO MATCH CONDUIT.
7. SIZE CONDUIT FOR CONDUCTOR TYPE INSTALLED OR FOR TYPE THWN CONDUCTORS, WHICHEVER INCH MINIMUM SIZE. 3/4 IS LARGER;
8. 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 HANGERS.
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 WET LOCATIONS.
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 SIX (6) INCHES ABOVE GRADE.
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.
2. UNDERGROUND: SCHEDULE 80 PVC
3. 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

1. 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.
3. 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.
4. USE CONDUCTOR NOT SMALLER THAN 12 AWG FOR POWER AND LIGHTING CIRCUITS.
5. 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.
7. USE SOLDERLESS PRESSURE CONNECTORS WITH INSULATING COVERS FOR COPPER CONDUCTOR SPLICES AND TAPS, 8 AWG AND SMALLER.
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.

E. PULL AND JUNCTION BOXES

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.
2. MATERIAL: NEMA 4X STAINLESS STEEL

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.
2. 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

1. PROVIDE ALL GROUNDING AND BONDING IN ACCORDANCE WITH THE NEC.
2. 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.
3. ALL GROUNDING AND BONDING CONNECTIONS BELOW GRADE SHALL BE OF THE EXOTHERMIC (CADWELD) WELDED TYPE.
4. 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

1. 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.
3. WIRE AND CABLE MARKERS: CLOTH MARKERS, SPLIT SLEEVE OR TUBING TYPE.
4. 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 WIRING.

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.
3. 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 DIPPED GALVANIZED CONFORMING TO ASTM SPECIFICATIONS A-386 OR A-153. THE SUPPORT AND HANGER SYSTEM SHALL BE INSTALLED FOLLOWING THE MANUFACTURERR 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.
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.
7. 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 (DELMARVA POWER) HAS CONFIRMED THAT 240 V 3 PHASE 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.
5. METER BOX AND CONDUIT: PROVIDED BY CONTRACTOR, PER UTILITY COMPANY REQUIREMENTS.
6. UNDERGROUND SERVICE ENTRANCE CONDUIT: PROVIDED BY CONTRACTOR, PER UTILITY COMPANY REQUIREMENTS.
7. 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.
c. ENGINE SPEED: 1800 RPM.
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
f. 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
g. 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.
h. RADIATOR: RADIATOR USING GLYCOL 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.
i. 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: 60 KW, 75 KVA, AT 0.8 POWER FACTOR, 240/120 VOLTS, 3 PHASE, 4 WIRE, 60 HZ AT 1800 RPM.
c. MOTOR STARTING KVA SHALL BE 161 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.
d. INSULATION: ANSI/NEMA MG 1 CLASS H.
e. TEMPERATURE RISE: 125 DEGREES C.
f. ENCLOSURE: WEATHER PROOF SOUND ATTENUATED HOUSING WITH CRITICAL SILENCER; 66 dB (A) AT 23 FT. (MAX.).
g. VOLTAGE REGULATION: INCLUDE GENERATOR-MOUNTED VOLTS PER HERTZ EXCITER-REGULATOR TO MATCH ENGINE AND GENERATOR CHARACTERISTICS, WITH VOLTAGE REGULATIONS +/- TWO PERCENT FROM NO LOAD TO FULL LOAD. INCLUDE MANUAL CONTROLS TO ADJUST VOLTAGE DROP +/- 5 PERCENT VOLTAGE LEVEL, AND VOLTAGE GAIN.

3. ACCESSORIES

a. SUB-BASE FUEL TANK: 140 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.
f. 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 FEATURES:

f.1. FREQUENCY METER: 45-65 HZ RANGE.
f.2. AC OUTPUT VOLTMETER.
f.3. AC OUTPUT AMMETER.
f.4. OUTPUT VOLTAGE ADJUSTMENT.
f.5. RUN LIGHT; GREEN.
f.6. COOLANT TEMPERATURE GAUGE.
f.7. FAULT RESET SWITCH.
f.8. ENGINE RUN/STOP/REMOTE SELECTOR SWITCH.
f.9. ENGINE RUNNING TIME METER.
f.10. OIL PRESSURE GAUGE.
f.11. OIL TEMPERATURE GAUGE.
f.12. BATTERY VOLTMETER.
f.13. INDICATOR LAMPS: RED, ONE EACH FOR LOW OIL PRESSURE, HIGH COOLANT TEMPERATURE, LOW COOLANT LEVEL, LOW FUEL LEVEL, OVERSPEED, AND OVERCRANK.
f.14. AUXILIARY RELAY; 3 PDT, OPERATES WHEN ENGINE RUNS, WITH CONTACTS PRE-WIRED TO TERMINAL STRIP.
f.15. FAULT RELAY; 3 PDT, OPERATES WHEN SAFETY DEVICES SHUTDOWN ENGINE, WITH CONTACTS PRE-WIRED TO TERMINAL STRIP.
f.16. 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.

4. WARRANTY

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

5. MAINTENANCE SERVICE

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 INTERVALS. SUBMIT FULL LOAD TEST RESULTS FOR REVIEW.
b. CLEAN ENGINE AND GENERATOR SURFACES. REPLACE ALL OIL AND FUEL FILTERS AFTER FULL LOAD TESTING.
c. 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 CHARGES.

L. AUTOMATIC TRANSFER SWITCH

1. DESCRIPTION: NEMA ICS 10; AUTOMATIC TRANSFER SWITCH.
2. CONFIGURATION: ELECTRICALLY-OPERATED, MECHANICALLY-HELD TRANSFER SWITCH.
3. MANUFACTURER: THE AUTOMATIC TRANSFER SWITCH SHALL BE FROM THE SAME MANUFACTURER AS THE GENERATOR SET.
4. RATINGS

a. RATINGS: NEMA ICS 10; AS FOLLOWS:
b. VOLTAGE: 240 VOLTS, THREE PHASE, FOUR WIRE, 60 HZ., SOLID NEUTRAL.
c. SWITCHED POLES: 3.
d. LOAD INRUSH RATING: COMBINATION; MOTORS, ELECTRIC DISCHARGE LIGHTING, AND RESISTIVE LOADS.
e. CONTINUOUS RATING: 200 AMPERES.
f. 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. 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 15 SECONDS, ADJUSTABLE.
c. INITIATE TRANSFER LOAD TO ALTERNATE SOURCE: UPON INITIATION BY NORMAL SOURCE MONITOR AND PERMISSION BY ALTERNATE SOURCE MONITOR.
d. TIME DELAY BEFORE TRANSFER TO ALTERNATE POWER SOURCE: 2 TO 120 SECONDS, ADJUSTABLE.
e. INITIATE RETRANSFER LOAD TO NORMAL SOURCE: UPON PERMISSION BY NORMAL SOURCE MONITOR.
f. TIME DELAY BEFORE TRANSFER TO NORMAL POWER: 0 TO 30 MINUTES, ADJUSTABLE; BYPASS TIME DELAY IN EVENT OF ALTERNATE SOURCE FAILURE.
g. TIME DELAY BEFORE ENGINE SHUT DOWN: 0 TO 10 MINUTES, ADJUSTABLE, OF UNLOADED OPERATION.
h. ENGINE EXERCISER: START ENGINE EVERY 7 DAYS; RUN FOR 30 MINUTES BEFORE SHUTTING DOWN. BYPASS EXERCISER CONTROL IF NORMAL SOURCE FAILS DURING EXERCISING PERIOD

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

a. INDICATING LIGHTS: MOUNT IN COVER OF ENCLOSURE TO INDICATE NORMAL SOURCE AVAILABLE, ALTERNATE SOURCE AVAILABLE, AND SWITCH POSITION.
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.
f. PROGRAMMED TRANSITION: SWITCH TO AN OPEN POSITION, THEN INHIBIT TRANSFER FOR AN ADJUSTABLE TIME DELAY PERIOD (1 TO 60 SECONDS, MINIMUM).
g. PROVIDE MANUFACTURER'S FIELD SERVICES AS FOLLOWS:
h. SERVICES OF QUALIFIED TECHNICIAN TO SUPERVISE INSTALLATIONS, ADJUSTMENTS, FINAL CONNECTIONS, AND SYSTEM STARTUP AND TESTING.
i. MANUFACTURER'S LETTER CERTIFYING THAT THE SYSTEM'S INSTALLATION, START-UP, AND TESTING ARE ACCEPTABLE AND THAT THE SYSTEM IS OPERATING PROPERLY.
j. 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 CHARGES.

M. FIRE EXTINGUISHERS

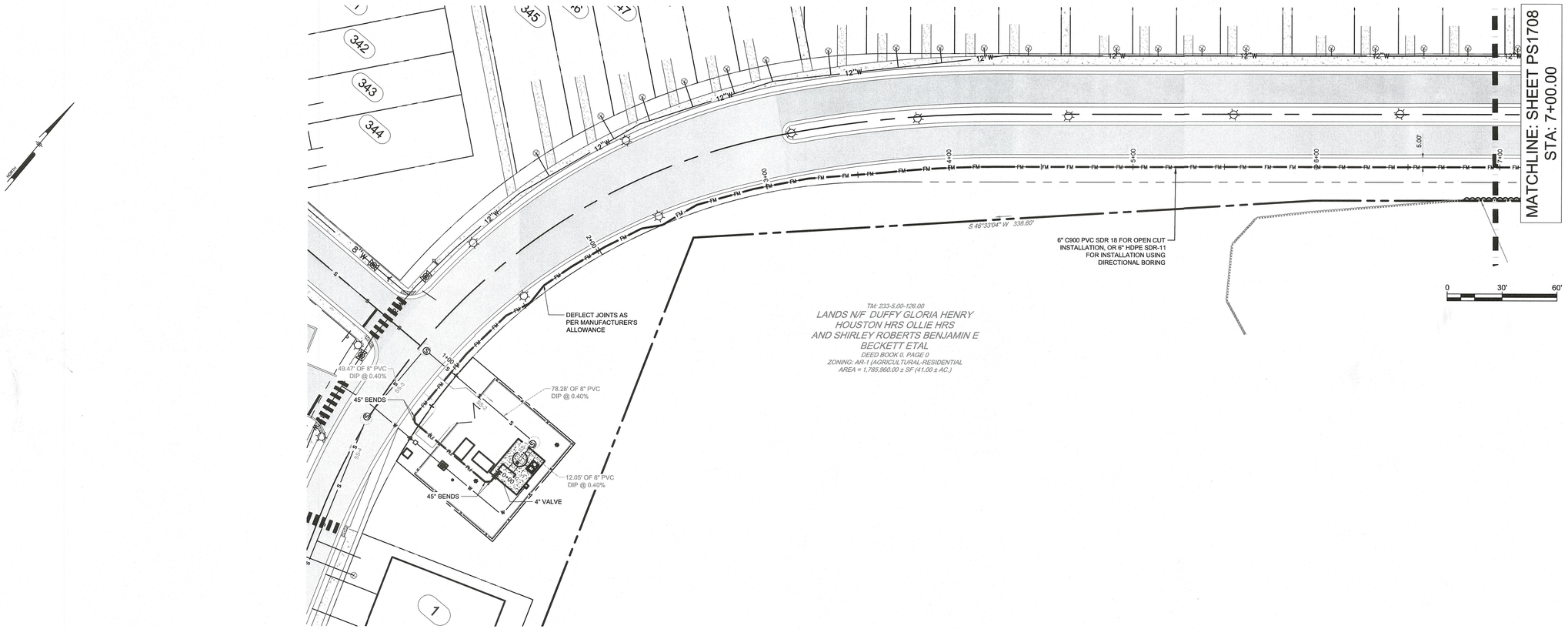
1. NFPA 10 DRY CHEMICAL TYPE: STEEL TANK WITH PRESSURE GAGE AND UPRIGHT SQUEEZE GRIP OPERATION, NOMINAL CAPACITY: SIX (6) POUNDS, MONO AMMONIUM PHOSPHATE POWDER WITH UL RATING: 3A - 40B: C. PROVIDE WALL/SURFACE MOUNTING BRACKET.

