

GENERAL NOTES:

- THIS PLAN AND APPROVAL IS FOR DOMESTIC WASTE WATER ONLY.
- ALL FACILITIES TO MEET ARTESIAN WASTEWATER MANAGEMENT INC. STANDARDS AND SPECIFICATIONS.

SITE NOTES:

- THE PROPERTY LINES SHOWN ON THIS PLAT WAS TAKEN FROM DOCUMENTS OF PUBLIC RECORDS AS WELL AS ACTUAL FIELD SURVEY PREPARED BY PENNONI ASSOCIATES.
- THE TOPOGRAPHY SHOWN ON THIS PLAN WAS TAKEN FROM A PLAN PREPARED BY PENNONI ASSOCIATES. VERTICAL DATUM NAVD88, HORIZONTAL DATUM NAD83.
- SANITARY SEWER SERVICE FOR THE SUBDIVISION WILL BE HANDLED BY THE INLAND BAYS WATER TREATMENT FACILITY AS OPERATED BY SUSSEX COUNTY.
- WATER FOR THE SITE WILL BE PROVIDED BY ARTESIAN WATER COMPANY INC.
- WATER AND SEWER MAIN SHALL HAVE A MINIMUM OF 10 FEET OF HORIZONTAL AND A MINIMUM OF 18 INCHES VERTICAL CLEARANCE BETWEEN THEM.
- 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.
- THE SITE IS LOCATED IN ZONE X BASED ON THE FEMA FLOOD INSURANCE RATE MAP NUMBER 10050C0340K, MAP REVISED MARCH 16, 2015 AND IS DETERMINED TO NOT BE INSIDE THE 500 YEAR FLOODPLAIN.
- THE SUSSEX CONSERVATION DISTRICT RESERVES THE RIGHT TO ADD, DELETE OR MODIFY ANY EROSION AND SEDIMENT CONTROL MEASURES AS THEY DEEM NECESSARY.
- ALL DISTURBED AREAS WITHIN THE RIGHT-OF-WAY, BUT NOT IN PAVEMENT, SHALL BE TOPSOILED (6" MINIMUM), FERTILIZED AND SEEDED.
- A 72 HOUR (MINIMUM) NOTICE SHALL BE GIVEN TO THE DELDOT DISTRICT PERMIT SUPERVISOR PRIOR TO STARTING ENTRANCE CONSTRUCTION.
- MISS UTILITY (811) OR 1-800-282-8555 SHALL BE NOTIFIED THREE (3) DAYS PRIOR TO EXCAVATION.
- 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".
- DAMAGE TO EXISTING SIGNS SHALL BE REPAIRED OR REPLACED AS PER THE "GUIDE FOR FABRICATION AND INSTALLATION OF TRAFFIC CONTROL DEVICES".
- ALL PROPOSED FOREST BUFFERS ARE TO BE MAINTAINED BY THE CONTRACTOR.
- ALL FIRE LANES, FIRE HYDRANTS AND FIRE DEPARTMENT CONNECTIONS SHALL BE MARKED IN ACCORDANCE WITH THE DELAWARE STATE FIRE PREVENTION REGULATIONS.

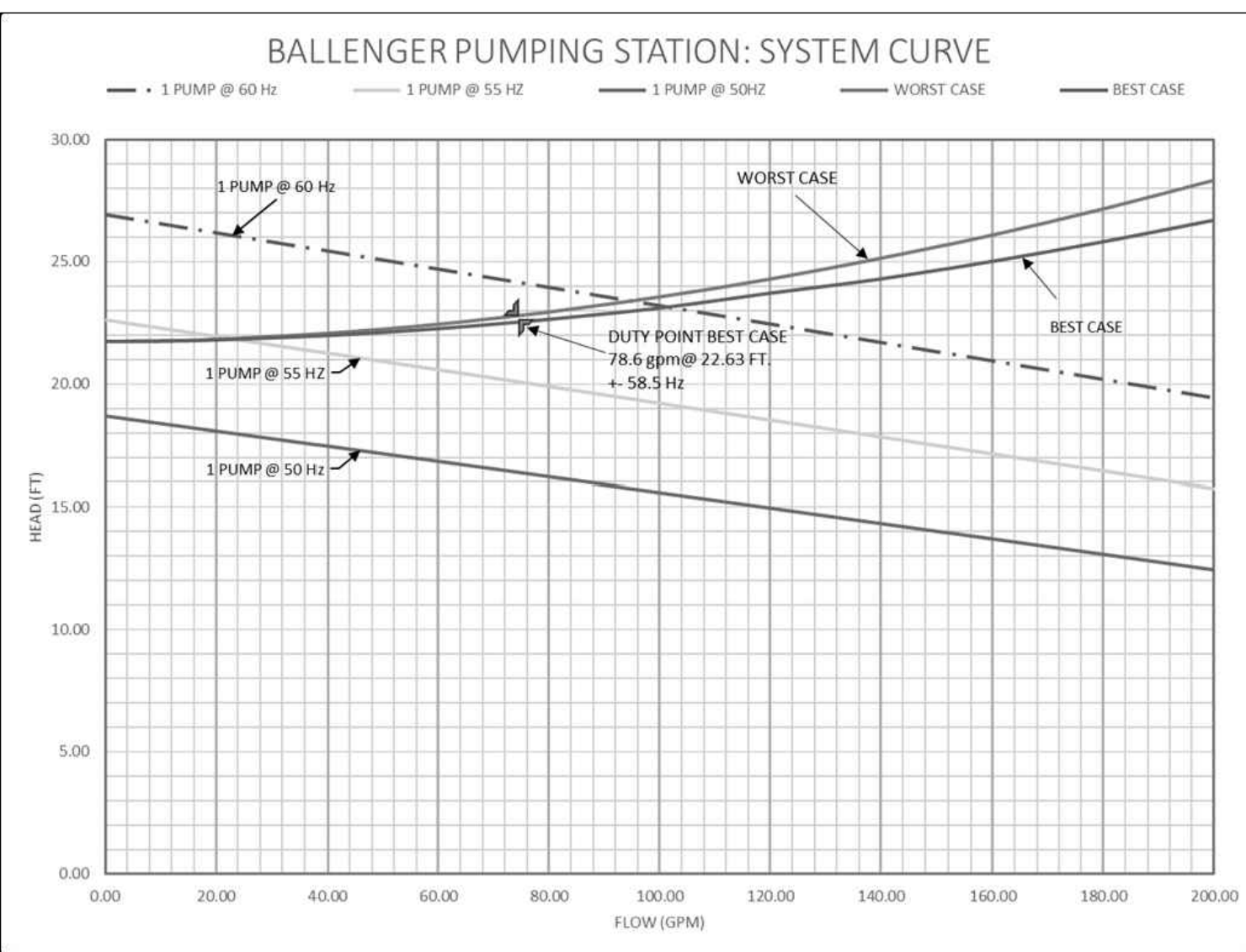
FLOW GENERATION:

FACILITY FLOW GENERATION

EDU EQUIVALENT TO 240 GPD
INFILTRATION: 250 GPD PER INCH/MILE

RESIDENTIAL UNITS	107 EDU	25680 GPD
CLUBHOUSE 6500 SF	4 EDU	960 GPD
INFILTRATION	4,416 FT	1673 GPD
TOTAL DAILY FLOW		28,313 GPD
		19.67 GPM
PEAK HOUR FACTOR	4.00	113,252 GPD
		78.6 GPM
DESIGN FLOW		

SYSTEM CURVE:



Available Storage vs Time

Stored Wastewater Elevation	Cumulated Wetwell Volume	Cum MH Vol	Accumulated Pipe Vol	Total Vol. Stored	Time (hours)
5	0	0	0	0	0
6	376	0	0	376	0.32
7	752	0	0	752	0.64
8	1128	0	0	1128	0.96
9	1504	188	232	1924	1.63
10	1880	470	940	3290	3.23
11	2256	946	1713	4815	4.08
12	2632	1410	2342	6384	5.41
13	3008	2162	3585	8755	7.42
14	3384	3196	4757	11337	9.61
15	3760	4418	5740	13918	11.79
16	4136	5922	7614	17672	14.97
17	4512	7614	9560	21686	18.37
18	4888	9682	11009	25579	21.67
19	5264	11844	11666	28774	24.38
20	5640	14006	11666	31312	26.53
21	6016	16168	11666	33850	28.68

BALLENGER SUBDIVISION SEWER PUMP STATION

TAX ID: 234-11.00-103.00 & 234.00-11.00-103.01

INDIAN RIVER HUNDRED

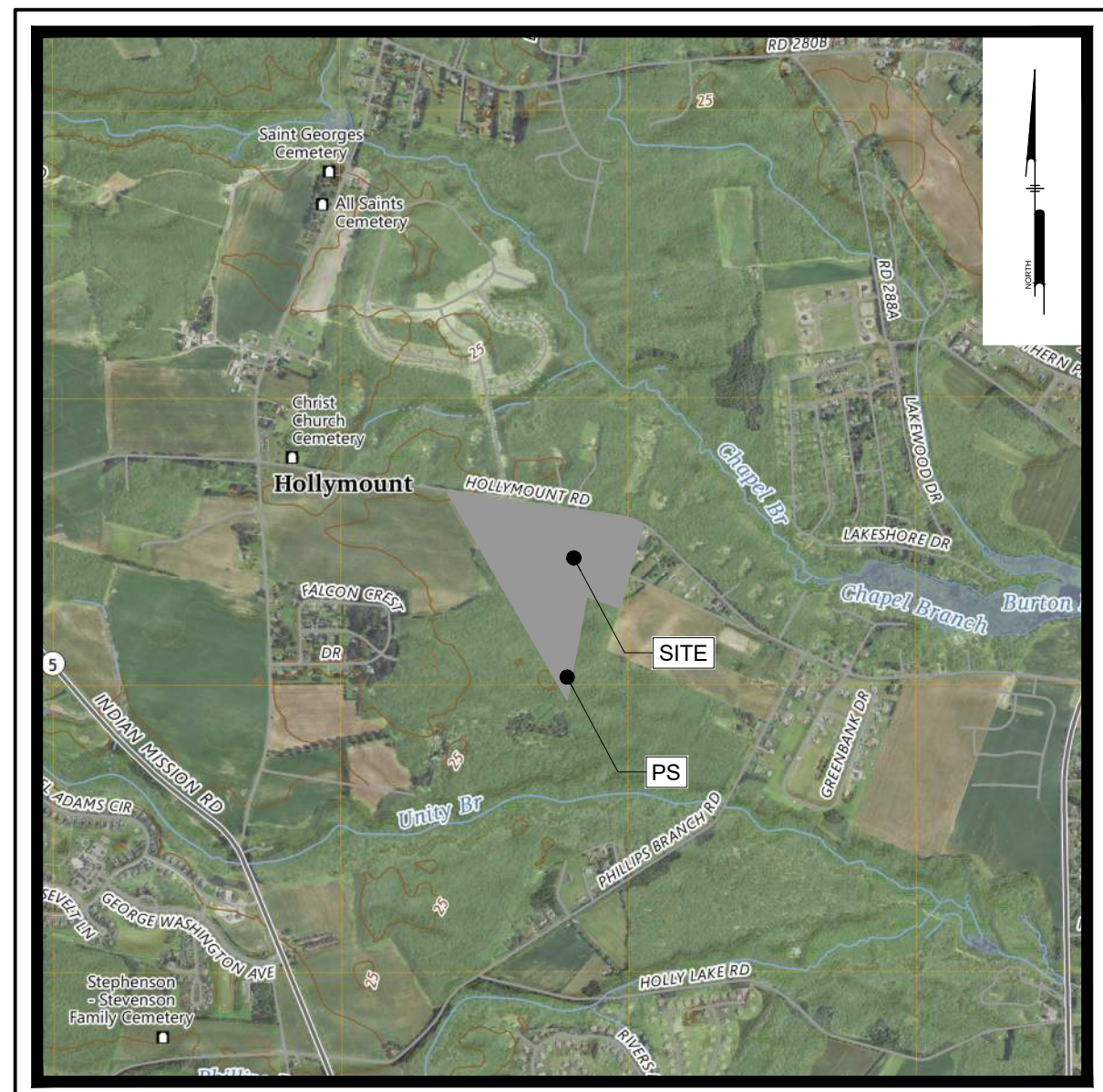
HOLLYMOUNT ROAD (SCR 048) HARBESON, DE 19951

CONSTRUCTION PLANS FOR WASTEWATER PUMPING STATION

PREPARED FOR:
DEVELOPER

RIBERA DEVELOPMENT, LLC

8684 VETERANS HIGHWAY, SUITE 203 MILLERSVILLE, MD 21108



LOCATION MAP
Scale: 1" = 2000'

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
---	---	SOIL LABEL
☐	☐	STORM SEWER, INLET
☐	☐	STORM SEWER, HEADWALL
☐	☐	STORM SEWER, MANHOLE
---	---	STORM SEWER, UNDERGROUND
---	---	MINOR CONTOUR
---	---	MAJOR CONTOUR
---	---	SPOT ELEVATION
---	---	TREE LINE
---	---	WATER, UNDERGROUND
☐	☐	WATER VALVE
☐	☐	WATER MAIN
---	---	CLEAN OUT
---	---	SANITARY SEWER, UNDERGROUND
---	---	SANITARY SEWER, FORCED MAIN
---	---	SANITARY SEWER, MANHOLE
---	---	POWER-UNDERGROUND ELECTRIC
---	---	POWER, UTILITY POLE
---	---	STREET LIGHT

SITE DATA COLUMN:

- TAX MAP NUMBER: 234-11.00-103.00 & 103.01 (DEED REF. PARCEL BOOK 2175, PG. 112)
- DEVELOPER NAME: RIBERA DEVELOPMENT, LLC
- DEVELOPER ADDRESS: 8684 VETERAN'S HIGHWAY, SUITE 203 MILLERSVILLE, MD 21108
- SITE ADDRESS: HOLLYMOUNT ROAD (SCR 048) HARBESON, DE 19951
- CURRENT ZONING: AR-1
- LATITUDE AND LONGITUDE: LATITUDE: W075°12' 23.2284" LONGITUDE: N038°40'24.3311"
- GROSS ACREAGE: 53.54± ACRES
- PROPOSED USE: RESIDENTIAL
- PROPOSED EDUS: DOMESTIC: 107 EDU'S 1 EDU = 240 GPD
- SEWER DISTRICT: ARTESIAN WASTEWATER MANAGEMENT INC.
- RECEIVING WASTE WATER PLANT: SUSSEX COUNTY INLAND BAYS WATER TREATMENT FACILITY
- 100 YEAR FLOOD PLAIN: ZONE X

CALL BEFORE YOU DIG
Call Miss Utility of Delmarva
800-282-8555
Ticket Number(s):

SHEET INDEX TABLE

SHEET #	DRAWING #	SHEET TITLE
1	PS1700	COVER SHEET
2	PS1701	PUMP STATION SITE PLAN
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4	PS1703	PUMP STATION DETAILS
5	PS1704	PUMP STATION DETAILS
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8	PS1707	ELECTRICAL DETAILS
9	PS1708	ELECTRICAL NOTES
10	PS1709	SANITARY PROFILE AND DETAIL

OWNERS
WARRINGTON ALTON F. HEIRS
31160 EDGEWATER DRIVE
LEWES, DE 19968

DEVELOPER
RIBERA DEVELOPMENT, LLC
8684 VETERAN'S HIGHWAY, SUITE 203
MILLERSVILLE, MD 21108

ENGINEER/PLANNER
PENNONI ASSOCIATES INC.
18072 DAVIDSON DRIVE
MILTON, DE 19968
(302) 684-8030

SURVEYOR
PENNONI ASSOCIATES, INC.