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

PCP/RTU PANELS AND CONTROLS SHALL BE PROVIDED BY SCHNEIDER ELECTRIC AND THE SYSTEM INTEGRATOR SHALL CONFORM TO ALL TOWN OF MILLSBORO SPECIFICATIONS AND REQUIREMENTS.

SYSTEM CONTROL NOTES:

1. 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. TOWN OF MILLSBORO WILL ADVISE WHICH SYSTEM SHOULD BE PROVIDED.
2. THE SYSTEM SHALL PROVIDE ALARM ANNUNCIATION, SYSTEM MONITORING, DATA COLLECTION, HISTORICAL TRENDING, AND REMOTE AUTOMATIC MODE OVERRIDE.
3. 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.
5. 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 TOWN OF MILLSBORO REQUIREMENTS.
7. 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



PLAN & PROFILE - 6" FORCE MAIN
H: 1" = 30' , V: 1" = 3'

1
PS1707

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

ALL DIMENSIONS MUST BE VERIFIED BY CONTRACTOR AND OWNER MUST BE NOTIFIED OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK

GENE LAFFERTY CERTIFIED ENGINEER No. 20958 PROFESSIONAL 10/15/2026

TOWNE LAKES

TM: 233-5.00-122.00
TOWN OF MILLSBORO/ DAGSBORO HUNDRED, SUSSEX COUNTY
MILLSBORO, DE 19966 MILLSBORO, DE 19966

SEWER FORCE MAIN PLAN AND PROFILE

ATAPCO TOWNE LAKES, LLC.
ONE SOUTH STREET, SUITE 2800
BALTIMORE, MD 21202-3335

NO.	DATE	REVISIONS	BY
2	2026-10-13	REVISED PER TOWN OF MILLSBORO COMMENTS	ASM
1	2026-06-05	REVISED PER TOWN OF MILLSBORO COMMENTS	ASM

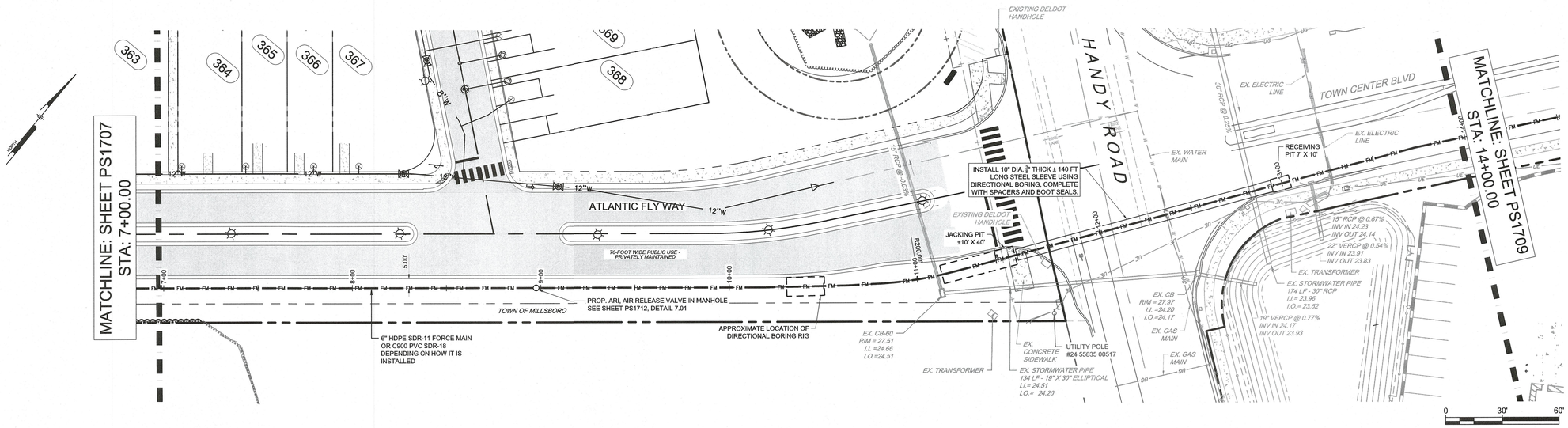
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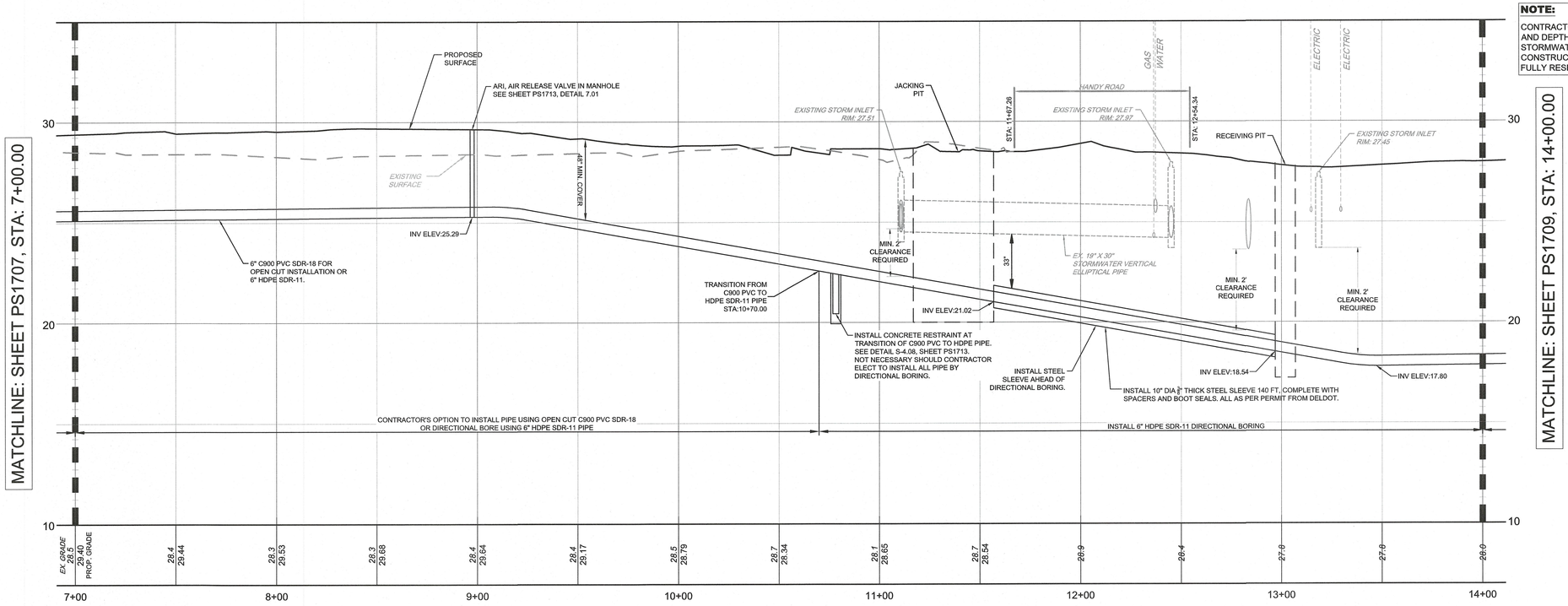
PROJECT	ATAPR24001
DATE	2025-11-20
DRAWING SCALE	1"=30'
DRAWN BY	CC
APPROVED BY	GCL

PS1707

SHEET 8 OF 14

PLOTTED: 10/15/2026 1:15 PM, BY: Ahmed Mohamed PLOTSTYLE: Pennoni MCS.ctb
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PLAN & PROFILE - 6" FORCE MAIN
H: 1" = 30' , V: 1" = 3'

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PS1708

0 30' 60'

NOTE:
CONTRACTOR TO VERIFY LOCATION AND DEPTH OF ELECTRIC, GAS AND ALL STORMWATER FACILITIES PRIOR TO CONSTRUCTION. CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGE

NOTE:
DIRECTIONAL BORE TO BE PERFORMED THROUGH THE SLEEVE, AND BE CONTINUOUS TO STA 20+40

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

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TOWNE LAKES
TM: 233-5.00-122.00
TOWN OF MILLSBORO/ DAGSBORO HUNDRED, SUSSEX COUNTY
MILLSBORO, DE 19966 MILLSBORO, DE 19966

SEWER FORCE MAIN PLAN AND PROFILE

ATAPCO TOWNE LAKES, LLC.
ONE SOUTH STREET, SUITE 2800
BALTIMORE, MD 21202-3335

NO.	DATE	REVISIONS	BY
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1	2026-08-05	REVISED PER TOWN OF MILLSBORO COMMENTS	ASM

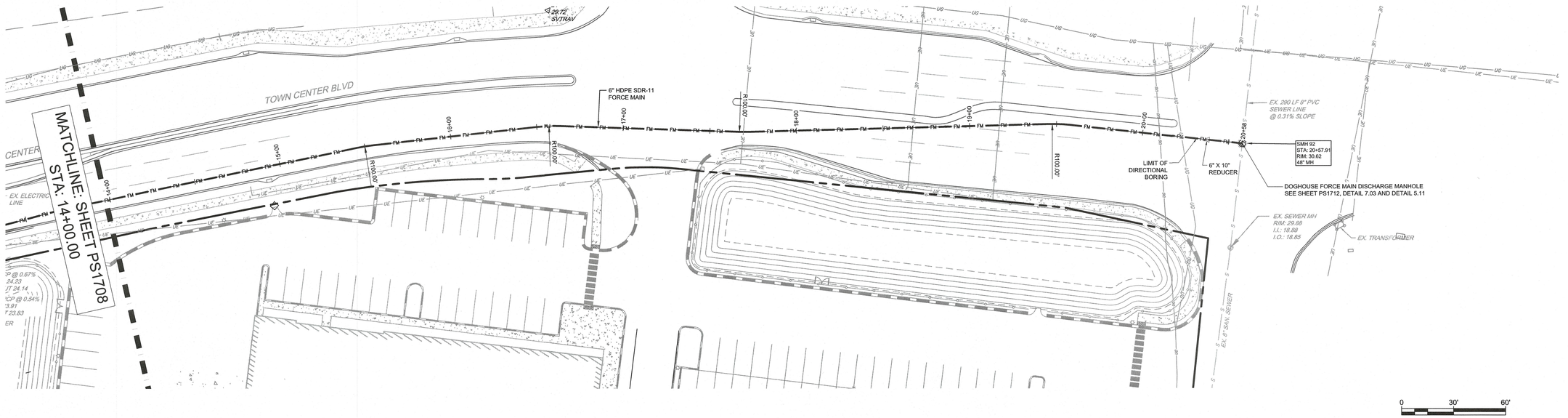
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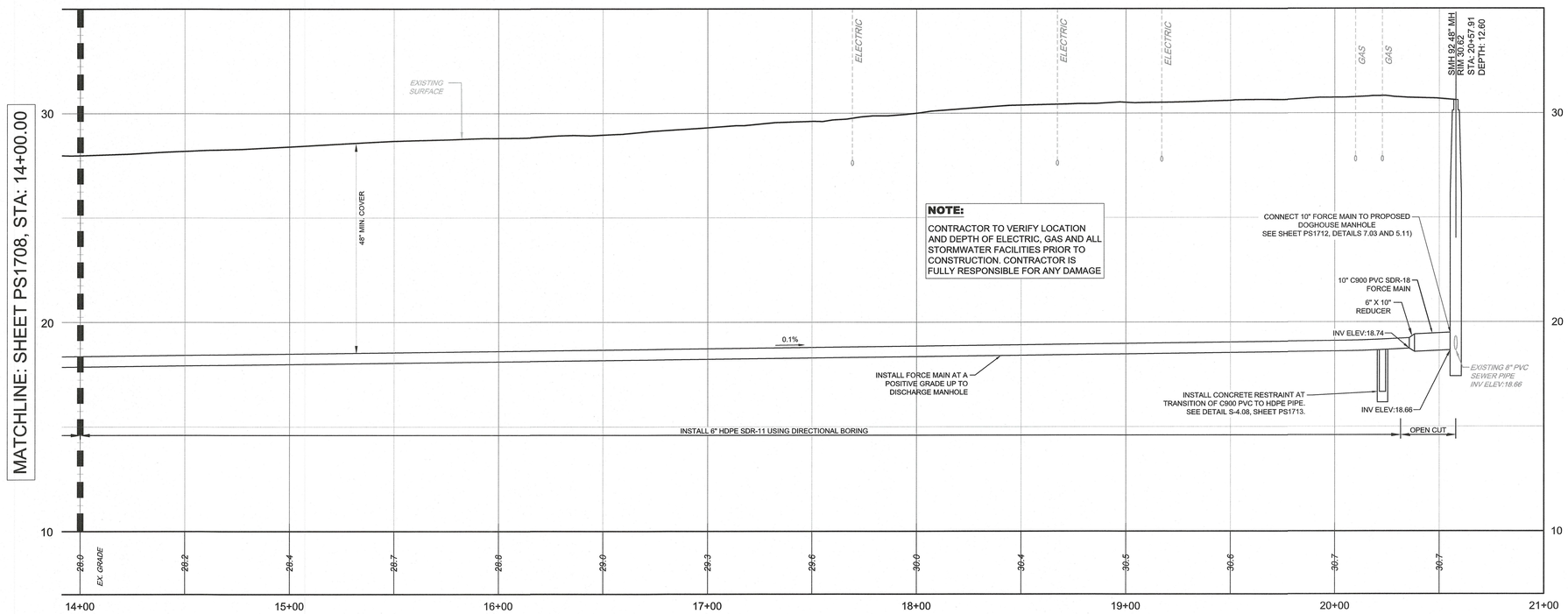
PROJECT	ATAPR24001
DATE	2025-11-20
DRAWING SCALE	1"=30'
DRAWN BY	CC
APPROVED BY	GCL

PS1708

SHEET 9 OF 14

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PLAN & PROFILE - 6" FORCE MAIN TO EXISTING MANHOLE

H: 1" = 30' , V: 1" = 3'

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PS1709

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

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GRAHAME LANE — LICENSE — 20688 — PROFESSIONAL ENGINEER — 10/15/2025

TOWNE LAKES

TM: 233-5.00-122.00
TOWN OF MILLSBORO/ DAGSBORO HUNDRED, SUSSEX COUNTY
MILLSBORO, DE 19966

SEWER FORCE MAIN PLAN AND PROFILE

ATAPCO TOWNE LAKES, LLC.
ONE SOUTH STREET, SUITE 2800
BALTIMORE, MD 21202-3335

NO.	DATE	REVISIONS	BY
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1	2026-08-05	REVISED PER TOWN OF MILLSBORO COMMENTS	ASM

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PROJECT	ATAPR24001
DATE	2025-11-20
DRAWING SCALE	1"=30'
DRAWN BY	CC
APPROVED BY	GCL

PS1709

SHEET 10 OF 14

U:\Accounts\ATAPR\ATAPR24001 - Towne Lakes Handy Road Millsboro\DESIGN_SHEETS\PUMP STATION\PS 1707-CS1710\dwg.dwg PLOTTED: 10/15/2026 1:15 PM, BY: Ahmed Mohamed PLOTSTYLE: Pennoni WCS.stb

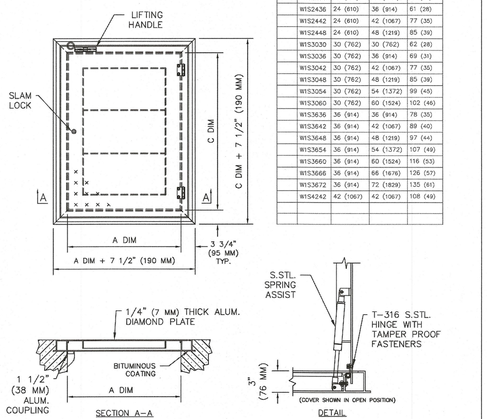
SERIES W1S ACCESS DOOR

HALLIDAY PRODUCTS
www.HallidayProducts.com
Phone: (800) 298-1027
Local: (407) 298-4470
Sales@HallidayProducts.com

STANDARD FEATURES:

- 300 LBS. PER SQ. FT. LOAD RATING (1464 KG PER SQ. METER LOAD RATING)
- EXTRUDED ALUMINUM CHANNEL FRAME
- SINGLE LEAF CONSTRUCTION
- AUTO-LOCK T-316 STAINLESS STEEL HOLD OPEN ARM WITH RELEASE HANDLE
- T-316 STAINLESS STEEL HINGES AND ATTACHING HARDWARE
- T-316 STAINLESS STEEL SLAM LOCK WITH REMOVABLE KEY
- STAINLESS STEEL COMPRESSION SPRING ASSIST
- BUILT-IN EPDM CUSHION/GASKET
- NON-OZONE DEPLETING BITUMINOUS COATING
- RECESSED LIFTING HANDLE
- LIFETIME GUARANTEE

STANDARD SIZES				
QTY.	MODEL NO.	A DIM INCHES (MM)	C DIM INCHES (MM)	UNIT WT. LBS. (KG)
	W1S2424	24 (610)	24 (610)	46 (20)
	W1S2430	24 (610)	30 (762)	51 (23)
	W1S2436	24 (610)	36 (914)	61 (28)
	W1S2442	24 (610)	42 (1067)	77 (35)
	W1S2448	24 (610)	48 (1219)	85 (39)
	W1S3030	30 (762)	30 (762)	62 (28)
	W1S3036	30 (762)	36 (914)	69 (31)
	W1S3042	30 (762)	42 (1067)	77 (35)
	W1S3048	30 (762)	48 (1219)	85 (39)
	W1S3054	30 (762)	54 (1372)	99 (45)
	W1S3060	30 (762)	60 (1524)	102 (46)
	W1S3636	36 (914)	36 (914)	78 (35)
	W1S3642	36 (914)	42 (1067)	89 (40)
	W1S3648	36 (914)	48 (1219)	97 (44)
	W1S3654	36 (914)	54 (1372)	107 (49)
	W1S3660	36 (914)	60 (1524)	116 (53)
	W1S3666	36 (914)	66 (1676)	126 (57)
	W1S3672	36 (914)	72 (1829)	135 (61)
	W1S4242	42 (1067)	42 (1067)	108 (49)



W1S SERIES R0

DETAIL- ACCESS DOOR

NOT TO SCALE

1 / PS1710

OPTIONAL PROTECTIVE GRATING PANEL

HALLIDAY PRODUCTS
www.HallidayProducts.com
Phone 800-298-1027
Fax 407-298-4534
Sales@HallidayProducts.com

STANDARD FEATURES:

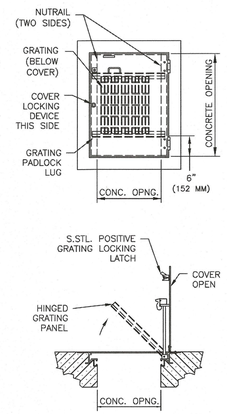
- ALUMINUM "I" BAR CONSTRUCTION
- ALL T-316 STAINLESS STEEL HARDWARE
- LOCKABLE WITH OWNER-SUPPLIED PADLOCK
- HINGED WITH POSITIVE LATCH TO MAINTAIN UPRIGHT POSITION
- LOAD RATED CONSISTENT WITH ACCESS COVER
- VIEW AREA FOR OBSERVATION AND LIMITED MAINTENANCE
- SAFETY ORANGE POWDER-COATED FINISH
- NUTRAIL W/S.STL. SPRING NUTS (300 LBS. PSF [1464 KG. PER METER] LOADED DOORS ONLY)
- LIFETIME GUARANTEE

APPLICATIONS:

THE OPTIONAL PROTECTIVE GRATING PANEL SHOULD BE SPECIFIED FOR APPLICATIONS IN AREAS THAT REQUIRE ADDITIONAL PROTECTION SHOULD THE ACCESS COVER BE LEFT IN THE OPEN POSITION. THIS OPTION SHOULD ALSO BE CONSIDERED WHEN A SINGLE PERSON INSPECTION OF WET WELLS IS DESIRABLE. THE GRATING PANEL HAS PROVISIONS FOR AN OWNER-SUPPLIED PADLOCK THAT WOULD PROVIDE SECONDARY PROTECTION AGAINST UNAUTHORIZED PERSONNEL OPENING THE ACCESS COVER. THIS OPTION IS NOT AVAILABLE FOR ALL ACCESS COVERS MODELS. PLEASE CONSULT THE FACTORY.

HALLIDAY PRODUCTS OPTIONAL PROTECTIVE GRATING PANEL IS EQUIPPED WITH ALL T-316 STAINLESS STEEL HARDWARE. THIS LOCKABLE GRATING PANEL CAN BE FACTORY INSTALLED ON MOST MODELS IN OUR EXTENSIVE LINE OF QUALITY ACCESS COVERS. EACH GRATING PANEL IS POWDER COAT FINISHED IN SAFETY ORANGE COLOR, AND IS EQUIPPED WITH A T-316 STAINLESS STEEL POSITIVE LATCH WITH RELEASE HANDLE THAT SECURES THE GRATING PANEL IN THE OPEN POSITION. THE GRATING SUPPORT LEDGES FEATURE BUILT-IN NUTRAIL. EACH UNIT IS SUPPLIED WITH FOUR STAINLESS STEEL SPRING NUTS USED TO MOUNT PUMP BRACKETS AND CABLE HOLDERS.