ENVIRONMENTAL CONSULTANT
PENNONI ASSOCIATES, INC.
18072 DAVIDSON DRIVE
MILTON, DE 19968
(302) 684-8030

SCHOOL DISTRICT
CAPE HENLOPEN

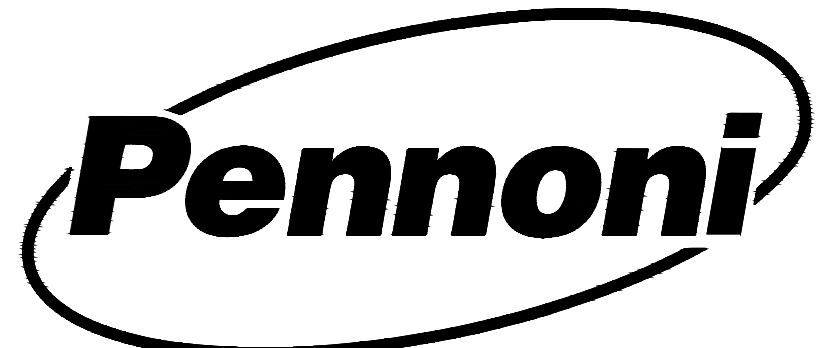
FIRE DISTRICT
INDIAN RIVER FIRE CO. (80)

POSTAL DISTRICT
INDIAN RIVER

WATER UTILITY
PUBLIC - ARTESIAN WATER COMPANY INC.

SEWER UTILITY
PUBLIC - ARTESIAN WASTEWATER MANAGEMENT INC.

PREPARED BY:
PENNONI ASSOCIATES INC.



18072 Davidson Drive
Milton, DE 19968
T 302.684.8030
F 302.684.8054

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

BALLENGER SUBDIVISION
234-11.00-103.00 & 234-11.00-103.01
HOLLYMOUNT ROAD (SCR 048)
HARBESON, DE 19951

COVER SHEET

RIBERA DEVELOPMENT, LLC
8684 VETERANS HIGHWAY, SUITE 203
MILLERSVILLE, MD 21108

NO.	DATE	REVISIONS	BY
2	2024-10-07	REVISED PER ARTESIAN COMMENTS	LFS
1	2024-07-29	REVISED PER AWM COMMENTS	VPL

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

PROJECT: **RIBER21006**

DATE: 2024-05-29

DRAWING SCALE: AS SHOWN

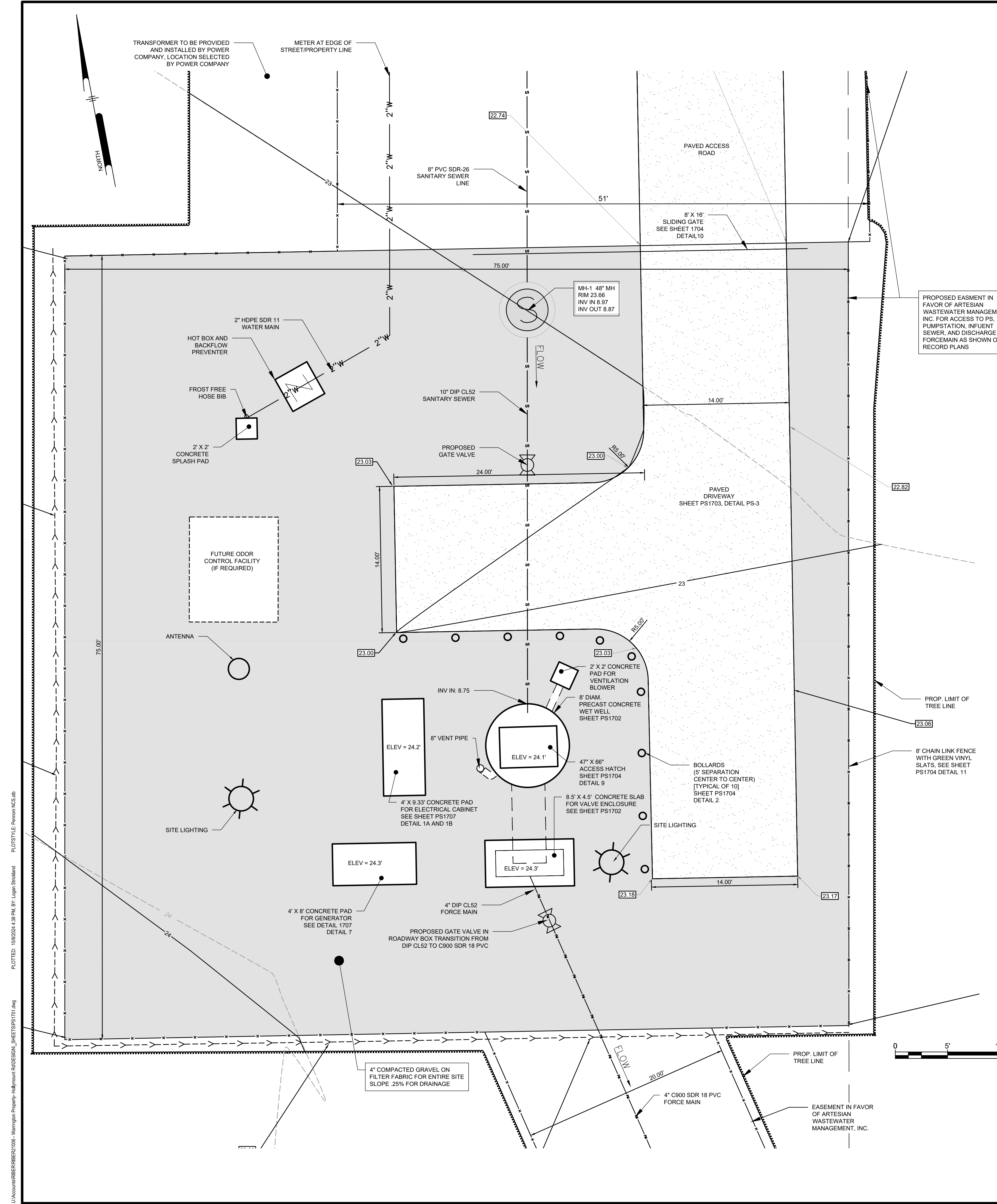
DRAWN BY: DTR

APPROVED BY: AMD

PS1700

SHEET 1 OF 10

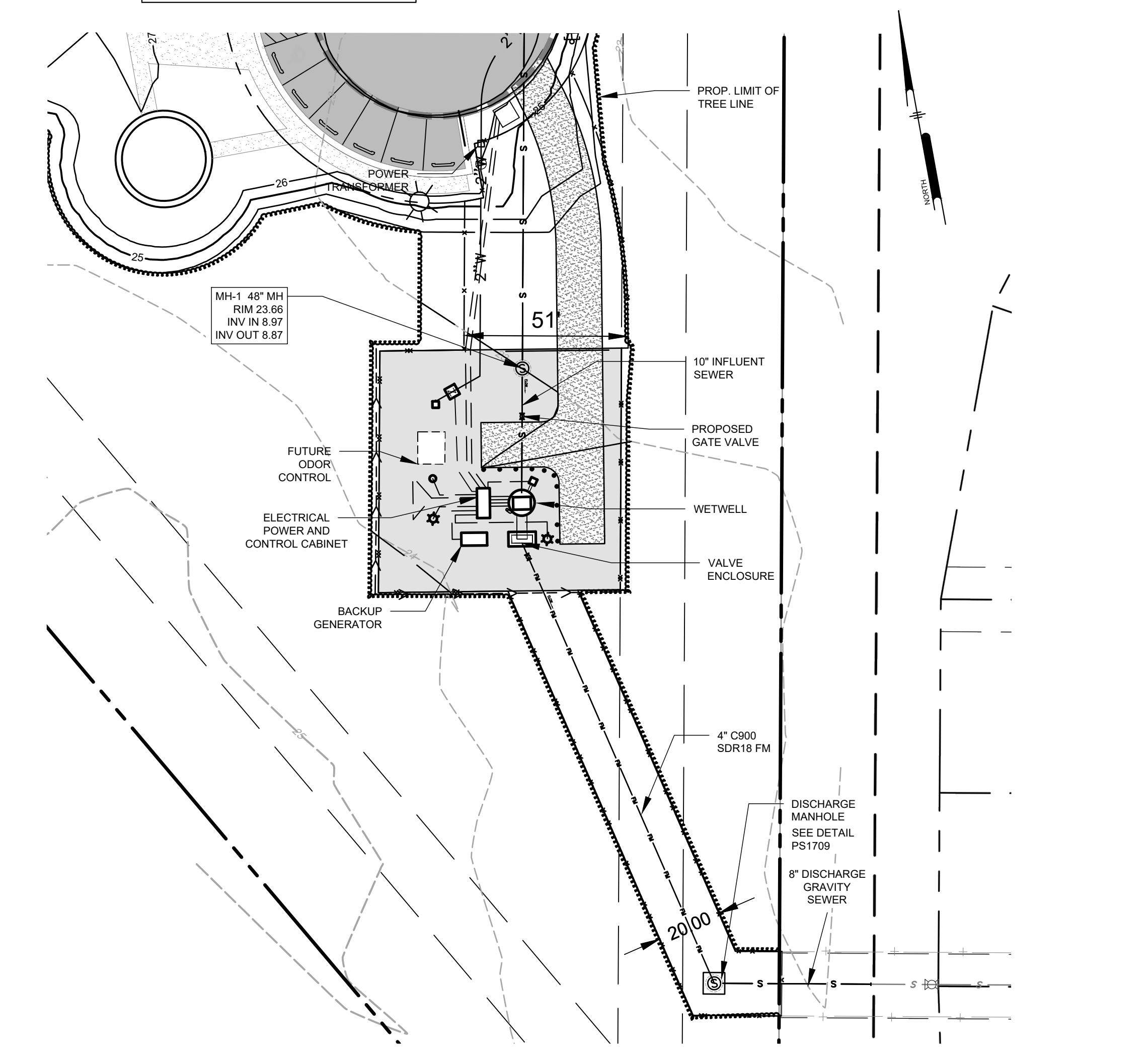
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- ### GENERAL NOTES FOR PUMP STATION CONSTRUCTION:
- ALL CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH ARTESIAN WASTEWATER COMPANY STANDARDS AND SPECIFICATIONS LATEST EDITION.
 - ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970 AND ALL AMENDMENTS THERETO. THESE DRAWINGS DO NOT INCLUDE THE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY.
 - 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.
 - 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.
 - 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 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.
 - 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.
 - 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 CONTRACTORS EXPENSE.
 - IT SHALL BE THE CONTRACTORS 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.
 - 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.
 - IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO OBTAIN THE APPROVAL AND ACCEPTANCE OF THE PUMP STATION, BY ARTESIAN WASTEWATER CO., UPON COMPLETION OF CONSTRUCTION.
 - SANITARY SEWER SEPARATION FROM WATER MAINS SHALL BE 10 FEET HORIZONTAL, 18 INCH VERTICAL MINIMUM AT ALL WATER AND SEWER CROSSINGS, UNLESS OTHERWISE NOTED.
 - 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.
 - IT SHALL BE THE CONTRACTORS 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:

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



PLAN - PUMPSTATION SITE LOCATION
SCALE: 1" = 30'



PENNONI ASSOCIATES INC.
18072 Davidson Drive
Milton, DE 19968
T 302.684.9030 F 302.684.8054

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BALLENGER SUBDIVISION
234-11.00-103.00 & 234-11.00-103.01
HOLLYMOUNT ROAD (SCR 048)
HARBESON, DE 19951

PUMP STATION SITE PLAN
RIBERA DEVELOPMENT, LLC
8684 VETERANS HIGHWAY, SUITE 203
MILLERSVILLE, MD 21108

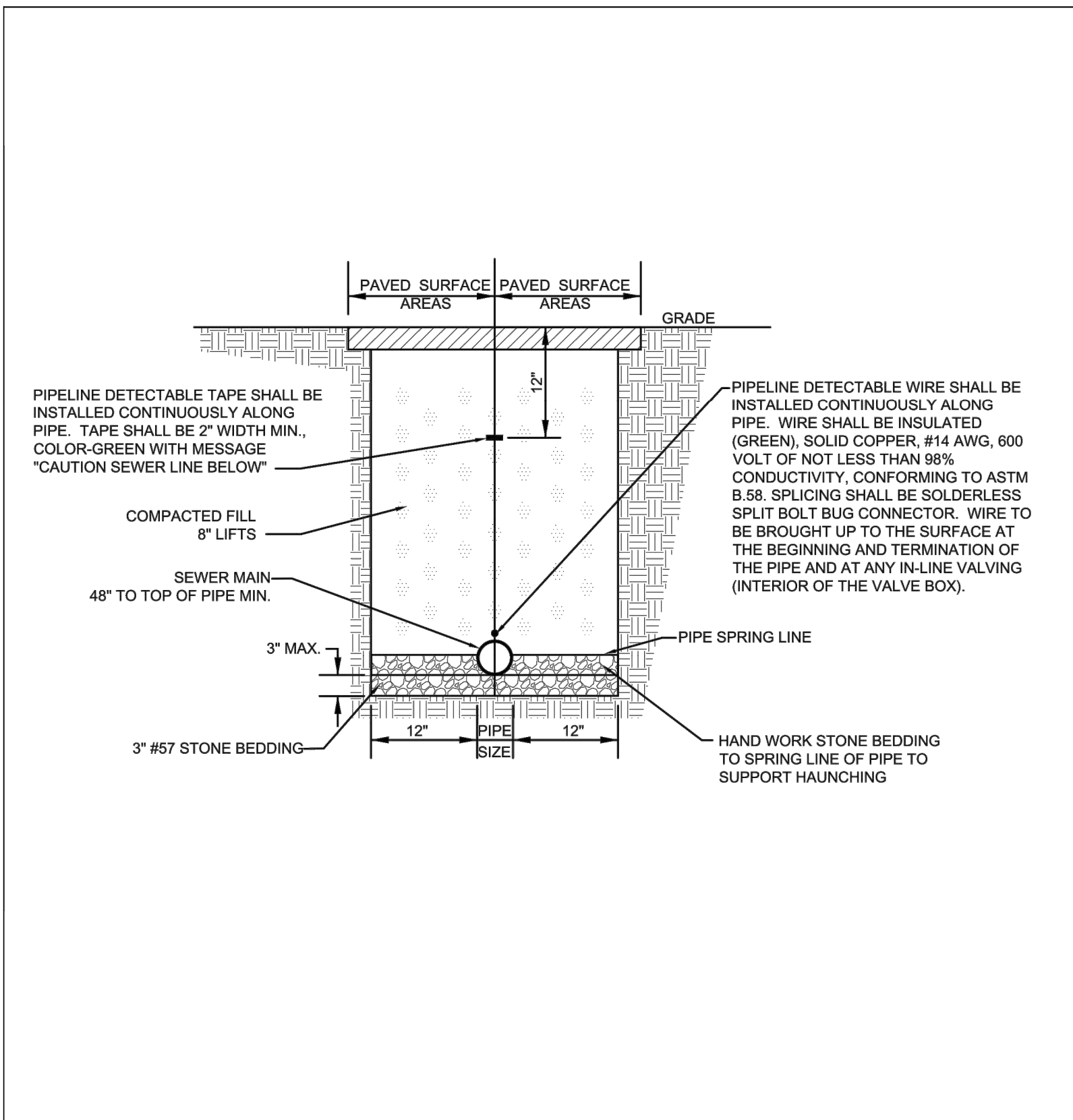
NO.	DATE	REVISIONS	BY
2	2024-10-07	REVISED PER ARTESIAN COMMENTS	LFS
1	2024-07-29	REVISED PER AWM COMMENTS	VPL