- CONSULT FACTORY FOR ALL PRICING
- FOR ADDITIONAL INFORMATION VISIT US AT: HallidayProducts.com



OPT-GRATE-N 07/29/05

DETAIL- OPTIONAL PROTECTIVE GRATING PANEL

NOT TO SCALE

1A / PS1710

SERIES DB PORTABLE HOIST

HALLIDAY PRODUCTS
www.HallidayProducts.com
Phone: (800) 298-1027
Local: (407) 298-4470
Sales@HallidayProducts.com

STANDARD FEATURES:

- TYPE-304 STAINLESS STEEL CONSTRUCTION
- 30 FEET (9.14 METERS) OF STAINLESS STEEL CABLE
- GALVANIZED 1 TON (907 KG) HOOK
- STAINLESS STEEL BRAKE WINCH
- ADJUSTABLE REACH IN 1" (25 MM) INCREMENTS

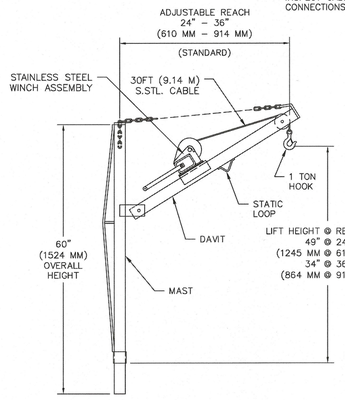
OPTIONS:

- TYPE-316 CONSTRUCTION
- ADDITIONAL CABLE AVAILABLE (SPECIFY LENGTH)
- ADDITIONAL WINCHES AVAILABLE
- STAINLESS STEEL HOOK
- OTHER REACHES AVAILABLE UPON REQUEST (CONSULT FACTORY)

STANDARD SIZES				
QTY.	MODEL NO.	CABLE SIZE INCHES (MM)	MAX. LOAD LBS. (KG)	UNIT WT. LBS. (KG)
	D1B36F	3/16" (4.76)	310 (141)	73 (33)
	D2B36G	1/4" (6.35)	1000 (454)	96 (44)
	D3B36H	1/4" (6.35)	1300 (590)	136 (62)

NOTICE:

- HALLIDAY PRODUCTS STAINLESS STEEL PORTABLE HOIST SHOULD NOT BE USED TO MOVE PEOPLE OR LOADS ABOVE PEOPLE.
- INSPECT CABLE AND HOOK CONNECTIONS BEFORE EACH USE.



DB SERIES R1

DETAIL- PROTABLE HOIST

NOT TO SCALE

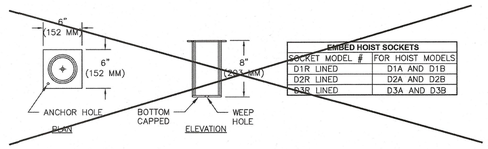
2 / PS1710

SERIES D HOIST SOCKETS

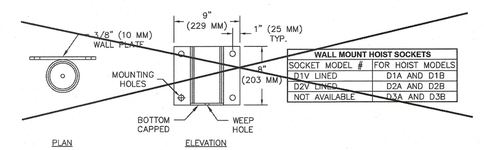
HALLIDAY PRODUCTS
www.HallidayProducts.com
Phone: (800) 298-1027
Local: (407) 298-4470
Sales@HallidayProducts.com

STANDARD FEATURES:

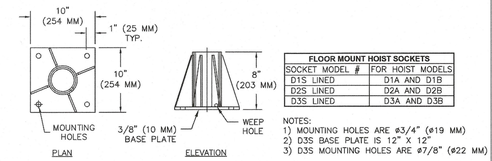
- STAINLESS STEEL TYPE-304 (STANDARD) OR TYPE-316 (OPTIONAL) CONSTRUCTION
- POLYMER LINING FOR SMOOTHER ROTATION
- AVAILABLE IN 3 STYLES
- 3 YEAR GUARANTEE



EMBED HOIST SOCKETS	
SOCKET MODEL #	FOR HOIST MODELS
D1R LINED	D1A AND D1B
D2R LINED	D2A AND D2B
D3R LINED	D3A AND D3B



WALL MOUNT HOIST SOCKETS	
SOCKET MODEL #	FOR HOIST MODELS
D1V LINED	D1A AND D1B
D2V LINED	D2A AND D2B
NOT AVAILABLE	D3A AND D3B



FLOOR MOUNT HOIST SOCKETS	
SOCKET MODEL #	FOR HOIST MODELS
D1S LINED	D1A AND D1B
D2S LINED	D2A AND D2B
D3S LINED	D3A AND D3B

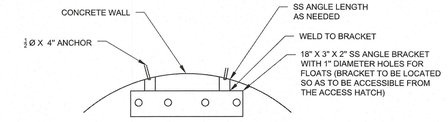
NOTES:
1) MOUNTING HOLES ARE ø3/4" (ø19 MM)
2) D3S BASE PLATE IS 12" X 12"
3) D3S MOUNTING HOLES ARE ø7/8" (ø22 MM)

D HOIST SOCKETS - R1

DETAIL- HOIST SOCKETS

NOT TO SCALE

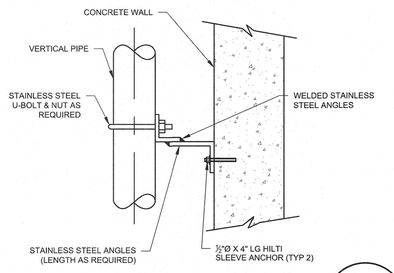
3 / PS1710



DETAIL- FLOAT SUPPORT BRACKET DETAIL

NOT TO SCALE

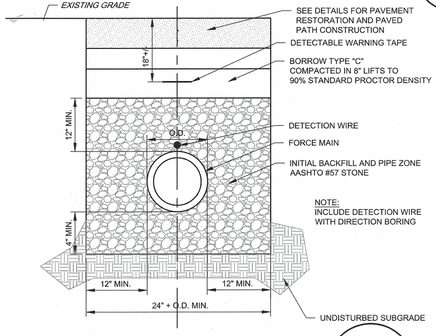
4 / PS1710



DETAIL- BRACKET AND PIPE SUPPORT DETAIL

NOT TO SCALE

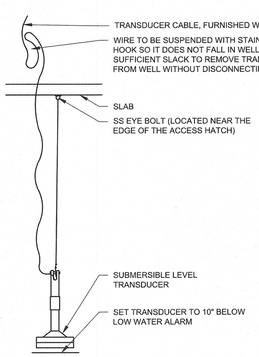
5 / PS1710



DETAIL- FORCE MAIN TRENCH OPEN CUT

NOT TO SCALE

6 / PS1710

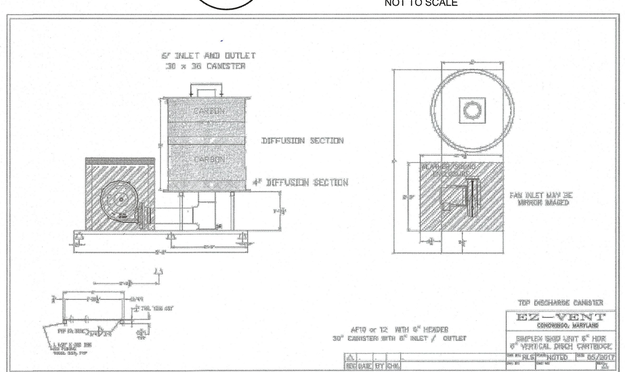


NOTE: ALL MOUNTING HARDWARE IN WET WELL SHALL BE STAINLESS STEEL

DETAIL- TRANSDUCER MOUNTING DETAIL

NOT TO SCALE

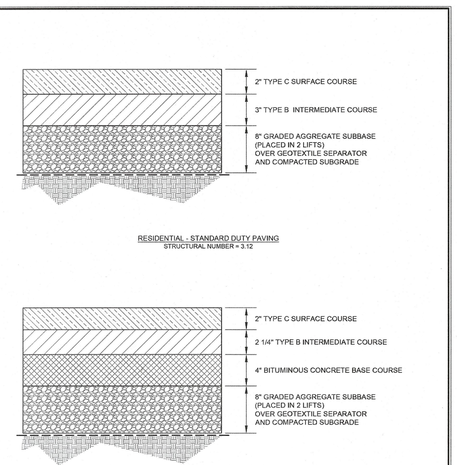
7 / PS1710



DETAIL- ODOR CONTROL DETAIL

NOT TO SCALE

8 / PS1710



DATE:	MARCH 2026	MILLSBORO~SUSSEX~DELAWARE	verdantas
PROJECT NO.:	CB.0201524	RESIDENTIAL PAVEMENT SECTIONS	1060 S. GOVERNORS AVE. - SUITE 101 DOVER, DE 19904 TEL: 302-674-9280
SCALE:	NO SCALE		SHEET: 9.01
DESIGNED BY:	GAF		
DRAWN BY:	GAF		
CHECKED BY:	GAF		

DETAIL- RESIDENTIAL PAVEMENT SECTIONS

NOT TO SCALE

9 / PS1710

PROJECT STATUS: —
PLOTTED: 10/14/2025 2:19 PM, BY: Ahmed Mohamed
PLOTSTYLE: Pennoni MCS.stb
U:\Accounts\ATAPRA\ATAPR24001 - Towne Lakes Handy Road Millsboro\DESIGN_SHEETS\PUMP STATIONS\PS1710dwg.dwg

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

ALL DIMENSIONS MUST BE VERIFIED BY CONTRACTOR AND OWNER MUST BE NOTIFIED OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK

10/14/2025

GARAGE LAKE SENECA 12/31/2026 DELAWARE

TOWNE LAKES
TM: 233-5.00-122.00
TOWN OF MILLSBORO/ DAGSBORO HUNDRED, SUSSEX COUNTY
MILLSBORO, DE 19966 MILLSBORO, DE 19966

PUMP STATION DETAILS

ATAPCO TOWNE LAKES, LLC.
ONE SOUTH STREET, SUITE 2800
BALTIMORE, MD 21202-3335

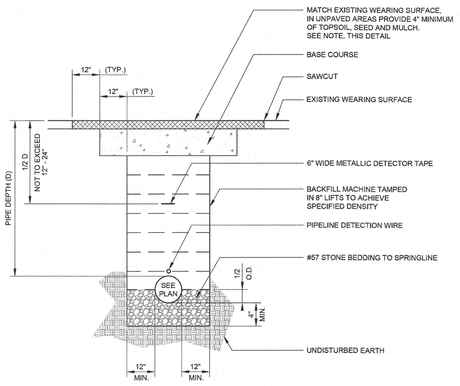
BY	REVISIONS	NO.	DATE
ASM	REVISED PER TOWN OF MILLSBORO COMMENTS	2	2026-10-13
ASM	REVISED PER TOWN OF MILLSBORO COMMENTS	1	2026-08-05

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 ASSOCIATE, AND OWNER SHALL INDEMNIFY AND HOLD HARMLESS PENNONI ASSOCIATES FROM ALL CLAIMS, DAMAGES, LOSSES AND EXPENSES ARISING OUT OF OR RESULTING THEREFROM.