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PROJECT	RIBER21006
DATE	2024-05-29
DRAWING SCALE	AS SHOWN
DRAWN BY	DTR
APPROVED BY	AMD

PS1701

SHEET 2 OF 10

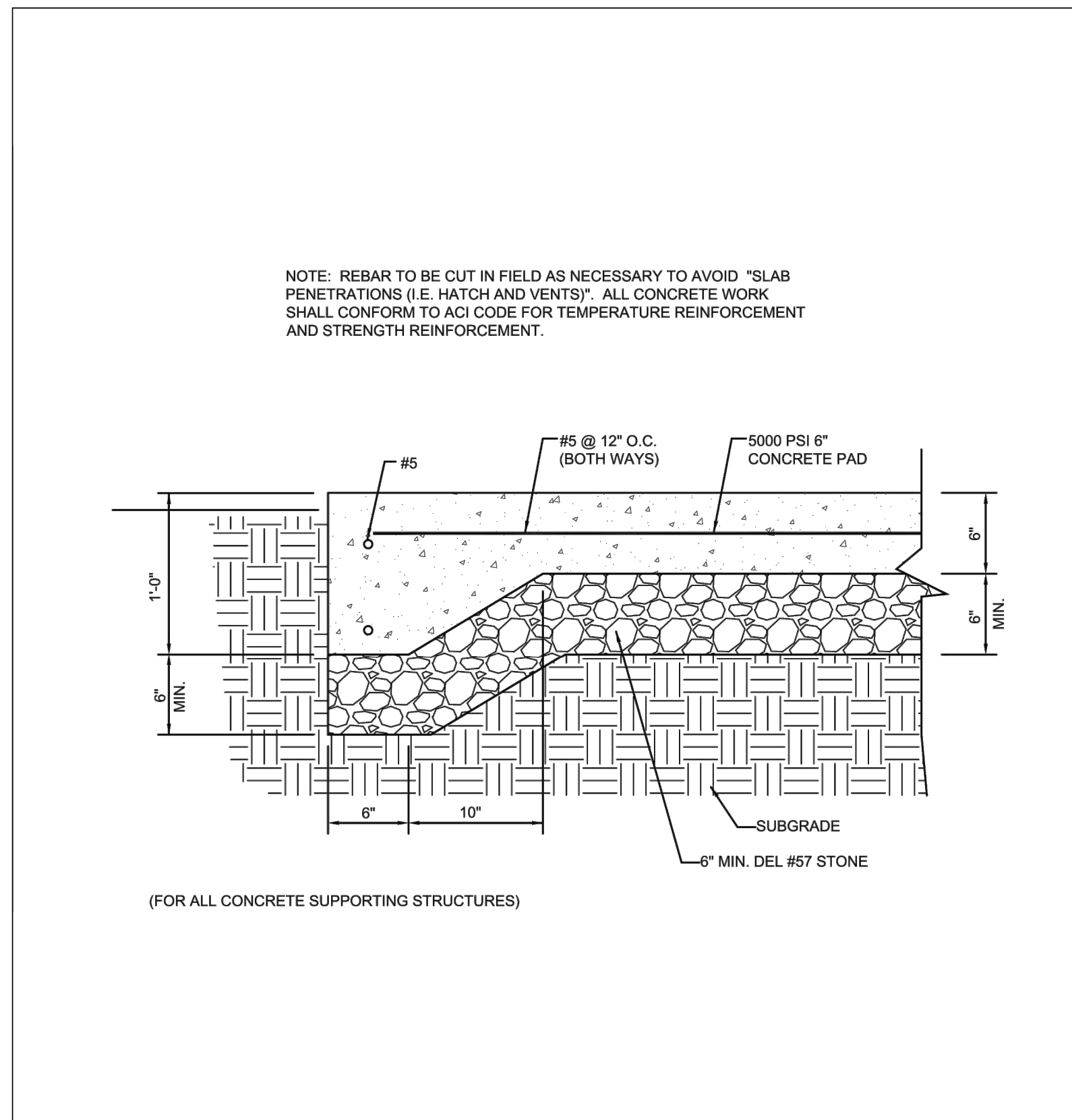


STANDARD DETAILS

TRENCH DETAIL FOR PAVED AREAS

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

ISSUED: JUNE 15, 2012	REVISED: SEPTEMBER 1, 2015
REVISED: FEBRUARY 20, 2014	SCALE: NOT TO SCALE
REVISED: MARCH 17, 2015	PLATE: TR-01

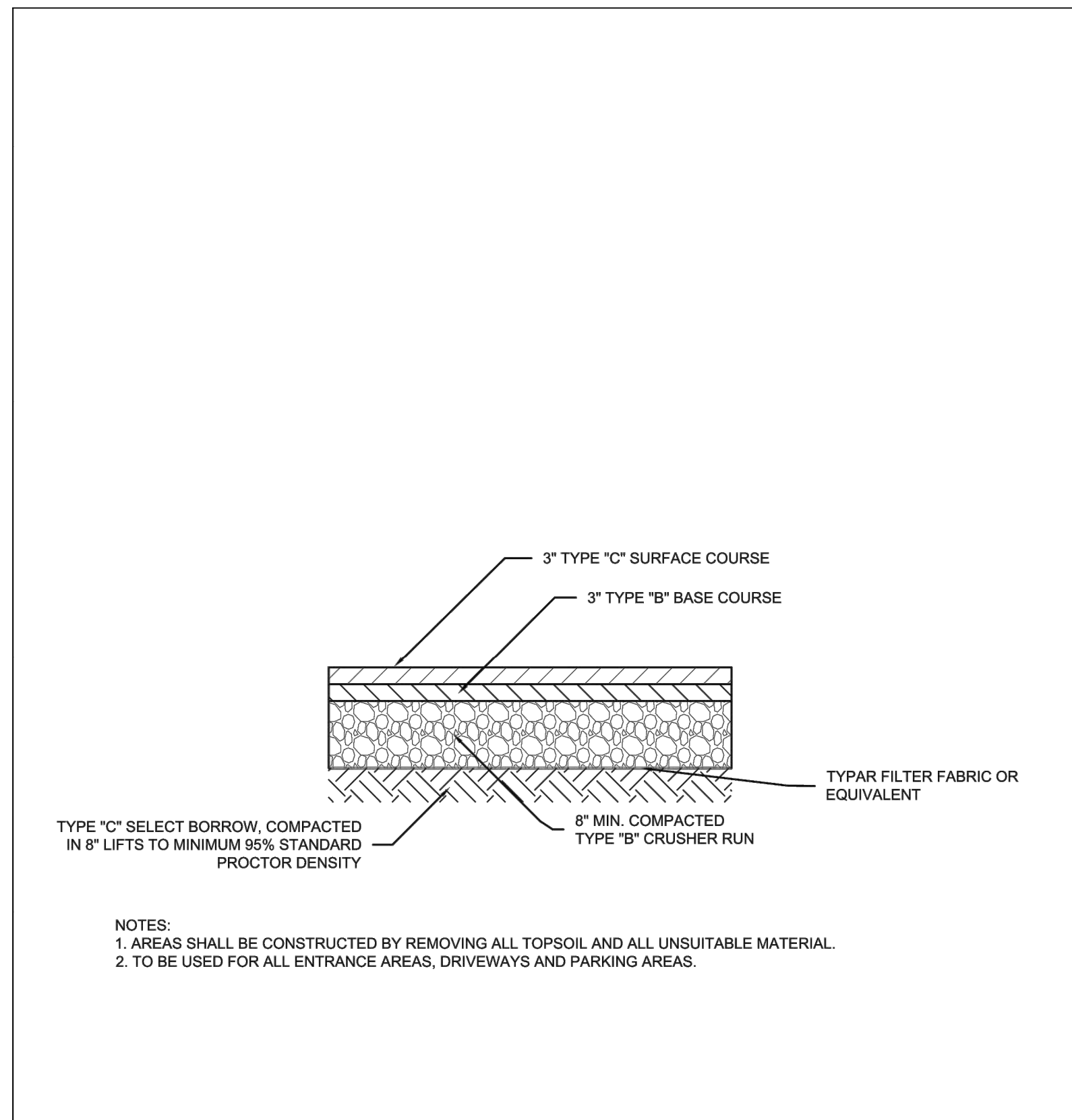


STANDARD DETAILS

PUMP STATION EQUIPMENT CONCRETE PAD TYPICAL SECTION

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

ISSUED: JUNE 15, 2012	SCALE: NOT TO SCALE
REVISED: FEBRUARY 20, 2014	
REVISED: SEPTEMBER 1, 2015	PLATE: PS-02

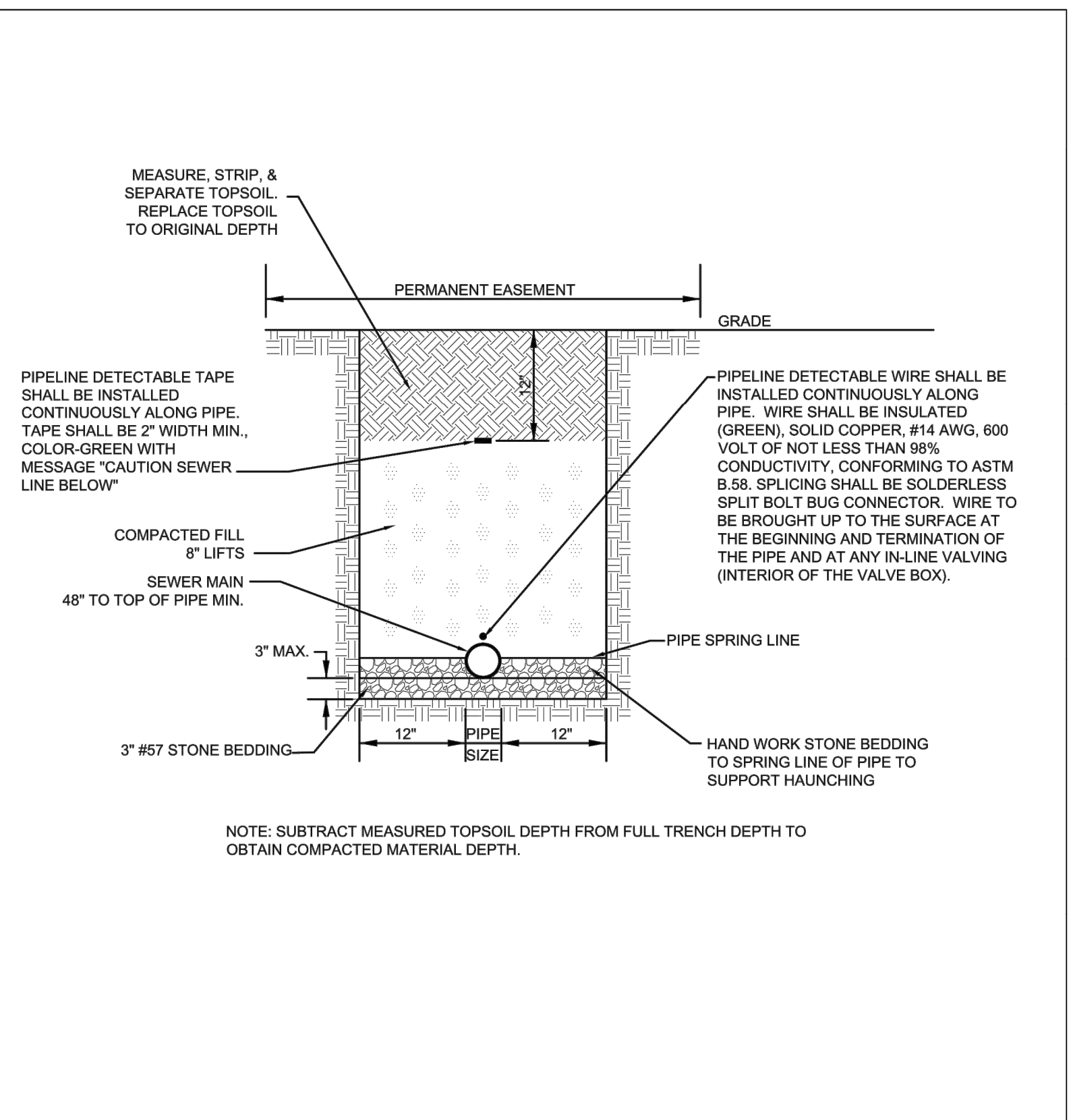


STANDARD DETAILS

PUMP STATION DRIVEWAY PAVEMENT SECTION

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

ISSUED: JUNE 15, 2012	SCALE: NOT TO SCALE
REVISED: FEBRUARY 20, 2014	REVISED: JUNE 20, 2016
REVISED: SEPTEMBER 1, 2015	PLATE: PS-03



STANDARD DETAILS

TRENCH DETAILS FOR UNPAVED AREAS

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

ISSUED: JUNE 15, 2012	REVISED: SEPTEMBER 1, 2015
REVISED: FEBRUARY 20, 2014	SCALE: NOT TO SCALE
REVISED: MARCH 17, 2015	PLATE: TR-02

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BALLENGER SUBDIVISION
234-11.00-03.00 & 234-11.00-103.01
HOLLYMOUNT ROAD (SCR 048)
HARBESON, DE 19951

PUMP STATION DETAILS

RIBERA DEVELOPMENT, LLC
866A VETERANS HIGHWAY, SUITE 203
MILLERSVILLE, MD 21108

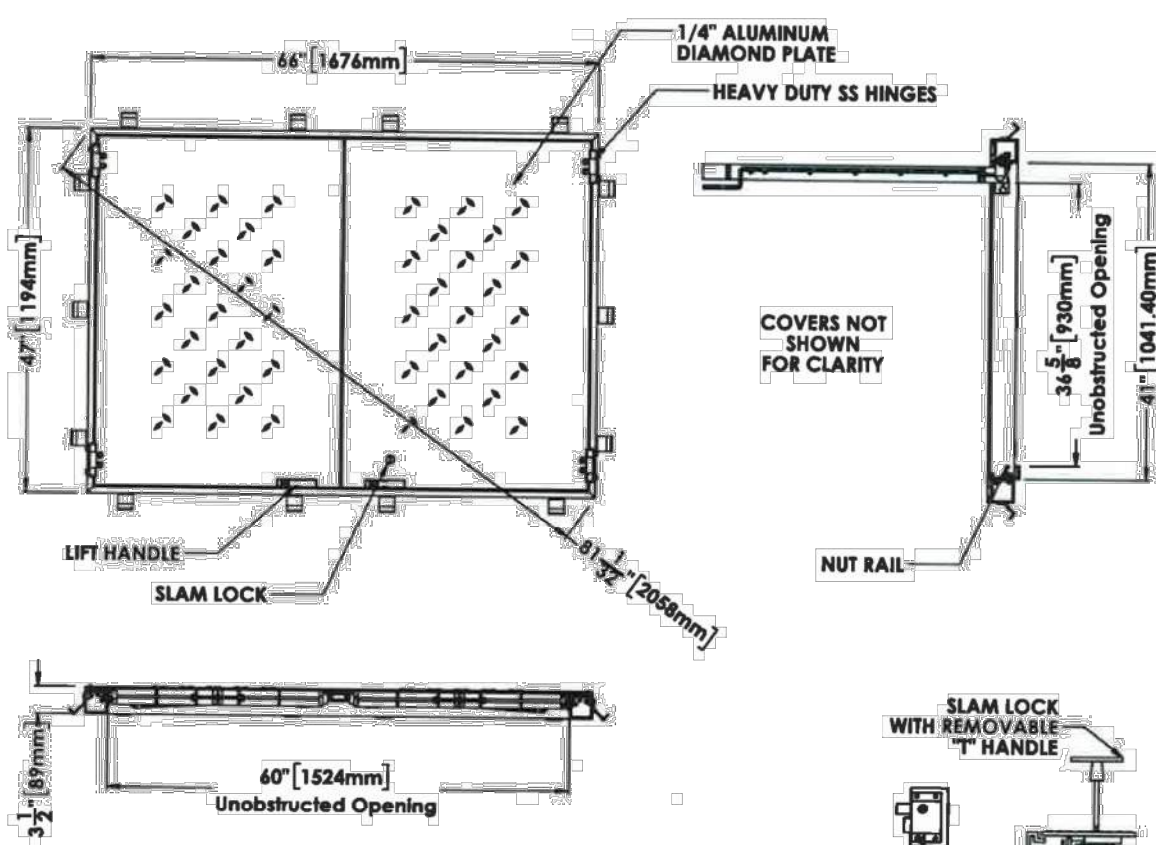
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PROJECT	RIBER21006
DATE	2024-05-29
DRAWING SCALE	AS SHOWN
DRAWN BY	DTR
APPROVED BY	AMD

U:\Account\BIBER\BIBER1006 - Harbeson Pump - Hollymount\03-03-2024 - 048-048-048-048.dwg
 PLOTTED: 10/8/2024 4:08 PM BY: Lupton, S. Michael
 PLOT STYLE: Pennoni.ncs.ctb

CLN2 Pedestrian Rated Aluminum SAFE HATCH



STYLE "CLN2" ACCESS HATCH, AS MANUFACTURED BY EJ.

MATERIAL SHALL BE 6061-T5 ALUMINUM FOR BARS, ANGLES, AND EXTRUSIONS. 1/4" DIAMOND PLATE SHALL BE 5086 ALUMINUM.

UNIT DESIGNED PEDESTRIAN RATED, FOR A MINIMUM LIVE LOAD OF 300 LBS./SQ. FT.

DESIGN FEATURES:

- Materials: Aluminum
- Design Load: 300 psf
- Open Area
- Coating: Mill Finish
- Designates Machined Surface

CERTIFICATION:

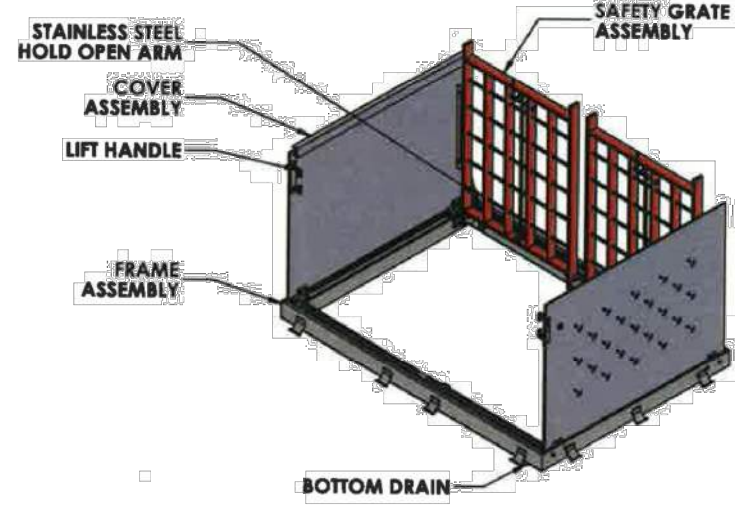
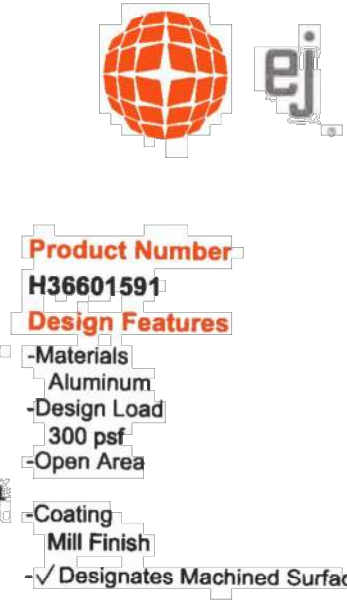
- NPR 18-00XXXX
- 201810-XXXX
- Estimated Weight: 197 LBS
- Country of Origin: USA
- Revision Level: #

DISCLAIMER:

Weight, drawings, dimensions (inch/mm) and drawings provided for your guidance. We reserve the right to modify specifications without prior notice.

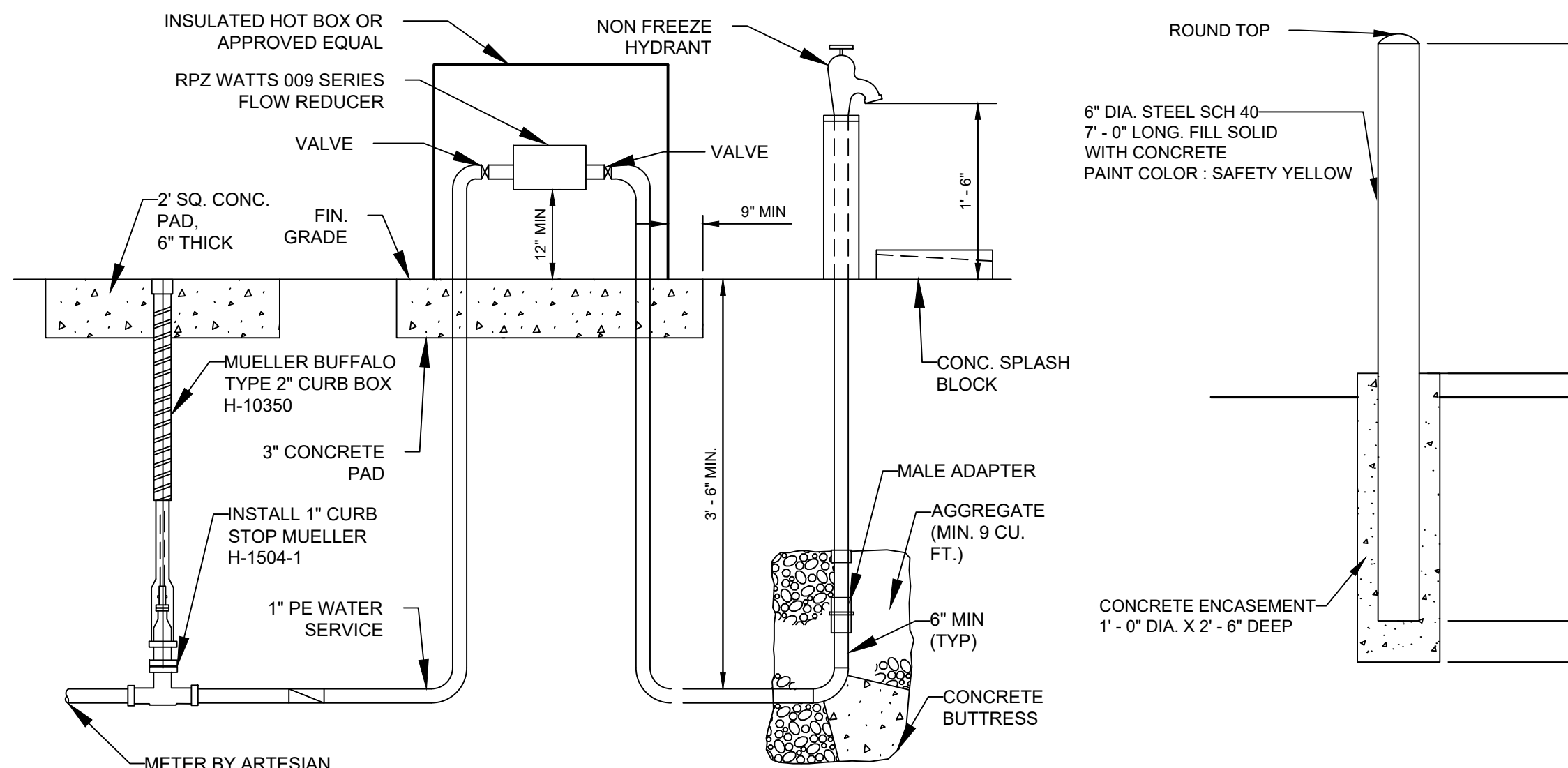
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CONTACT:
800 626 4653
ej.com



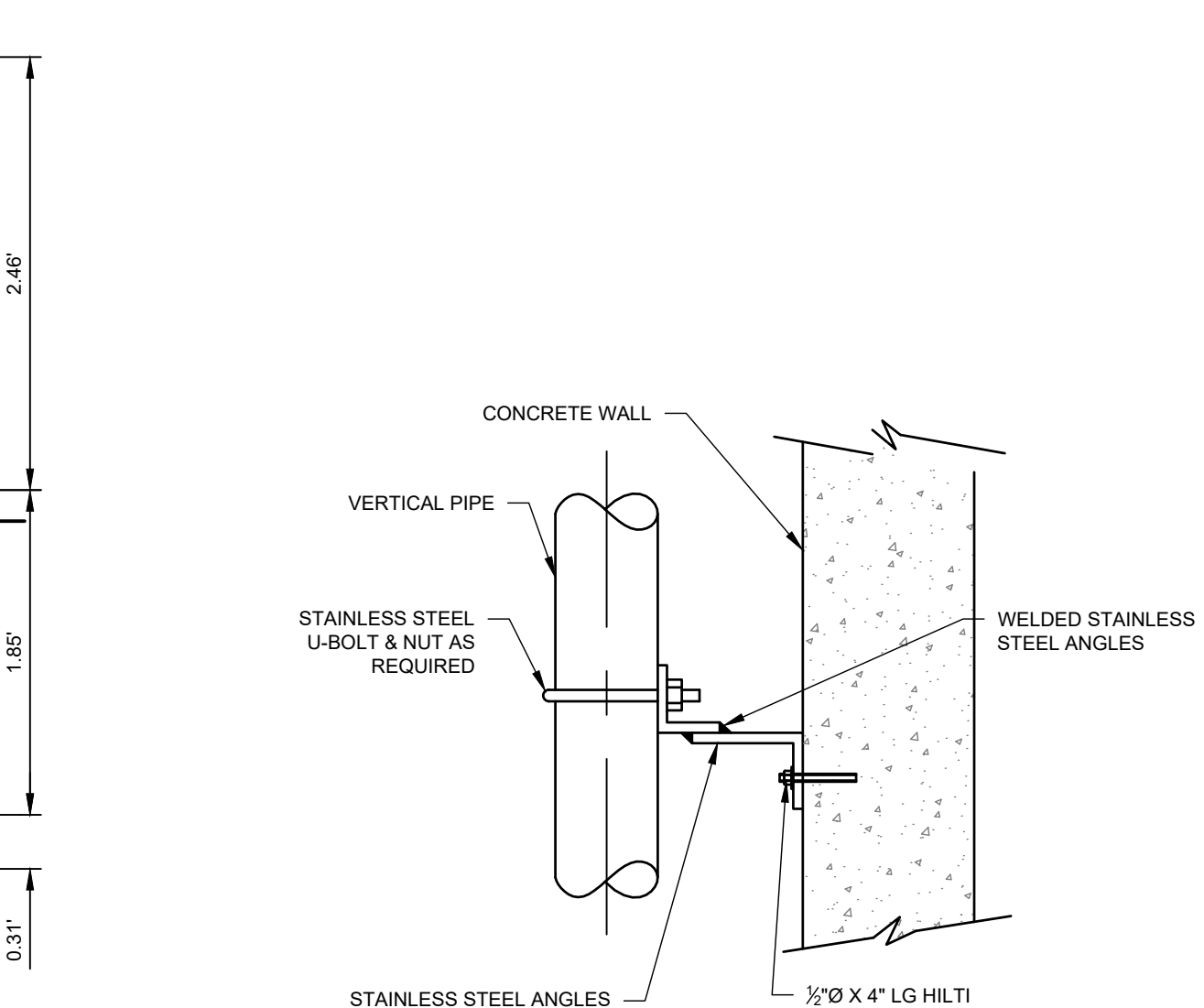
DETAIL- WETWELL HATCH
NOT TO SCALE

9
PS1704



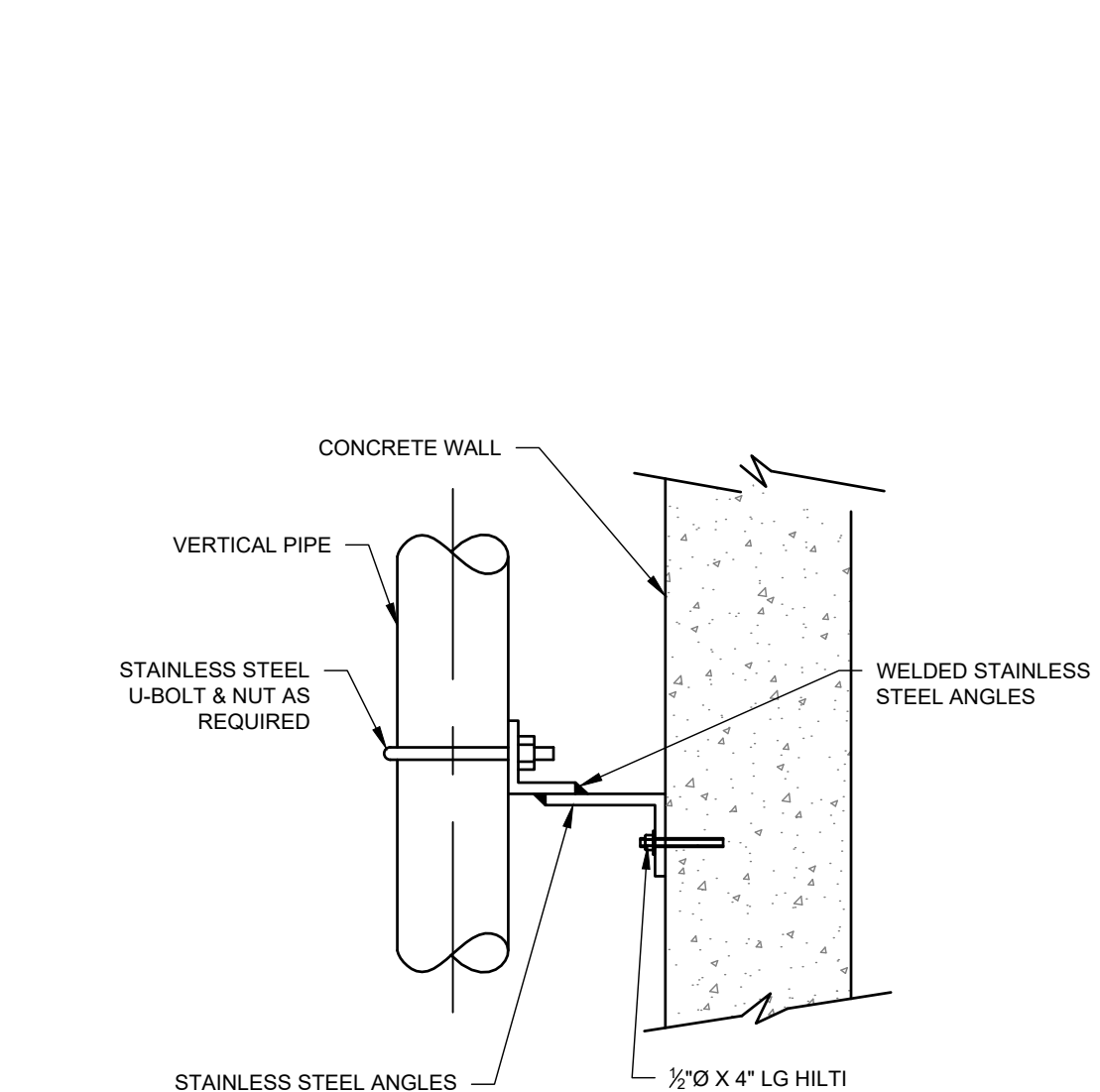
DETAIL- YARD HYDRANT
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PS1704