PROJECT	ATAPR24001
DATE	2026-10-13
DRAWING SCALE	AS SHOWN
DRAWN BY	CC
APPROVED BY	GCL

PS1710

SHEET 11 OF 14



NOTE: AT ROAD CROSSINGS, WEARING SURFACE REPAIR SHALL EXTEND 10 FEET ON BOTH SIDES OF CENTERLINE OF PIPE.

DATE:	MARCH 2026
PROJECT NO.:	CB.0201524
SCALE:	NO SCALE
DESIGNED BY:	GAF
DRAWN BY:	GAF
CHECKED BY:	GAF

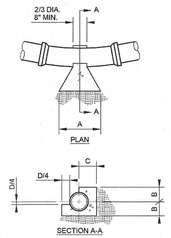
MILLSBORO–SUSSEX–DELAWARE

PIPE TRENCH AND BACKFILL

verdantas

1060 S. GOVERNORS AVE - SUITE 101
DOVER, DE 19904
TEL. 302-674-9280

SHEET: 2.01



BUTTRESS FOR HORIZONTAL BENDS										
BEND		0'-6"	8"	10"	12"	16"	20"	24"	30"	36"
1/64	A						1'-8"	2'-0"	2'-6"	3'-0"
	B						10"	1'-0"	1'-3"	1'-6"
	C						10"	1'-0"	1'-1"	1'-2"
1/32	A	6"	8"	10"	1'-0"	1'-4"	1'-8"	2'-0"	2'-6"	3'-0"
	B	7"	8"	9"	10"	1'-0"	1'-2"	1'-4"	1'-7"	1'-11"
	C	7"	7"	8"	8"	9"	10"	1'-0"	1'-1"	1'-2"
1/16	A	9"	1'-0"	1'-6"	1'-9"	2'-3"	3'-0"	3'-6"	4'-2"	5'-4"
	B	7"	8"	9"	10"	1'-0"	1'-2"	1'-4"	1'-7"	2'-0"
	C	8"	9"	10"	11"	1'-2"	1'-4"	1'-5"	1'-9"	2'-0"
1/8	A	1'-3"	1'-8"	2'-1"	2'-6"	3'-4"	4'-2"	5'-0"	6'-3"	7'-6"
	B	7"	8"	9"	11"	1'-3"	1'-6"	1'-8"	2'-0"	2'-4"
	C	8"	9"	10"	11"	1'-2"	1'-4"	1'-9"	2'-3"	2'-8"

NOTES:

1. PORTLAND CEMENT CONCRETE FOR BUTTRESSES SHALL BE 3000 PSI MINIMUM.
2. BUTTRESS DIMENSIONS SHOWN ARE MINIMUM DIMENSIONS BASED UPON SOIL BEARING CAPACITY OF 3000 P.S.F. AND STATIC WATER PRESSURE OF 150 P.S.I.
3. MINOR VARIATIONS IN BUTTRESS SHAPE WILL BE PERMITTED PROVIDED MINIMUM BEARING AGAINST SOLID GROUND IS MAINTAINED.
4. CONCRETE TO MEET UNDISTURBED EARTH. IF CONCRETE CAN NOT MEET UNDISTURBED EARTH AN ANCHORING SYSTEM APPROVED BY THE ENGINEER MAY BE USED.

DATE:	MARCH 2026
PROJECT NO.:	CB.0201524
SCALE:	NO SCALE
DESIGNED BY:	GAF
DRAWN BY:	GAF
CHECKED BY:	GAF

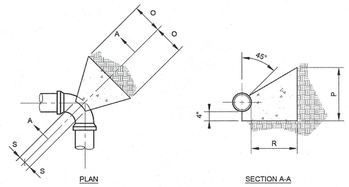
MILLSBORO–SUSSEX–DELAWARE

CONCRETE BUTTRESSES FOR HORIZONTAL BENDS

verdantas

1060 S. GOVERNORS AVE - SUITE 101
DOVER, DE 19904
TEL. 302-674-9280

SHEET: 3.01



BUTTRESSES FOR HORIZ. 90° BENDS				
PIPE SIZE	O	P	R	S
6" OR LESS	1'-0"	1'-2"	1'-8"	5"
8"	1'-4"	1'-6"	1'-7"	6"
10"	1'-6"	2'-1"	1'-7"	6"
12"	1'-8"	2'-6"	1'-7"	7"
14"	2'-4"	2'-6"	1'-8"	9"
16"	2'-5"	3'-0"	1'-8"	10"
18"	2'-7"	3'-6"	1'-11"	1'-0"
20"	2'-10"	3'-10"	2'-6"	1'-0"
24"	3'-10"	4'-0"	2'-9"	1'-0"
30"	5'-0"	5'-0"	3'-0"	1'-2"
36"	6'-0"	6'-0"	3'-4"	1'-2"

NOTES:

1. PORTLAND CEMENT CONCRETE FOR BUTTRESSES SHALL BE 3000 PSI MINIMUM.
2. BUTTRESS DIMENSIONS SHOWN ARE MINIMUM DIMENSIONS BASED UPON SOIL BEARING CAPACITY OF 3000 P.S.F. AND STATIC WATER PRESSURE OF 150 P.S.I.
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4. CONCRETE TO MEET UNDISTURBED EARTH. IF CONCRETE CAN NOT MEET UNDISTURBED EARTH AN ANCHORING SYSTEM APPROVED BY THE ENGINEER MAY BE USED.

DATE:	MARCH 2026
PROJECT NO.:	CB.0201524
SCALE:	NO SCALE
DESIGNED BY:	GAF
DRAWN BY:	GAF
CHECKED BY:	GAF

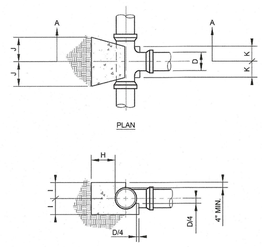
MILLSBORO–SUSSEX–DELAWARE

CONCRETE BUTTRESSES FOR HORIZONTAL 90° BENDS

verdantas

1060 S. GOVERNORS AVE - SUITE 101
DOVER, DE 19904
TEL. 302-674-9280

SHEET: 3.02



BUTTRESS FOR TEES										
PIPE DIA.	D	0'-6"	8"	10"	12"	16"	20"	24"	30"	36"
	H	8"	9"	10"	1'-0"	1'-2"	1'-4"	1'-6"	1'-9"	2'-0"
	I	8"	10"	1'-0"	1'-3"	1'-8"	2'-1"	2'-6"	3'-1"	3'-9"
	J	8"	8"	1'-0"	1'-0"	1'-4"	1'-8"	2'-0"	2'-6"	3'-0"
	K	6"	8"	8"	8"	10"	1'-2"	1'-4"	1'-6"	1'-10"

NOTES:

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2. BUTTRESS DIMENSIONS SHOWN ARE MINIMUM DIMENSIONS BASED UPON SOIL BEARING CAPACITY OF 3000 P.S.F. AND STATIC WATER PRESSURE OF 150 P.S.I.
3. MINOR VARIATIONS IN BUTTRESS SHAPE WILL BE PERMITTED PROVIDED MINIMUM BEARING AGAINST SOLID GROUND IS MAINTAINED.
4. CONCRETE TO MEET UNDISTURBED EARTH. IF CONCRETE CAN NOT MEET UNDISTURBED EARTH AN ANCHORING SYSTEM APPROVED BY THE ENGINEER MAY BE USED.

DATE:	MARCH 2026
PROJECT NO.:	CB.0201524
SCALE:	NO SCALE
DESIGNED BY:	GAF
DRAWN BY:	GAF
CHECKED BY:	GAF

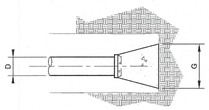
MILLSBORO–SUSSEX–DELAWARE

CONCRETE BUTTRESSES FOR HORIZONTAL TEES

verdantas

1060 S. GOVERNORS AVE - SUITE 101
DOVER, DE 19904
TEL. 302-674-9280

SHEET: 3.03



BUTTRESS FOR CAPS										
PIPE DIA.	D	0'-6"	8"	10"	12"	16"	20"	24"	30"	36"
	E	6"	8"	8"	10"	1'-0"	1'-4"	1'-8"	2'-0"	2'-0"
	F	11"	1'-2"	1'-6"	1'-9"	2'-4"	2'-11"	3'-6"	4'-4"	5'-3"
	G	1'-3"	1'-8"	2'-1"	2'-6"	3'-4"	4'-2"	5'-0"	6'-3"	7'-6"

NOTES:

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4. CONCRETE TO MEET UNDISTURBED EARTH. IF CONCRETE CAN NOT MEET UNDISTURBED EARTH AN ANCHORING SYSTEM APPROVED BY THE ENGINEER MAY BE USED.

DATE:	MARCH 2026
PROJECT NO.:	CB.0201524
SCALE:	NO SCALE
DESIGNED BY:	GAF
DRAWN BY:	GAF
CHECKED BY:	GAF

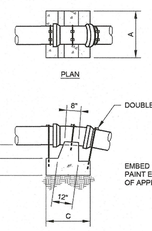
MILLSBORO–SUSSEX–DELAWARE

CONCRETE BUTTRESSES FOR CAPS

verdantas

1060 S. GOVERNORS AVE - SUITE 101
DOVER, DE 19904
TEL. 302-674-9280

SHEET: 3.04



BUTTRESS FOR VERTICAL BENDS					
BEND		0'-6"	8"	10"	12"
1/32	A	1'-6"	1'-6"	1'-5"	3'-0"
	B	1'-3"	1'-9"	1'-3"	2'-0"
	C	2'-0"	2'-6"	2'-9"	3'-0"
1/16	A	2'-0"	3'-4"	3'-8"	4'-0"
	B	1'-9"	2'-3"	2'-6"	2'-6"
	C	2'-6"	2'-8"	3'-10"	4'-0"
1/8	A	2'-6"	3'-0"	4'-0"	4'-6"
	B	2'-6"	2'-9"	3'-0"	3'-6"
	C	3'-0"	4'-0"	4'-6"	4'-9"

REINFORCING BARS				
SIZE	1/32	1/16	1/8	
6"	3-#4	3-#4	3-#4	
8"	3-#4	3-#4	3-#4	
10"	3-#4	3-#4	3-#5	
12"	3-#4	3-#4	3-#5	

NOTES:

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2. BUTTRESS DIMENSIONS SHOWN ARE MINIMUM DIMENSIONS BASED UPON SOIL BEARING CAPACITY OF 3000 P.S.F. AND STATIC WATER PRESSURE OF 150 P.S.I.
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DATE:	MARCH 2026
PROJECT NO.:	CB.0201524
SCALE:	NO SCALE
DESIGNED BY:	GAF
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CHECKED BY:	GAF

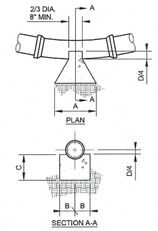
MILLSBORO–SUSSEX–DELAWARE

CONCRETE BUTTRESS ANCHORAGE FOR VERTICAL BENDS

verdantas

1060 S. GOVERNORS AVE - SUITE 101
DOVER, DE 19904
TEL. 302-674-9280

SHEET: 3.05



BUTTRESS FOR VERTICAL BENDS										
BEND		0'-6"	8"	10"	12"	16"	20"	24"	30"	36"
1/64	A						1'-8"	2'-0"	2'-6"	3'-0"
	B						10"	1'-0"	1'-3"	1'-6"
	C						10"	1'-0"	1'-1"	1'-2"
1/32	A	6"	8"	10"	10"	1'-4"	1'-8"	2'-0"	2'-6"	3'-0"
	B	7"	8"	9"	10"	1'-0"	1'-2"	1'-4"	1'-7"	1'-10"
	C	7"	7"	8"	8"	9"	10"	1'-0"	1'-1"	1'-2"
1/16	A	9"	1'-0"	1'-6"	1'-9"	2'-3"	3'-0"	3'-6"	4'-2"	5'-4"
	B	7"	7"	8"	10"	1'-0"	1'-2"	1'-4"	1'-7"	2'-0"
	C	7"	7"	7"	8"	8"	9"	10"	1'-0"	1'-1"	1'-2"
1/8	A	1'-3"	1'-8"	2'-1"	2'-6"	3'-4"	4'-2"	5'-0"	6'-3"	7'-6"
	B	7"	8"	9"	11"	1'-3"	1'-6"	1'-9"	2'-3"	2'-8"
	C	7"	8"	10"	11"	1'-3"	1'-6"	1'-9"	2'-3"	2'-8"

NOTES:

1. PORTLAND CEMENT CONCRETE FOR BUTTRESSES SHALL BE 3000 PSI MINIMUM.
2. BUTTRESS DIMENSIONS SHOWN ARE MINIMUM DIMENSIONS BASED UPON SOIL BEARING CAPACITY OF 3000 P.S.F. AND STATIC WATER PRESSURE OF 150 P.S.I.
3. MINOR VARIATIONS IN BUTTRESS SHAPE WILL BE PERMITTED PROVIDED MINIMUM BEARING AGAINST SOLID GROUND IS MAINTAINED.
4. CONCRETE TO MEET UNDISTURBED EARTH. IF CONCRETE CAN NOT MEET UNDISTURBED EARTH AN ANCHORING SYSTEM APPROVED BY THE ENGINEER MAY BE USED.

DATE:	MARCH 2026
PROJECT NO.:	CB.0201524
SCALE:	NO SCALE
DESIGNED BY:	GAF
DRAWN BY:	GAF
CHECKED BY:	GAF

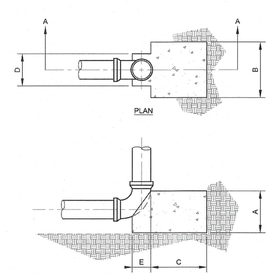
MILLSBORO–SUSSEX–DELAWARE

CONCRETE BUTTRESSES FOR VERTICAL BENDS

verdantas

1060 S. GOVERNORS AVE - SUITE 101
DOVER, DE 19904
TEL. 302-674-9280

SHEET: 3.06



BUTTRESS FOR VERTICAL 90° BEND					
PIPE SIZE	A	B	C	D	E
3" OR LESS	9"	9"	9"	8"	3"
4"	12"	12"	12"	10"	4"
6"	1'-6"	1'-6"	1'-6"	12"	6"
8"	1'-6"	2'-0"	2'-0"	1'-2"	8"
10"	2'-0"	2'-6"	2'-6"	1'-4"	10"
12"	2'-6"	3'-0"	3'-0"	1'-6"	12"

NOTES:

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DESIGNED BY:	GAF
DRAWN BY:	GAF
CHECKED BY:	GAF

MILLSBORO–SUSSEX–DELAWARE

CONCRETE BUTTRESSES FOR VERTICAL 90° BENDS

verdantas

1060 S. GOVERNORS AVE - SUITE 101
DOVER, DE 19904
TEL. 302-674-9280

SHEET: 3.07

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

ALL DIMENSIONS MUST BE VERIFIED BY CONTRACTOR AND OWNER MUST BE NOTIFIED OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK



TOWNE LAKES
TM: 233-5.00-122.00
TOWN OF MILLSBORO/ DAGSBORO HUNDRED, SUSSEX COUNTY
MILLSBORO, DE 19966 MILLSBORO, DE 19966

PS. AND FM. NOTES AND DETAILS

ATAPCO TOWNE LAKES, LLC.
ONE SOUTH STREET, SUITE 2800
BALTIMORE, MD 21202-3335

NO.	DATE	REVISIONS	BY
2	2026-10-13	REVISED PER TOWN OF MILLSBORO COMMENTS	ASM
1	2026-08-05	REVISED PER TOWN OF MILLSBORO COMMENTS	ASM

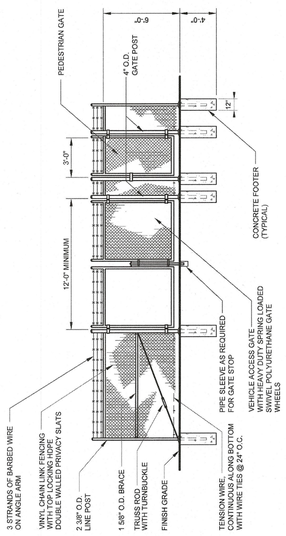
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PROJECT	ATAPR24001
DATE	2026-10-13
DRAWING SCALE	AS SHOWN
DRAWN BY	CC
APPROVED BY	GCL

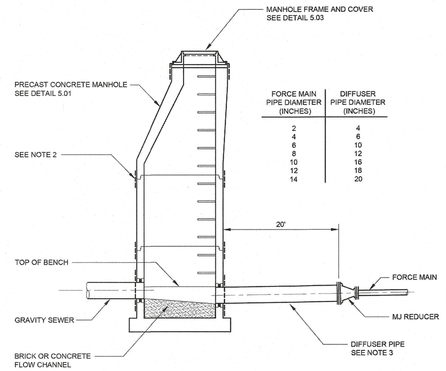
PS1711

SHEET 12 OF 14

U:\Accounts\ATAPR\ATAPR24001 - Towne Lakes Hardy Road Millsboro\DESIGN_SHEETS\PUMP STATION\PS-1711.dwg PLOTTED: 10/14/2026 2:16 PM, BY: Ahmed Mohamed PLOTSTYLE: Pennoni NCS.stb PROJECT STATUS: —



DATE: MARCH 2026	MILLSBORO–SUSSEX–DELAWARE	verdantas	
PROJECT NO.: CB.0201524	FENCE AND GATE	1060 S. GOVERNORS AVE - SUITE 101 DOVER, DE 19904 TEL. 302-674-9280	SHEET: 6.10
SCALE: NO SCALE			
DESIGNED BY: GAF			
DRAWN BY: GAF			
CHECKED BY: GAF			

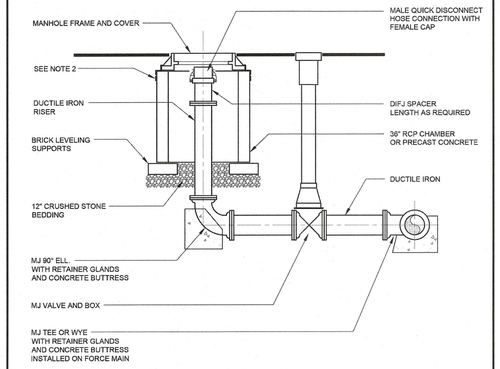


FORCE MAIN PIPE DIAMETER (INCHES)	DIFFUSER PIPE DIAMETER (INCHES)
2	4
4	6
6	10
8	12
10	16
12	18
14	20

NOTES:

1. PROVIDE PROTECTIVE COATING ON ALL INTERIOR AND EXTERIOR SURFACES. REFER TO SPECIFICATION SECTION 5B OF THIS STANDARD FOR ADDITIONAL DETAILS.
2. MANHOLE FRAME, SECTION JOINTS, AND PIPE PENETRATIONS SHALL BE WRAPPED WITH HEAT SHRINKABLE ENCAPSULATION SYSTEM.
3. PROVIDE DIFFUSER PIPE TO REDUCE FORCE MAIN EXIT VELOCITY, DISSIPATE HYDRAULIC ENERGY AND TO RELEASE TRAPPED AIR. DIFFUSER PIPE MATERIAL SHALL BE IN ACCORDANCE WITH SECTION 5B OF THIS STANDARD AND HAVE A CROSS-SECTIONAL AREA THAT IS AT LEAST TWICE THE FORCE MAIN PIPE DIAMETER. REFER TO TABLE, THIS SHEET.

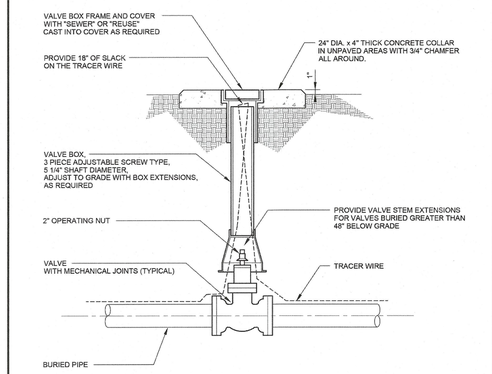
DATE: MARCH 2026	MILLSBORO–SUSSEX–DELAWARE	verdantas	
PROJECT NO.: CB.0201524	FORCE MAIN DISCHARGE MANHOLE	1060 S. GOVERNORS AVE - SUITE 101 DOVER, DE 19904 TEL. 302-674-9280	SHEET: 7.03
SCALE: NO SCALE			
DESIGNED BY: GAF			
DRAWN BY: GAF			
CHECKED BY: GAF			



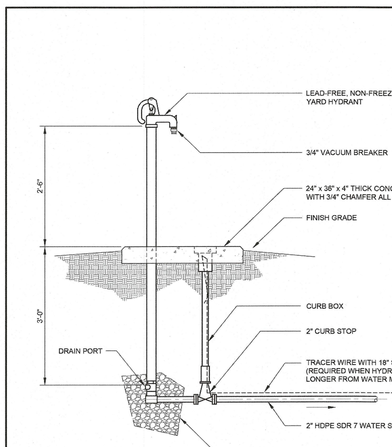
NOTES:

1. PROVIDE PROTECTIVE COATING ON ALL INTERIOR AND EXTERIOR SURFACES. REFER TO SPECIFICATION SECTION 5B OF THIS STANDARD FOR ADDITIONAL DETAILS.
2. MANHOLE FRAME AND ANY REQUIRED SECTION JOINTS SHALL BE WRAPPED WITH HEAT SHRINKABLE ENCAPSULATION SYSTEM.