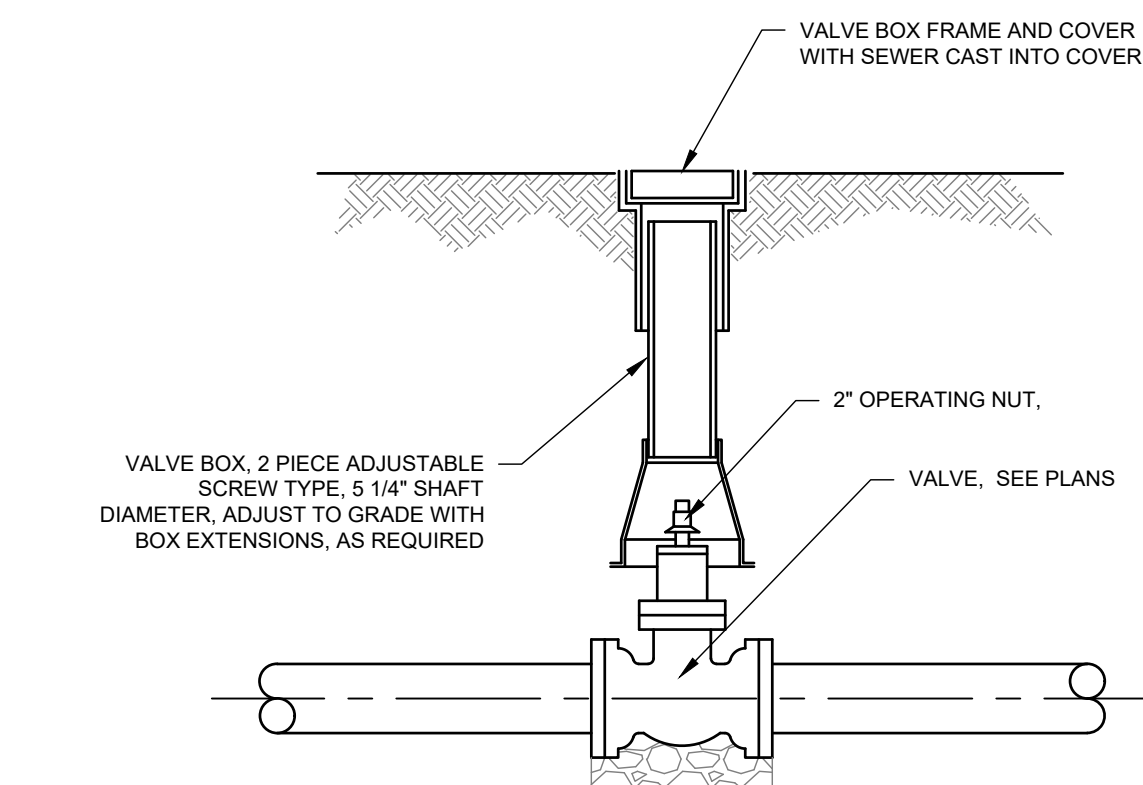
DETAIL- STANDARD BOLLARD
NOT TO SCALE

2
PS1704



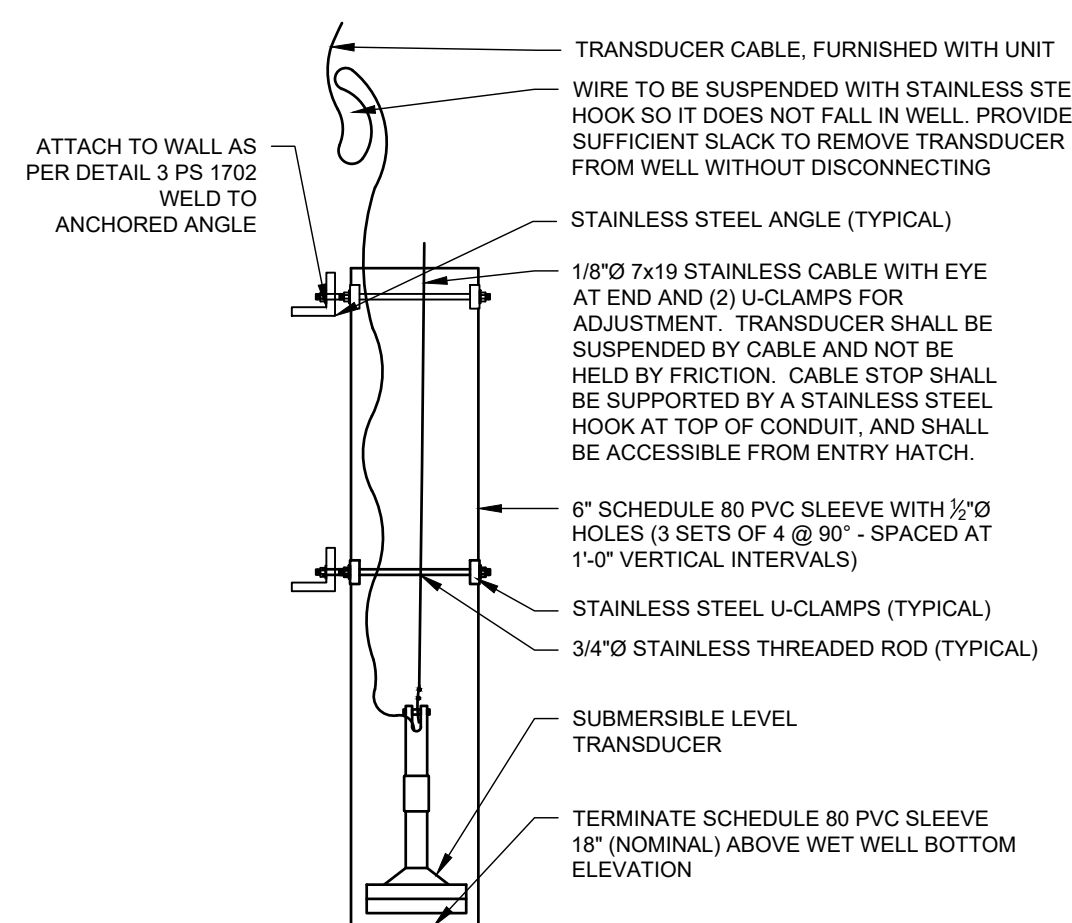
DETAIL- BRACKET AND PIPE SUPPORT DETAIL
NOT TO SCALE

3
PS1704



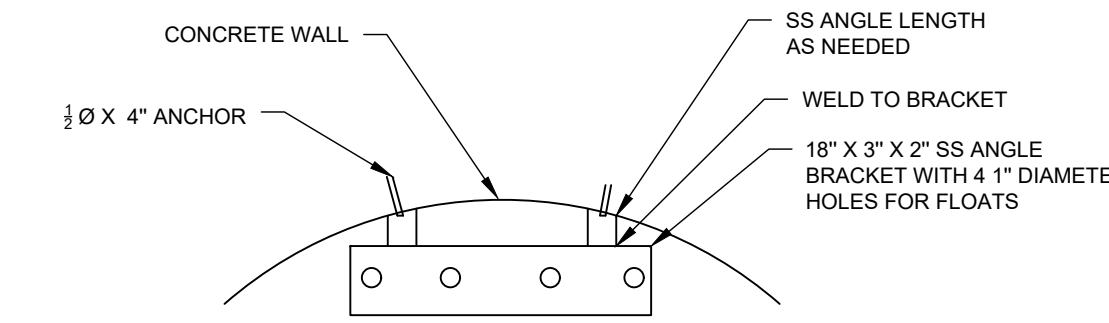
DETAIL- VALVE BOX DETAIL
NOT TO SCALE

5
PS1704



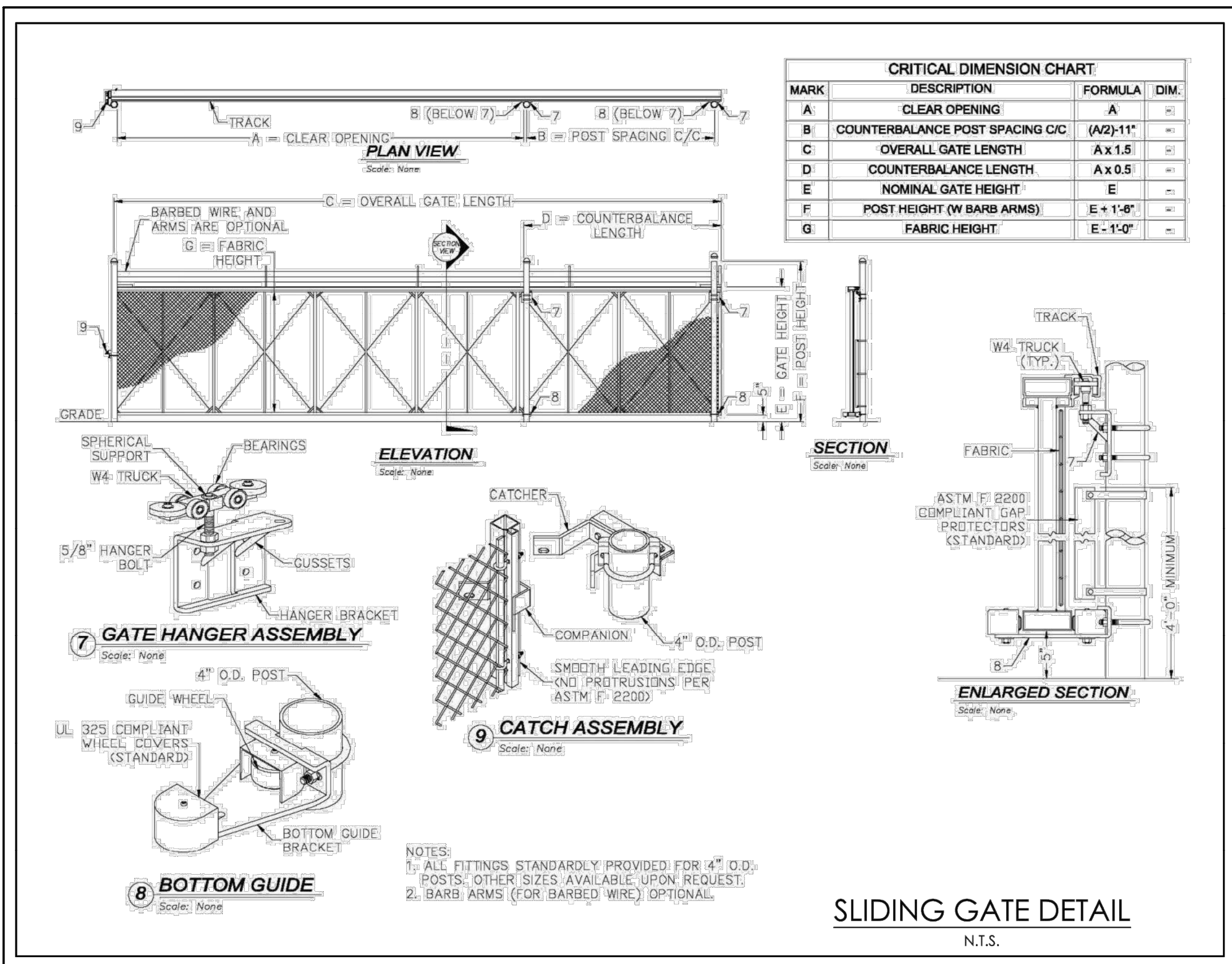
DETAIL- TRANSDUCER MOUNTING DETAIL
NOT TO SCALE

6
PS1704



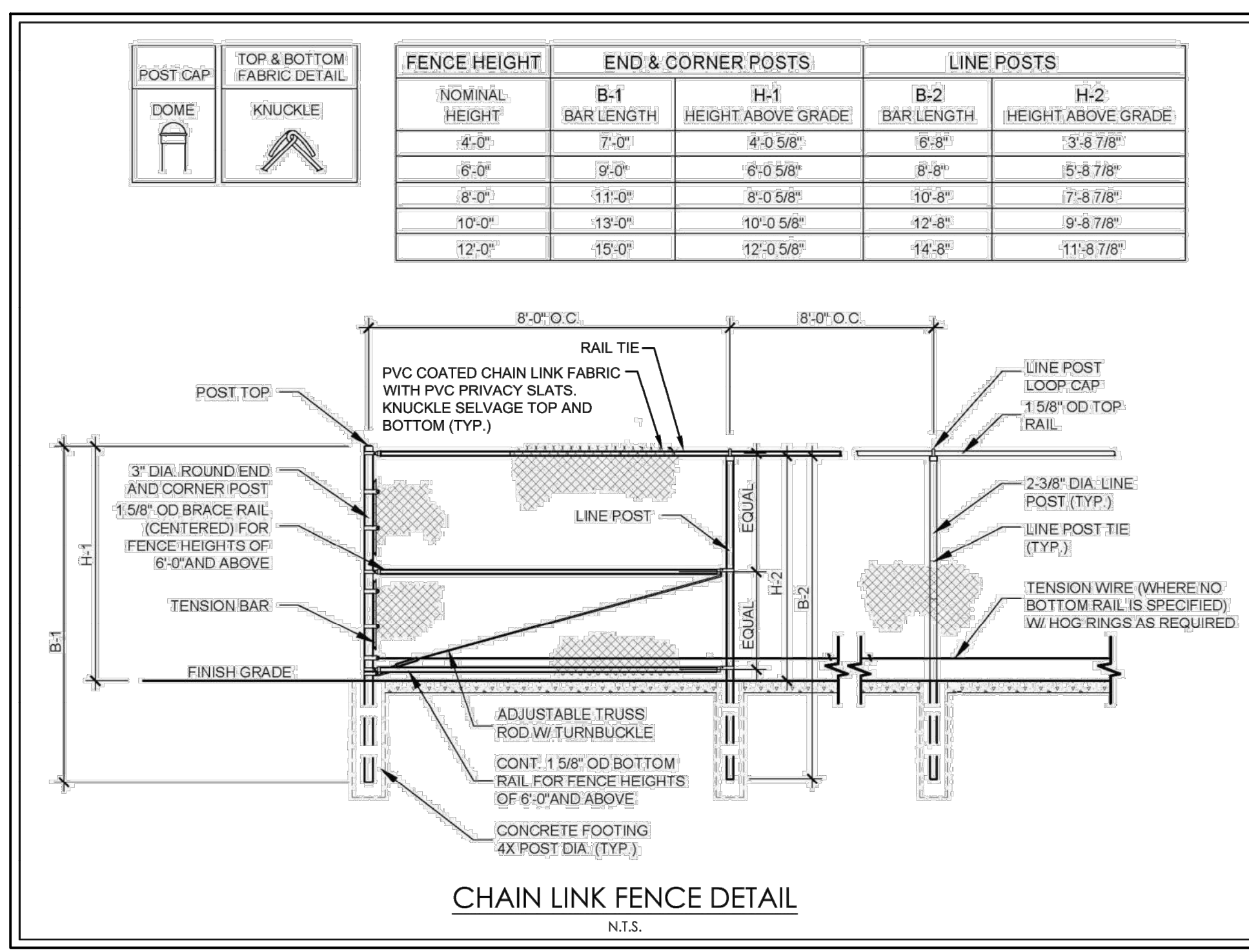
DETAIL-FLOAT SUPPORT BRACKET DETAIL
NOT TO SCALE

7
PS1704



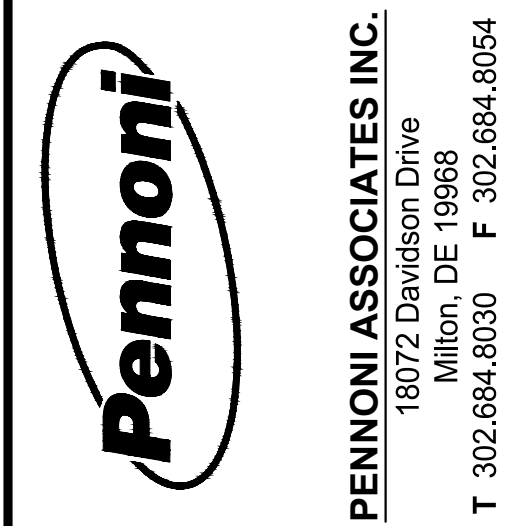
DETAIL- 8' HIGH CHAINLINK FENCE SLIDING GATE
NOT TO SCALE

10
PS1704



DETAIL- 8' HIGH CHAINLINK FENCE
NOT TO SCALE

11
PS1704



PENNONI ASSOCIATES INC.
18072 Davidson Drive
Milton, DE 19968
T 302.684.9030 F 302.684.8054

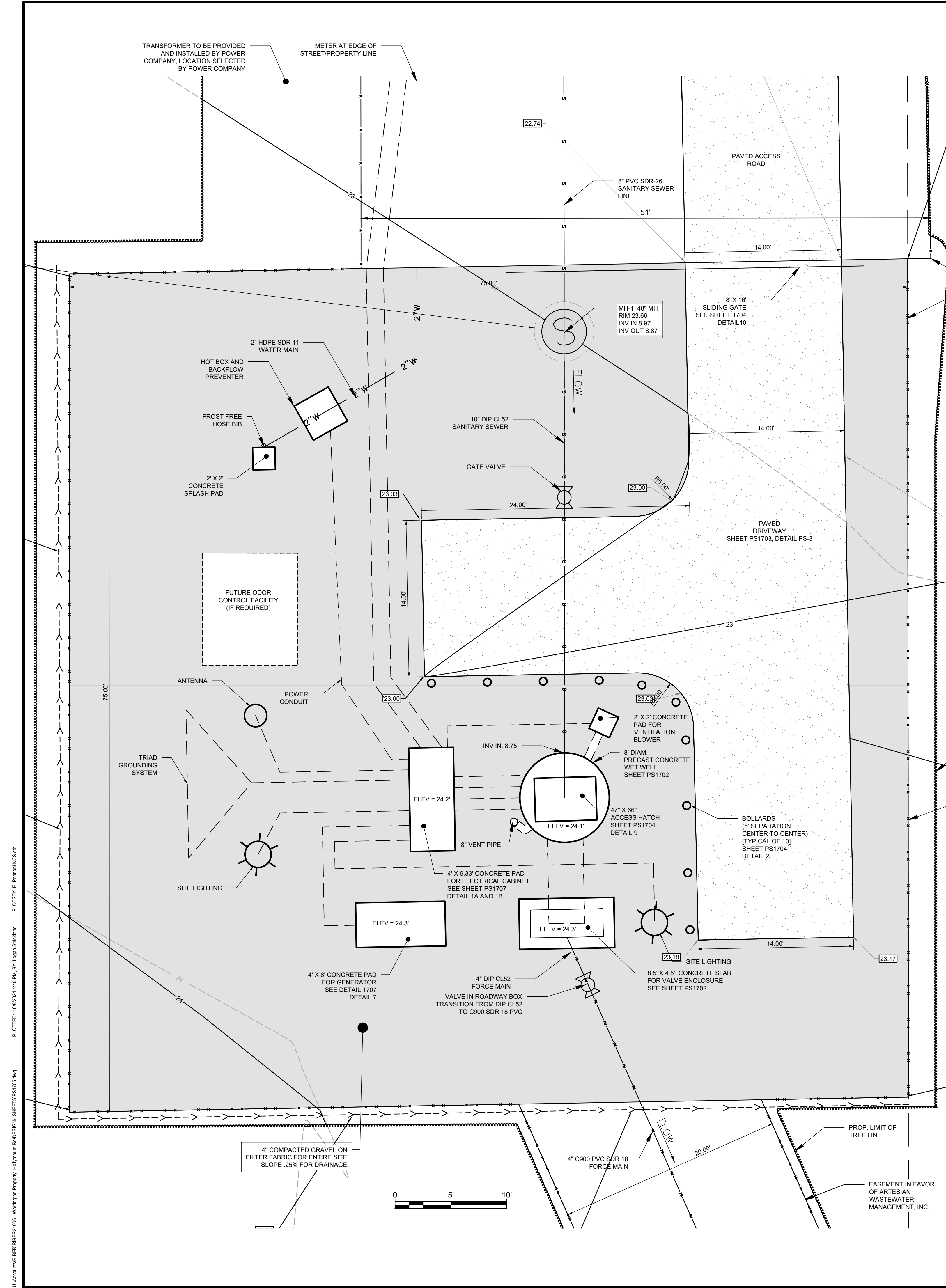
BALLENGER SUBDIVISION
234-11.00-103.00 & 234-11.00-103.01
HOLLYMOUNT ROAD (SCR 048)
HARBESON, DE 19951

PUMP STATION DETAILS

RIBERA DEVELOPMENT, LLC
866A VETERANS HIGHWAY, SUITE 203
MILLERSVILLE, MD 21108

DATE	REVISIONS	BY
2024-10-07	2 REVISED PER ARTESIAN COMMENTS	LFS
2024-07-29	1 REVISED PER AWM COMMENTS	VPL

PROJECT	RIBER21006
DATE	2024-05-29
DRAWING SCALE	AS SHOWN
DRAWN BY	DTR
APPROVED BY	AMD

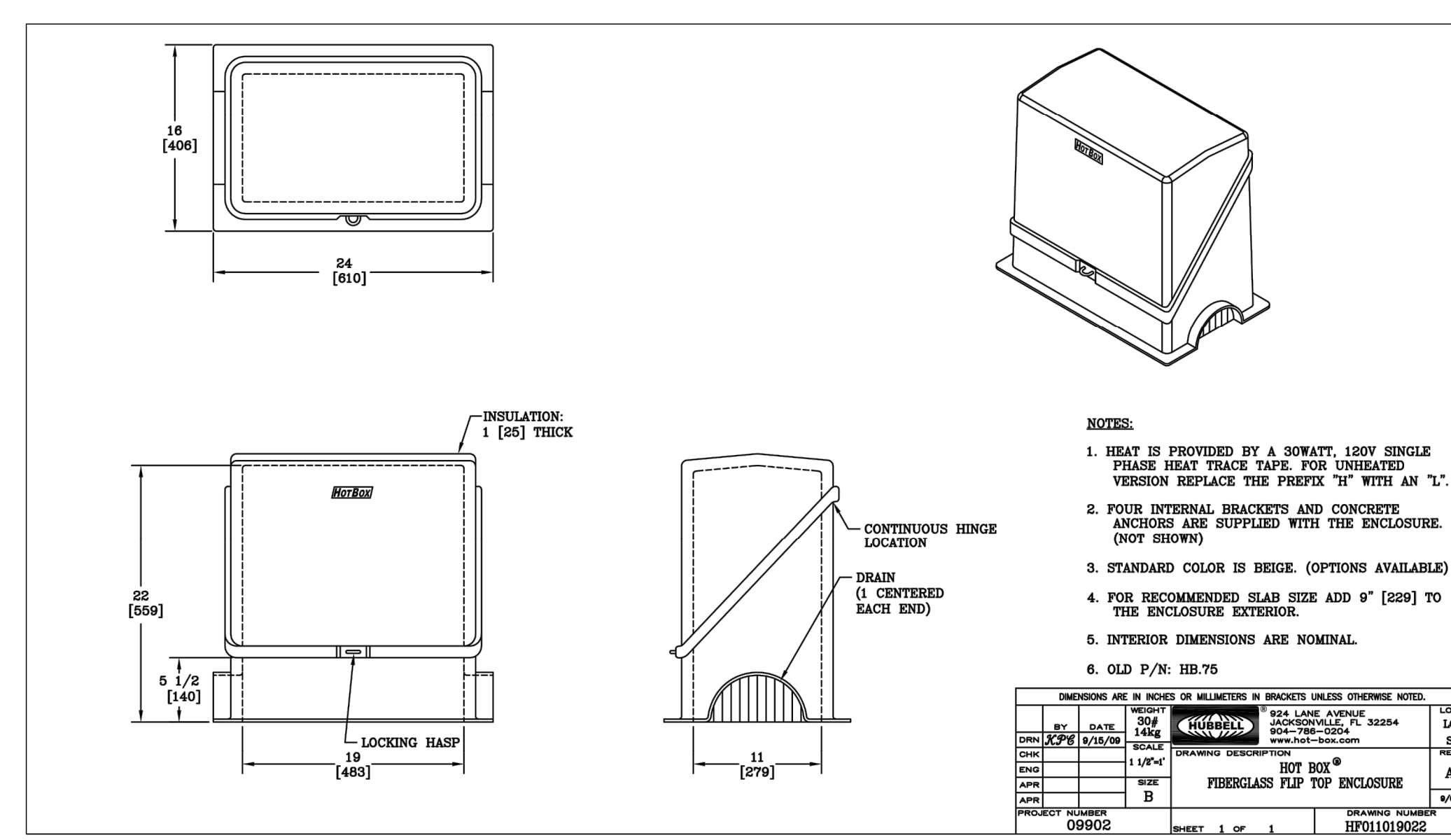


ELECTRICAL NOTES:

- ALL WORK SHALL BE DONE IN STRICT COMPLIANCE WITH THE REQUIREMENTS / REGULATIONS OF THE FOLLOWING CODES / AGENCIES / UTILITIES:
 - THE NATIONAL ELECTRICAL CODE (NEC)
 - LOCAL BUILDING AND FIRE CODES
 - ALL LOCAL, STATE, AND FEDERAL SAFETY REGULATIONS
 - ALL LOCAL, STATE, AND FEDERAL ENVIRONMENTAL PROTECTION REGULATIONS
 - DESIGN SAFETY STANDARDS FOR ELECTRICAL SYSTEMS (OSHA)
 - ANY OTHER PUBLIC AGENCIES HAVING JURISDICTION
 - DELAWARE ELECTRICAL CO-OP
 - ARTESIAN WASTEWATER COMPANY
 - THE LOCATION OF TRANSFORMER AND METER TO BE DECIDED IN CONJUNCTION WITH POWER COMPANY/SUPPLIER
- 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.
- 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.
- 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.
- ALL WORK SHALL BE GROUNDED AS INDICATED ON THE DRAWINGS AND / OR AS REQUIRED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE.
- 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.
- ALL EQUIPMENT SHALL BE INSTALLED AND WIRED IN STRICT COMPLIANCE WITH THE REQUIREMENTS AND RECOMMENDATIONS OF THE EQUIPMENT MANUFACTURER.
- UPON COMPLETION OF THE INSTALLATION THE CONTRACTOR SHALL BALANCE THE LOAD ON ALL PARTS OF THE DISTRIBUTION SYSTEM.
- 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 THE EXISTING CONDITIONS.
- 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.
- 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, DIVISION I, GROUPS C AND D. ALL EQUIPMENT AND WIRING INSTALLED IN THESE AREAS SHALL MEET THE REQUIREMENTS FOR THIS TYPE OF HAZARDOUS LOCATION.