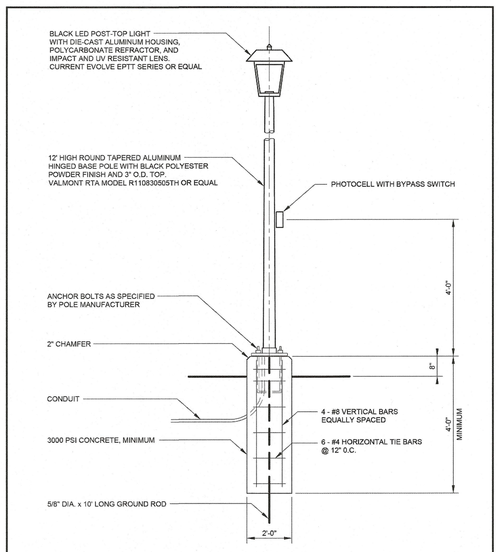
DATE: MARCH 2026	MILLSBORO–SUSSEX–DELAWARE	verdantas	
PROJECT NO.: CB.0201524	FORCE MAIN BYPASS PUMPING CONNECTION	1060 S. GOVERNORS AVE - SUITE 101 DOVER, DE 19904 TEL. 302-674-9280	SHEET: 6.06
SCALE: NO SCALE			
DESIGNED BY: GAF			
DRAWN BY: GAF			
CHECKED BY: GAF			



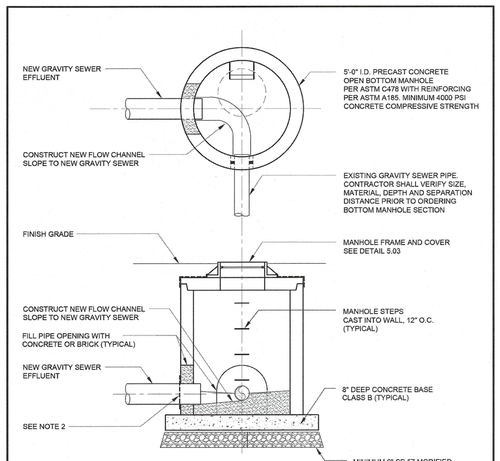
DATE: MARCH 2026	MILLSBORO–SUSSEX–DELAWARE	verdantas	
PROJECT NO.: CB.0201524	BURIED VALVE (SEWER OR BENEFICIAL REUSE)	1060 S. GOVERNORS AVE - SUITE 101 DOVER, DE 19904 TEL. 302-674-9280	SHEET: 7.04
SCALE: NO SCALE			
DESIGNED BY: GAF			
DRAWN BY: GAF			
CHECKED BY: GAF			



DATE: MARCH 2026	MILLSBORO–SUSSEX–DELAWARE	verdantas	
PROJECT NO.: CB.0201524	YARD HYDRANT	1060 S. GOVERNORS AVE - SUITE 101 DOVER, DE 19904 TEL. 302-674-9280	SHEET: 6.07
SCALE: NO SCALE			
DESIGNED BY: GAF			
DRAWN BY: GAF			
CHECKED BY: GAF			



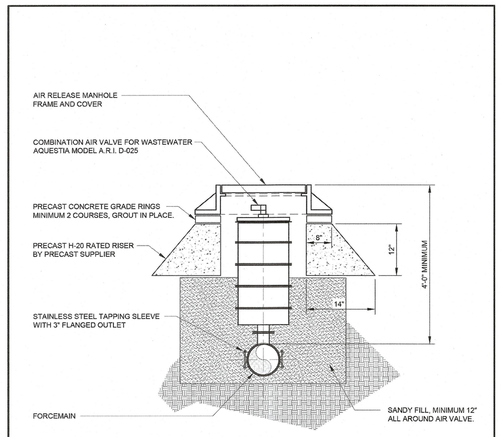
DATE: MARCH 2026	MILLSBORO–SUSSEX–DELAWARE	verdantas	
PROJECT NO.: CB.0201524	YARD LIGHT	1060 S. GOVERNORS AVE - SUITE 101 DOVER, DE 19904 TEL. 302-674-9280	SHEET: 6.08
SCALE: NO SCALE			
DESIGNED BY: GAF			
DRAWN BY: GAF			
CHECKED BY: GAF			



NOTES:

1. PROVIDE PROTECTIVE COATING ON ALL EXTERIOR SURFACES. REFER TO SPECIFICATION SECTION 5B OF THIS STANDARD FOR ADDITIONAL DETAILS.
2. MANHOLE FRAME, SECTION JOINTS, AND PIPE PENETRATIONS SHALL BE WRAPPED WITH HEAT SHRINKABLE ENCAPSULATION SYSTEM.

DATE: MARCH 2026	MILLSBORO–SUSSEX–DELAWARE	verdantas	
PROJECT NO.: CB.0201524	DOGHOUSE MANHOLE	1060 S. GOVERNORS AVE - SUITE 101 DOVER, DE 19904 TEL. 302-674-9280	SHEET: 5.11
SCALE: NO SCALE			
DESIGNED BY: GAF			
DRAWN BY: GAF			
CHECKED BY: GAF			



DATE: MARCH 2026	MILLSBORO–SUSSEX–DELAWARE	verdantas	
PROJECT NO.: CB.0201524	AIR VALVE MANHOLE	1060 S. GOVERNORS AVE - SUITE 101 DOVER, DE 19904 TEL. 302-674-9280	SHEET: 7.01
SCALE: NO SCALE			
DESIGNED BY: GAF			
DRAWN BY: GAF			
CHECKED BY: GAF			

Pennoni

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

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GABRIELLE LAKE LICENSED PROFESSIONAL ENGINEER NO. 25098 STATE OF DELAWARE 10/15/2026

TOWNE LAKES
TM: 233-5.00-122.00
TOWN OF MILLSBORO/ DAGSBORO HUNDRED, SUSSEX COUNTY
MILLSBORO, DE 19966 MILLSBORO, DE 19966

PS. AND FM. NOTES AND DETAILS

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ONE SOUTH STREET, SUITE 2800
BALTIMORE, MD 21202-3335

NO.	DATE	REVISIONS	BY
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1	2026-09-05	REVISED PER TOWN OF MILLSBORO COMMENTS	ASM

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PROJECT	ATAPR24001
DATE	2026-10-13
DRAWING SCALE	AS SHOWN
DRAWN BY	CC
APPROVED BY	GCL

PS1712

SHEET 13 OF 14

PLOTTED: 10/14/2026 2:16 PM BY: Ahmed Mohamed PLOTSTYLE: Pennoni NCS.stb PROJECT STATUS: —
U:\Accounts\ATAPR\ATAPR24001 - Towne Lakes Handy Road Millsboro\DESIGN_SHEETS\PUMP STATION\PS.1711.dwg

Standard Detail & Specifications

Construction Site Pollution Prevention

Delaware NPDES Discharge Permit
General Permit for Discharge of Stormwater from Construction Activities

((Project Name))

((NOI Permit Number))

((Agency Plan Approval ID))

((Contact Name & Number for Additional Site Information))

((Contact Name & Number to Obtain Copy of Approved Plan))

If you observe indicators of stormwater pollutants in the discharge or in the receiving waterbody, call the DNREC Spill Notification 24 HR Hotline at

1-800-662-8802

Example Construction General Permit (CGP) Signage

NOTES:

1. Minimum sign size 2' x 2'
2. Minimum text size 1"
3. Sign must be posted at a safe, publicly accessible location close to construction site
4. Sign must be visible from the public road nearest the active construction site
5. Signs posted within a DelDOT or other public road right-of-way (ROW) must be in accordance with all local and/or State requirements in regards to safety, location, orientation, etc.

Source:	Symbol:	Detail No.
Delaware ESC Handbook		**DE-ESC-3.6.1** Sheet 1 of 3 Effective January 2026

Standard Detail & Specifications

Construction Site Pollution Prevention

1) Equipment and Vehicle Fueling and Maintenance

a. Minimize spills and leaks of fuels and oils.
   i. Fuel only in marked areas a minimum of 50 feet away from drains and watercourses. Use automatic shut-off nozzles and do not top off tanks. Provide lighting if fueling at night.
   ii. Use berms or other barriers around fueling, maintenance, and parking areas to prevent stormwater from running through and to contain spills. Use drip pans during maintenance.
   iii. Take equipment and vehicles to off-site facilities for maintenance when possible.
   iv. Check vehicles and equipment daily for leaks. Repair immediately or remove from site.
   v. Clean up any spills right away. Do not hose them down.
b. Keep absorbent materials and spill kits on site, especially in fueling and storage areas.
c. Dispose of or recycle used oil, fluids, lubricants, and cleanup materials according to manufacturer instructions and all local, state, and federal regulations.

2) Equipment and Vehicle Washing

a. Minimize discharge of pollutants from wash water.
   i. Use off-site commercial wash facilities when possible.
   ii. If washing on-site, use high-pressure water without detergents in a contained area with an impervious berm.
   iii. Dispose of concrete washout water only in designated washout areas for hardening and proper disposal.
b. Do not discharge soaps, solvents, or detergents.
c. Store soaps, detergents, and solvents under cover (e.g., plastic sheeting, temporary roofs) or use another effective method to prevent contact with stormwater.

3) Storage, Handling, and Disposal of Building Products, Materials, and Waste

a. Minimize exposure of materials, products, and waste to rain, stormwater, and wind.
b. Building materials and products:
   i. Cover materials (e.g., plastic sheeting, tarp, or roof) to prevent contact with rain and stormwater. Final building materials and products intended for outdoor use do not require cover.
   ii. Secure materials (e.g., tarp, mesh, or lidded dumpster) to protect from wind.

Source:	Symbol:	Detail No.
Adapted from USEPA CGP 2022 (as modified)		**DE-ESC-3.6.1** Sheet 2 of 3 Effective January 2026

Standard Detail & Specifications

Construction Site Pollution Prevention

c. Construction and domestic waste:
   i. Provide enough containers (e.g., dumpsters, trash bins) to hold all waste.
   ii. Keep container lids closed when not in use and during storms.
   iii. For containers without lids, cover with a tarp or temporary roof to prevent exposure to rain and wind.
   iv. Do not dump or allow liquid wastes (e.g., paint, solvents, chemicals) to enter the ground, drains, or waterways.
d. Dispose of waste in designated containers and clean up loose trash immediately.
e. Empty dumpsters when at 80% capacity by volume.
f. Waste containers are not required for final building materials and products if stored separately from other construction, domestic or other waste. If mixed, the waste must be managed as construction and domestic waste in Section 3(c).

4) Hazardous Materials, Other Chemicals and Sanitary Waste:

a. Store hazardous materials and chemicals under cover or in secondary containment, at least 50 feet from drains or waterways.
b. Keep containers labeled, sealed, watertight, and closed when not in use.
c. Store contaminated waste in sealed, labeled containers made of suitable material.
d. Dispose of hazardous materials according to Delaware laws and regulations.
e. Post spill reporting contact information clearly on site.

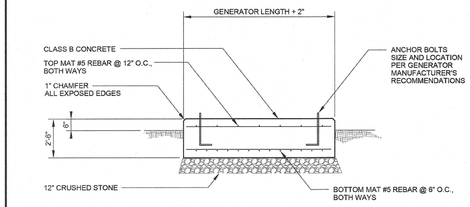
5) Pesticides, Herbicides, Fertilizers, and Landscape Material:

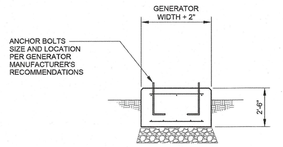
a. Keep all products labeled and covered (e.g., plastic sheeting or temporary roofs) to prevent contact with rain and stormwater.
b. Provide similarly effective protection methods, such as storing fertilizer in a weatherproof area or on a covered pallet, to minimize polluted run-off.
c. Apply all products according to state and federal regulations.

CONTACT INFORMATION

DNREC 24-Hour Toll Free Number	**800-662-8802**
DNREC Solid & Hazardous Waste Management Section	**302-739-9403**

Source:	Symbol:	Detail No.
Adapted from USEPA CGP 2022 (as modified)		**DE-ESC-3.6.1** Sheet 3 of 3 Effective January 2026





DATE:	MARCH 2026
PROJECT NO.:	CB.0201524
SCALE:	NO SCALE
DESIGNED BY:	GAF
DRAWN BY:	GAF
CHECKED BY:	GAF

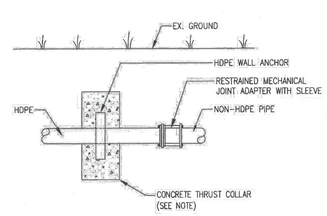
MILLSBORO~SUSSEX~DELAWARE

GENERATOR PAD

verdantas

1060 S. GOVERNORS AVE - SUITE 101
DOVER, DE 19904
TEL. 302-674-9280

SHEET: 6.05



ELEVATION

NOTE:
FOR TRANSITIONS BETWEEN HDPE PIPE AND NON-HDPE PIPE, AN APPROPRIATELY DESIGNED CONCRETE THRUST COLLAR AROUND A POLY WALL ANCHOR SHALL BE INCORPORATED TO ACCOUNT FOR THE POISSON EFFECT OF THE HDPE PIPE. AS AN ALTERNATIVE, ADDITIONAL JOINT RESTRAINTS SHALL BE INCORPORATED OUTSIDE THE LIMITS OF HDPE PIPING, AS APPROVED BY THE COUNTY.

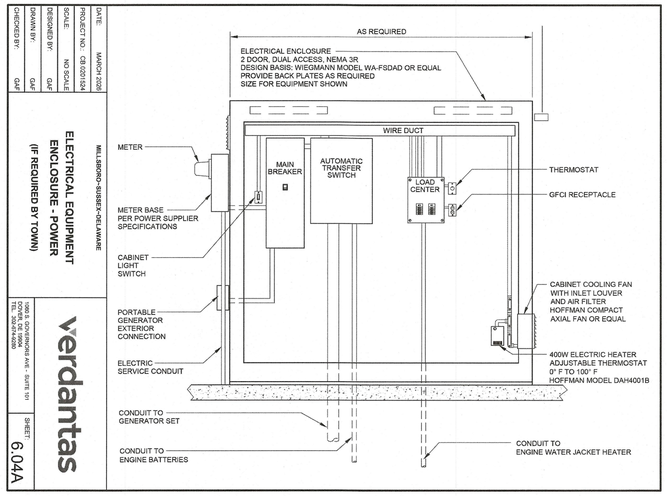
SUSSEX COUNTY ENGINEERING DEPARTMENT

APPROVED: SUSSEX COUNTY ENGINEER

TRANSITION FROM HDPE TO NON-HDPE PIPE

DETAIL: S-4.08

DATE ISSUED: 12/30/2021



ELECTRICAL EQUIPMENT ENCLOSURE - POWER (IF REQUIRED BY TOWN)

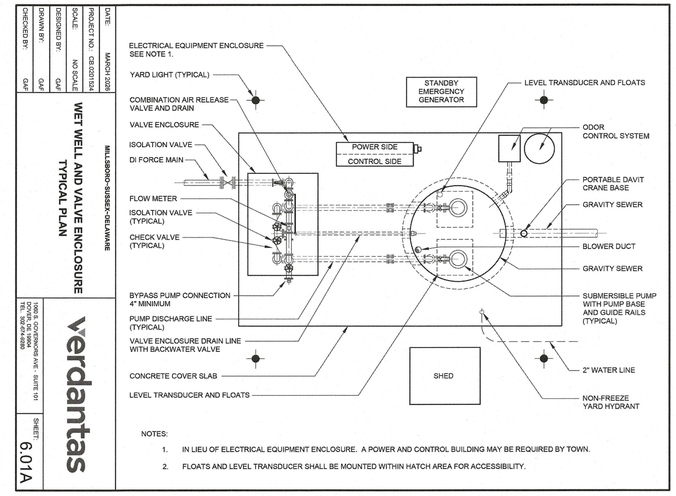
MILLSBORO~SUSSEX~DELAWARE

DATE:	MARCH 2026
PROJECT NO.:	CB.0201524
SCALE:	NO SCALE
DESIGNED BY:	GAF
DRAWN BY:	GAF
CHECKED BY:	GAF

verdantas

1060 S. GOVERNORS AVE - SUITE 101
DOVER, DE 19904
TEL. 302-674-9280

SHEET: 6.04A



NOTES:

1. IN LIEU OF ELECTRICAL EQUIPMENT ENCLOSURE. A POWER AND CONTROL BUILDING MAY BE REQUIRED BY TOWN.
2. FLOATS AND LEVEL TRANSDUCER SHALL BE MOUNTED WITHIN HATCH AREA FOR ACCESSIBILITY.

WET WELL AND VALVE ENCLOSURE TYPICAL PLAN

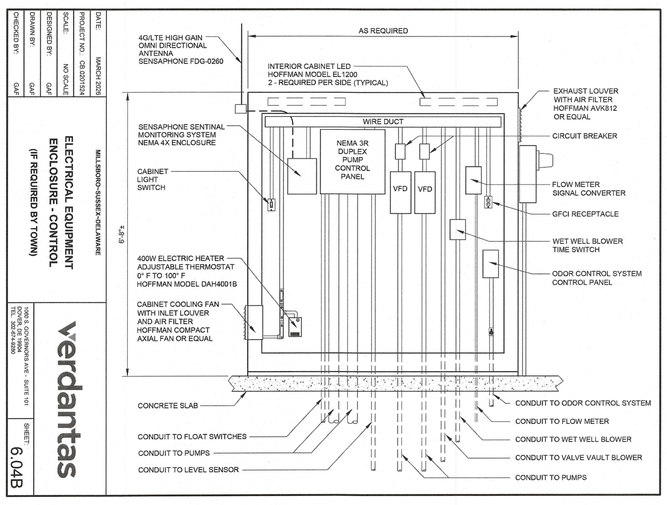
MILLSBORO~SUSSEX~DELAWARE

DATE:	MARCH 2026
PROJECT NO.:	CB.0201524
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DESIGNED BY:	GAF
DRAWN BY:	GAF
CHECKED BY:	GAF

verdantas

1060 S. GOVERNORS AVE - SUITE 101
DOVER, DE 19904
TEL. 302-674-9280

SHEET: 6.01A



ELECTRICAL EQUIPMENT ENCLOSURE - CONTROL (IF REQUIRED BY TOWN)

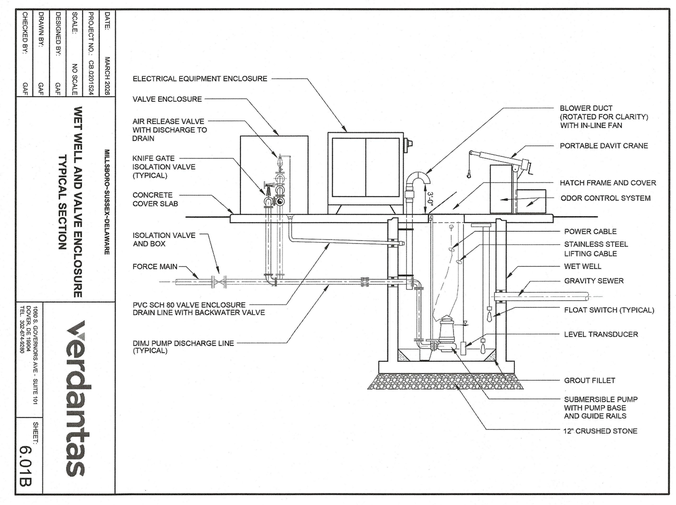
MILLSBORO~SUSSEX~DELAWARE

DATE:	MARCH 2026
PROJECT NO.:	CB.0201524
SCALE:	NO SCALE
DESIGNED BY:	GAF
DRAWN BY:	GAF
CHECKED BY:	GAF

verdantas

1060 S. GOVERNORS AVE - SUITE 101
DOVER, DE 19904
TEL. 302-674-9280

SHEET: 6.04B



WET WELL AND VALVE ENCLOSURE TYPICAL SECTION

MILLSBORO~SUSSEX~DELAWARE

DATE:	MARCH 2026
PROJECT NO.:	CB.0201524
SCALE:	NO SCALE
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DRAWN BY:	GAF
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verdantas

1060 S. GOVERNORS AVE - SUITE 101
DOVER, DE 19904
TEL. 302-674-9280

SHEET: 6.01B

Pennoni

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18072 Davidson Drive
Milton, DE 19968
T 302.684.8030 **F** 302.684.8054

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TOWNE LAKES
TM: 233-5.00-122.00
TOWN OF MILLSBORO/ DAGSBORO HUNDRED, SUSSEX COUNTY
MILLSBORO, DE 19966 MILLSBORO, DE 19966

PS. AND FM. NOTES AND DETAILS

ATAPCO TOWNE LAKES, LLC.
ONE SOUTH STREET, SUITE 2800
BALTIMORE, MD 21202-3335

NO.	DATE	REVISIONS	BY
2	2026-10-13	REVISED PER TOWN OF MILLSBORO COMMENTS	ASM
1	2026-08-05	REVISED PER TOWN OF MILLSBORO COMMENTS	ASM

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PROJECT	ATAPR24001
DATE	2026-10-13
DRAWING SCALE	AS SHOWN
DRAWN BY	CC
APPROVED BY	GCL

PS1713

SHEET 14 OF 14

U:\Accounts\ATAPR\ATAPR24001 - Towne Lakes Hardy Road Millsboro\DESIGN_SHEETS\PUMP STATION\PS_1712.dwg PLOTTED: 10/14/2025 2:15 PM BY: Ahmed Mohamed PLOTSTYLE: Pennoni MCS.stb PROJECT STATUS: —