DETAIL - HEATED HOT BOX
NOT TO SCALE

1
PS1705

Pennoni
PENNONI ASSOCIATES INC.
18072 Davidson Drive
Milton, DE 19968
T 302.684.9030 F 302.684.8054

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BALLENGER SUBDIVISION
234-11.00-103.00 & 234-11.00-103.01
HOLLYMOUNT ROAD (SCR 048)
HARBESON, DE 19951

ELECTRICAL SITE PLAN
RIBERA DEVELOPMENT, LLC
8684 VETERANS HIGHWAY, SUITE 203
MILLERSVILLE, MD 21108

NO.	DATE	REVISIONS	BY
2	2024-10-07	REVISED PER ARTESIAN COMMENTS	LFS
1	2024-07-29	REVISED PER AWM COMMENTS	VPL

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PROJECT: RIBER21006
DATE: 2024-05-29
DRAWING SCALE: AS SHOWN
DRAWN BY: DTR
APPROVED BY: AMD

PS1705
SHEET 6 OF 10

PLOTTED: 10/23/24 4:40 PM BY: [signature] PENNONI ASSOCIATES INC.
 U:\Account\BIBER21006\PS1705.dwg - Harbeson Pump - Hollymount - RIBER21006 - SHEET PS1705.dwg

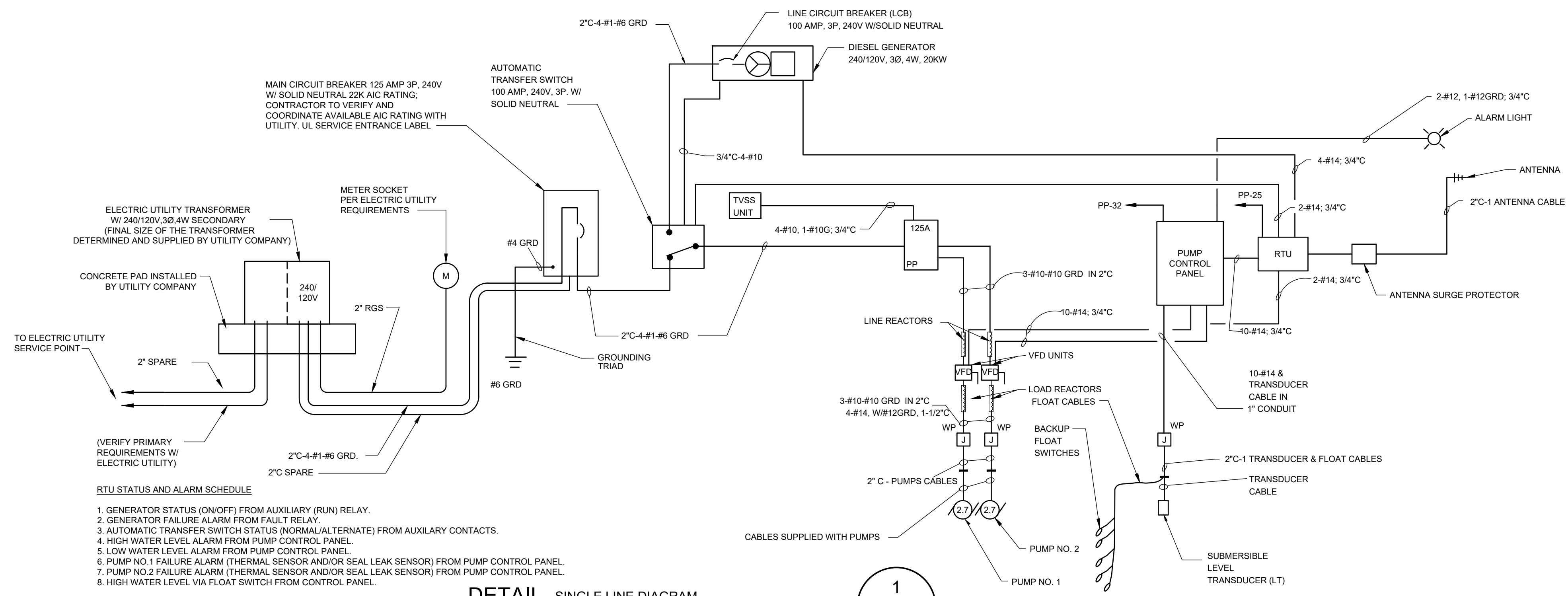
B-PHASE HIGH LEG										PANEL SCHEDULE										PANEL SHALL HAVE COPPER BUS AND COPPER GROUND BUS	
PANEL: PP		INTERRUPTING RATING: 22,000 AMP RMS SYM.		MOUNTING: SURFACE		PHASE: 3Ø		WIRE: 4		MAIN: MLO		DESCRIPTION		CIRCUIT		DESCRIPTION		CIRCUIT			
VOLTAGE: 240/120V		AMP: 125A		WIRE: 4		MAIN: MLO															
CIRCUIT	DESCRIPTION	WIRE	POLES	VA/PHASE						BKR SIZE	POLES	WIRE	DESCRIPTION	CIRCUIT							
				A		B		C													
				LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT												
1	SPARE		1 20							20	3	4	PUMP NO. 1 STARTER	2							
3														4							
5														6							
7	SPARE		1 20							20	3	4	PUMP NO. 2 STARTER	8							
9	SPARE		1 20											10							
11	WP CABINET RECP *	12	1 20					180	1330					12							
13	SPARE		1 20							30	3	10	TVSS	14							
15														16							
17														18							
19	CABINET LIGHTING TYPE "A"	12	1 20	72						20	1		SPARE	20							
21	SPACE												SPACE	22							
23	CABINET RECEPTACLE *	12	1 20					360	240	20	1	12	BATTERY CHARGER	24							
25	RTU	1	1 20	40	25					20	1	12	FLOW METER	26							
27	SPACE												SPACE	28							
29	JACKET HEATER	12	2 20					500	140	20	1	12	MAINTENANCE LIGHT	30							
31				500	600					20	1	12	PCP	32							
33	SPACE												SPACE	34							
35	WET WELL FAN	12	1 20					864	200	20	1	12	CABINET HEATER	36							
37	HOT BOX HEATING	12	1 20	30						60	3	6	SPARE	38							
39	SPACE													40							
41	CABINET HEATER	12	1 20					200						42							
TOTALS						3927		2660		5344											
								11931													

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

TYPE	MANUFACTURER/CATALOG NO.	LAMP			MOUNTING		REMARKS
		NO.	TYPE	WATT	TYPE	HEIGHT	
A	COLUMBIA FEM L48 MD MVOLT 35K E10WMC	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-D8T-7PR-TL SSA-S-14-40-A-1-S2-D8	2	LED	70	POLE	14'-0"	MOUNTING ARM: ALL ITEMS SHALL HAVE DARK BRONZE FINISH 120 VOLT ANTENNA MOUNTING: POLE: DARK BRONZE FINISH W/ POLE CAP
C	SPAULDING SSA-S-20-40-B-OT-DB	N/A	N/A	N/A	POLE	20'-0"	

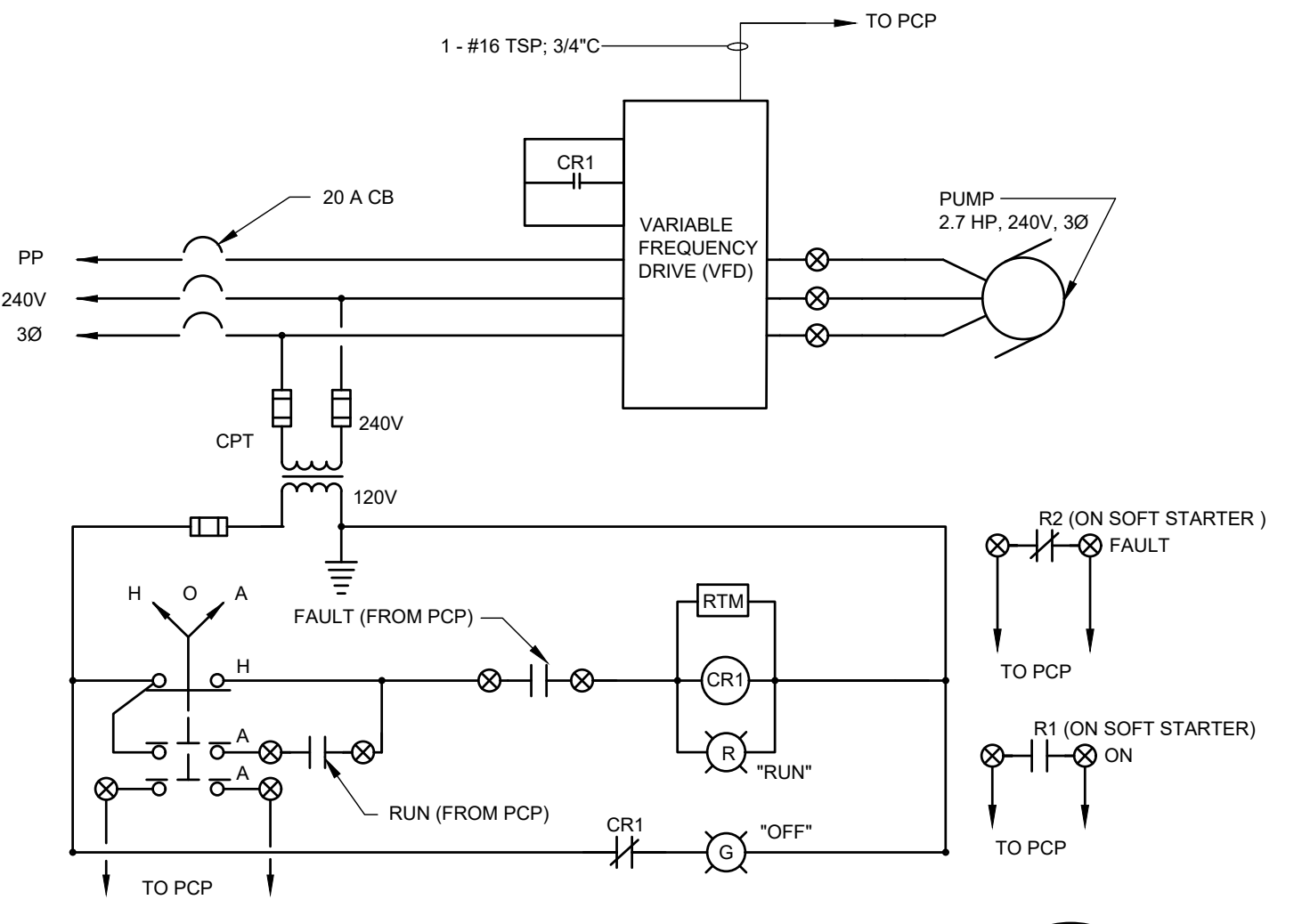
GENERATOR LOAD CALCULATIONS

ITEM	VOLTS	AMPS	PHASE	VA	HP	QTY	NOTE	TOTAL
Pump 1&2	240	9.6	1,732	3990	2.7HP	2	NEMA-J	7980
Lights "A"	120	0.15	1	18.0		4	Cabinet	72
Lights "B"	120	0.58	1	70.0		2	Site	140
Receptacles	120	1.5	1	180.0		3		540
PCP	120	5.0	1	600.0		1		600
RTU	120	0.33	1	40.0		1		40
Jkt Htr	240	4.17	1	1000.0	1KW	1	Genset	1000
Batt Chgr	120	2	1	240.0		1	Genset	240
FM/SC	120	0.21	1	25.0		1	Flowmeter	25
Cabinet Heater	120	1.67	1	200.0		2	Cabinet	400
WW Supply Fan	120	7.2	1	864.0	1/3HP	1		864
Hot Box Heat Trace	120	0.25	1	30.0		1		30
Connected Load in VA								11931
28.70 A at 240V-3Phase								
Base Load=	3951	9.5						
Pump 1 Load=	3990	10RLA	64 LRA					
Pump 2 Load=	3990	10RLA	64 LRA					
Generator Size	20KW	25KVA	at 0.8PF	60 AMP				



DETAIL- SINGLE LINE DIAGRAM
 NOT TO SCALE

1
 PS 1705



DETAIL- PUMP ENCLOSED VFD UNIT ELEMENTARY DIAGRAM
 NOT TO SCALE

2
 PS 1705

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	WW	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
⊕	DUPLEX RECEPTACLE, 120V, 20A	— — — —	CONCEALED CONDUIT
⊕	TOGGLE SWITCH, 120V, 20A, LOWER CASE LETTER DENOTES FIXTURES TO BE SWITCHED	— — — —	CONDUIT SEAL
10	MOTOR, NUMBER DENOTES HP	— G —	GROUND ROD
J, JB	JUNCTION BOX	⊕	GROUND CONDUCTOR
⊕	DIESEL GENERATOR	⊕	FIRE EXTINGUISHER
8	WIRING, ARROW INDICATES HOMERUN TO PANEL NUMBER "8" INDICATES CIRCUIT	⊕	GROUND CONNECTION
⊕	CIRCUIT BREAKER	⊕	TELEPHONE OUTLET
⊕	METER	⊕	COMBINATION MOTOR STARTER
⊕	AUTOMATIC TRANSFER SWITCH	⊕	DISCONNECT SWITCH
⊕	PHASE, DIAMETER	⊕	ELECTRIC LINES
⊕	CONTACT	⊕	TELEPHONE LINES
⊕	PILOT LIGHT; R = RED, G = GREEN	⊕	HEAT TRACE
⊕	EXTERNAL WIRING TERMINAL	⊕	VARIABLE FREQUENCY DRIVE

Pennoni
 PENNONI ASSOCIATES INC.
 18072 Davidson Drive
 Milton, DE 19968
 T 302.684.9030 F 302.684.8054

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BALLENGER SUBDIVISION
 234-11.00-03.00 & 234-11.00-103.01
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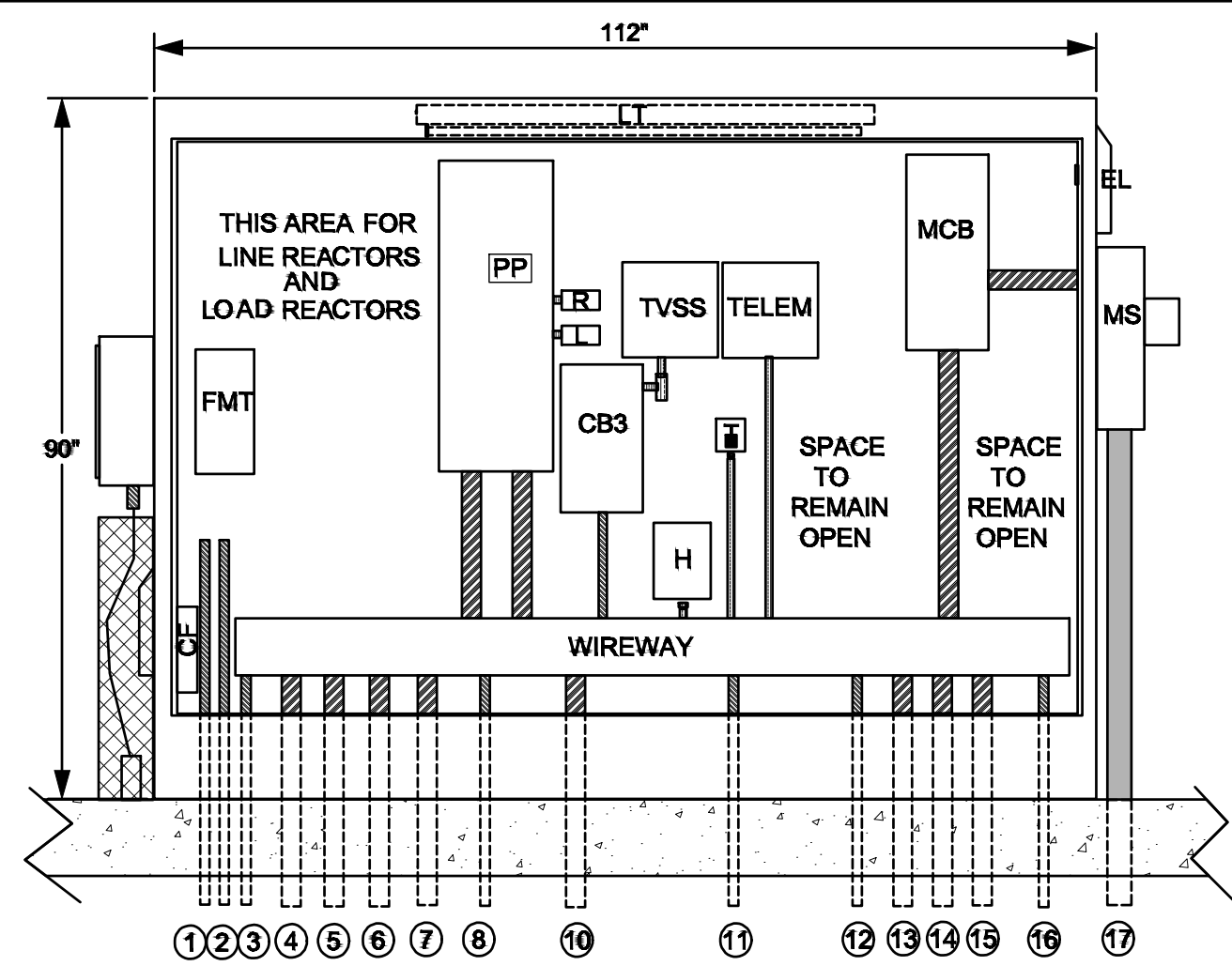
ELECTRICAL DETAILS
 RIBERA DEVELOPMENT, LLC
 866A VETERANS HIGHWAY, SUITE 203
 MILLERSVILLE, MD 21108

NO.	DATE	REVISIONS
2	2024-10-07	REVISED PER ARTESIAN COMMENTS
1	2024-06-20	ADDRESS ARTESIAN VOLTAGE COMMENTS

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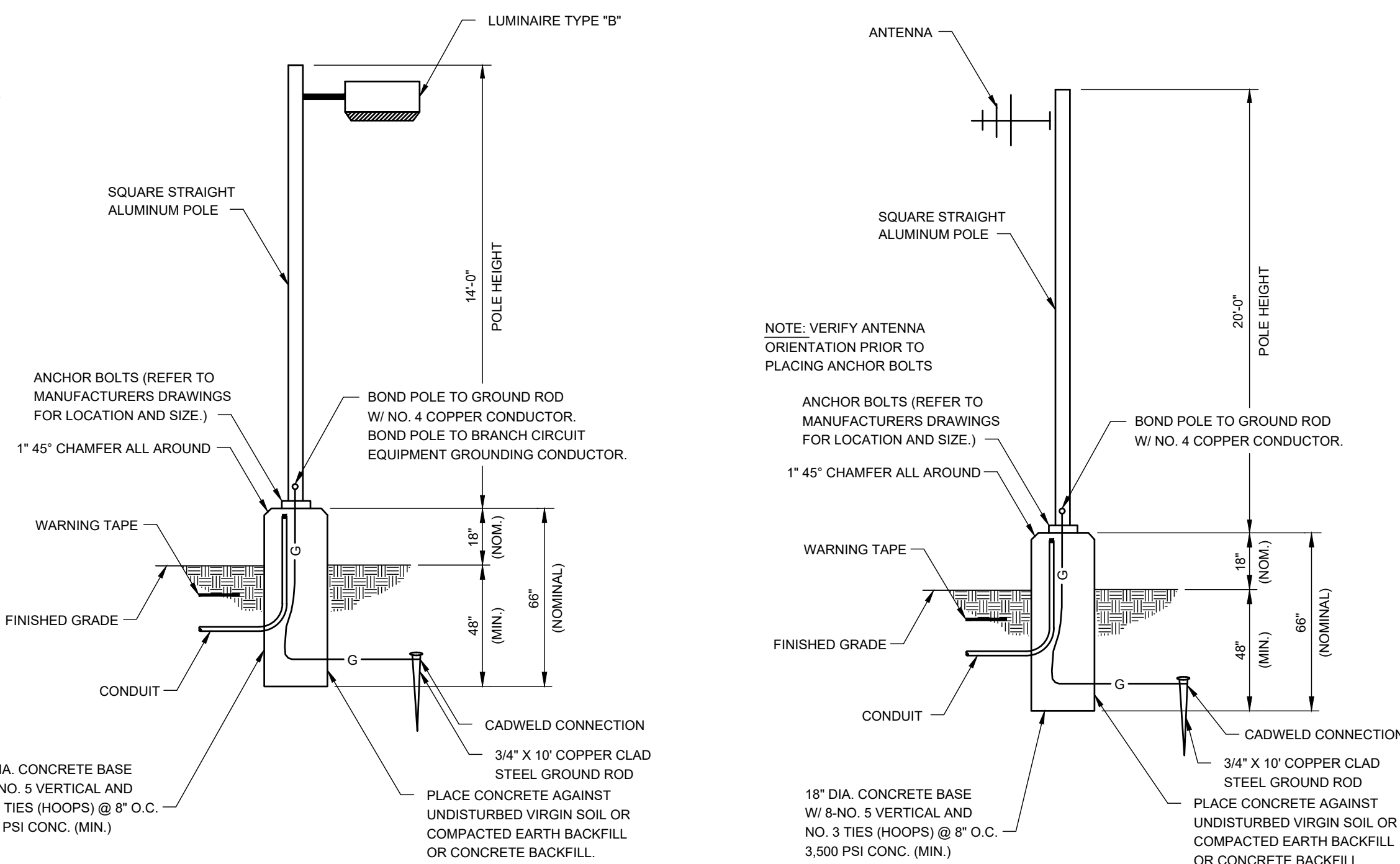
PROJECT: RIBER21006
 DATE: 2024-05-29
 DRAWING SCALE: AS SHOWN
 DRAWN BY: DTR
 APPROVED BY: AMD

PS1706
 SHEET 7 OF 10



ELECTRICAL CABINET NOTES

1. ELECTRICAL CABINET SHALL BE MANUFACTURED BY HOFFMAN
2. CABINET SHALL BE 90" HIGH, 48" WIDE, AND 112" LONG
3. CABINET SHALL HOUSE 3 DOORS ON THE FRONT AND REAR SIDE
4. CABINET SHALL BE STEEL PAINTED WHITE ON THE INSIDE AND OUTSIDE
5. LOWER SUPPORT CHANNEL SHALL BE C304 STAINLESS STEEL



DETAIL- LIGHT POLE
NOT TO SCALE
PS1707

DETAIL- ANTENNA POLE
NOT TO SCALE
PS1707

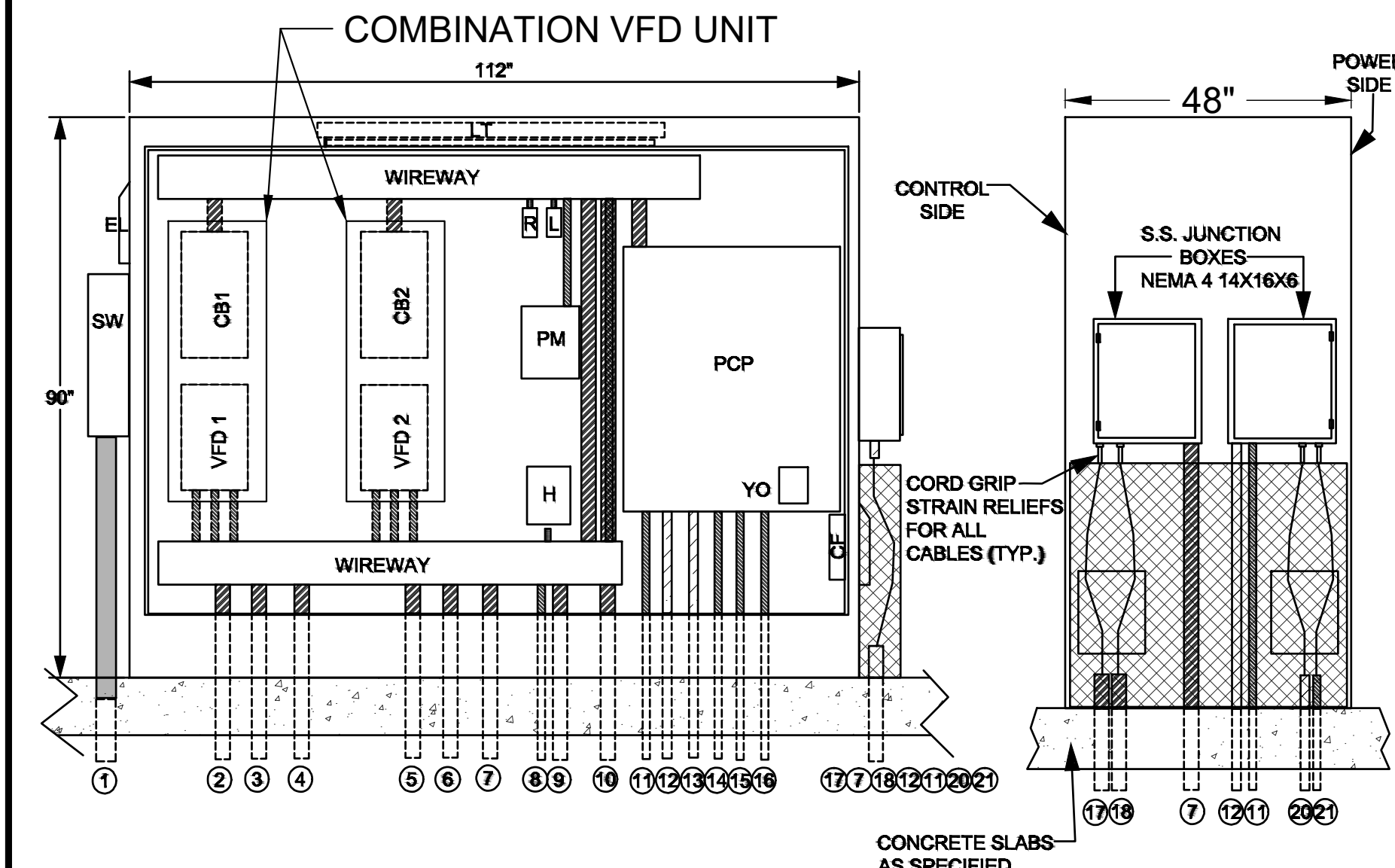
ELECTRICAL CONDUIT DESIGN LEGEND

- 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, 125 AMP, 240/120 V, MAIN CIRCUIT BREAKER
- PP - POWER PANEL
- TVSS - TRANSIENT VOLTAGE SURGE SUPPRESSOR, 240/120 V, 3 PH, 4 WIRE, SQUARE D ESM SERIES, 100 KA
- MS - METER SOCKET-240/120 V, 3 PH, 200 AMP, 4 WIRE
- R - RECEPTACLE
- L - LIGHT SWITCH
- LT - CABINET LIGHT
- CSB - SQUARE D, 30 AMP CIRCUIT BREAKER, 240 V, 3 PH
- FMT - FLOW METER TOTALIZER ELECTRONICS
- TELEM - TELEMETRY UNIT

ELECTRICAL CABINET - REAR VIEW POWER SIDE

NOT TO SCALE
PS1707



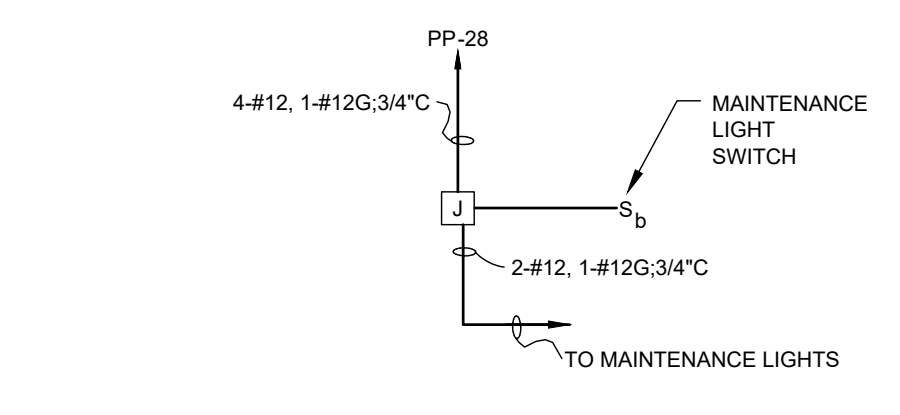
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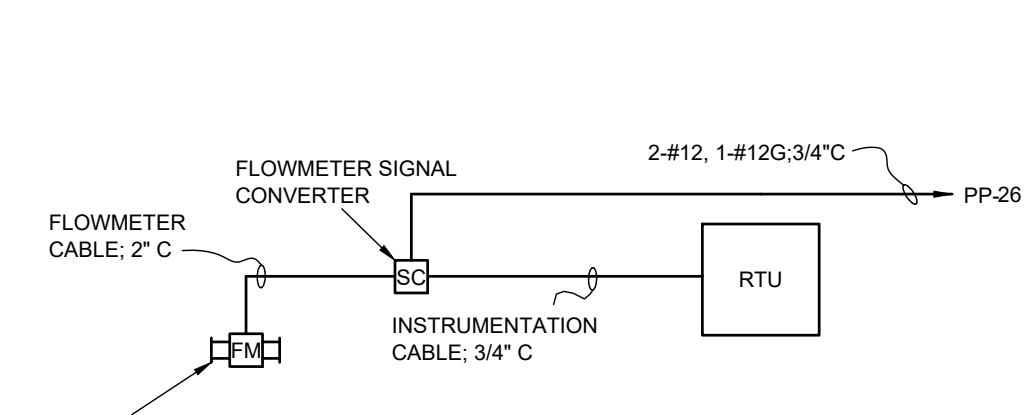
- T - CABINET COOLING THERMOSTAT
- EL - EXHAUST LOUVER
- PCP - SQUARE CONTROL PANEL
- PM - PHASE MONITOR
- H - 400 WATT CABINET HEATER
- CF - CABINET COOLING FAN
- SW - 125 AMP, SQUARE D, NEMA 3R, 3 PH, NON-FUSIBLE SAFETY SWITCH
- R - RECEPTACLE
- L - LIGHT SWITCH
- LT - CABINET LIGHT
- CS1 - SQUARE D COMBINATION STARTER W/ THERMAL MAGNETIC BREAKER
- 100 V. COIL, 100 CONTROL TRANSFORMER
- CS2 - SQUARE D COMBINATION STARTER W/ THERMAL MAGNETIC BREAKER
- 100 V. COIL, 100 CONTROL TRANSFORMER
- YO - YOKAGAWA

ELECTRICAL CABINET - FRONT VIEW CONTROL SIDE

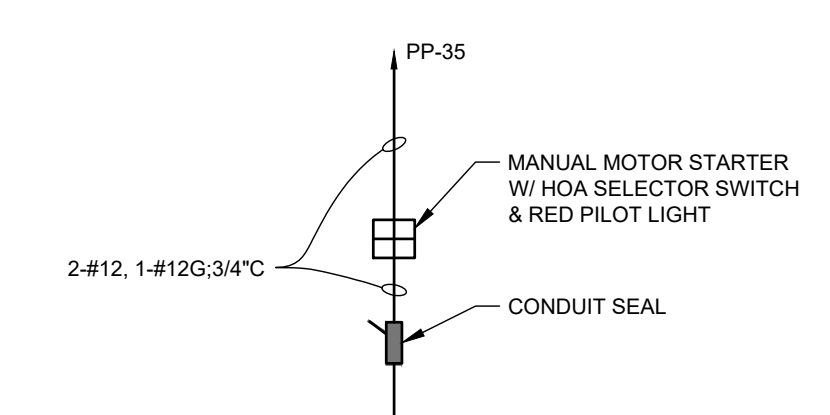
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PS1707



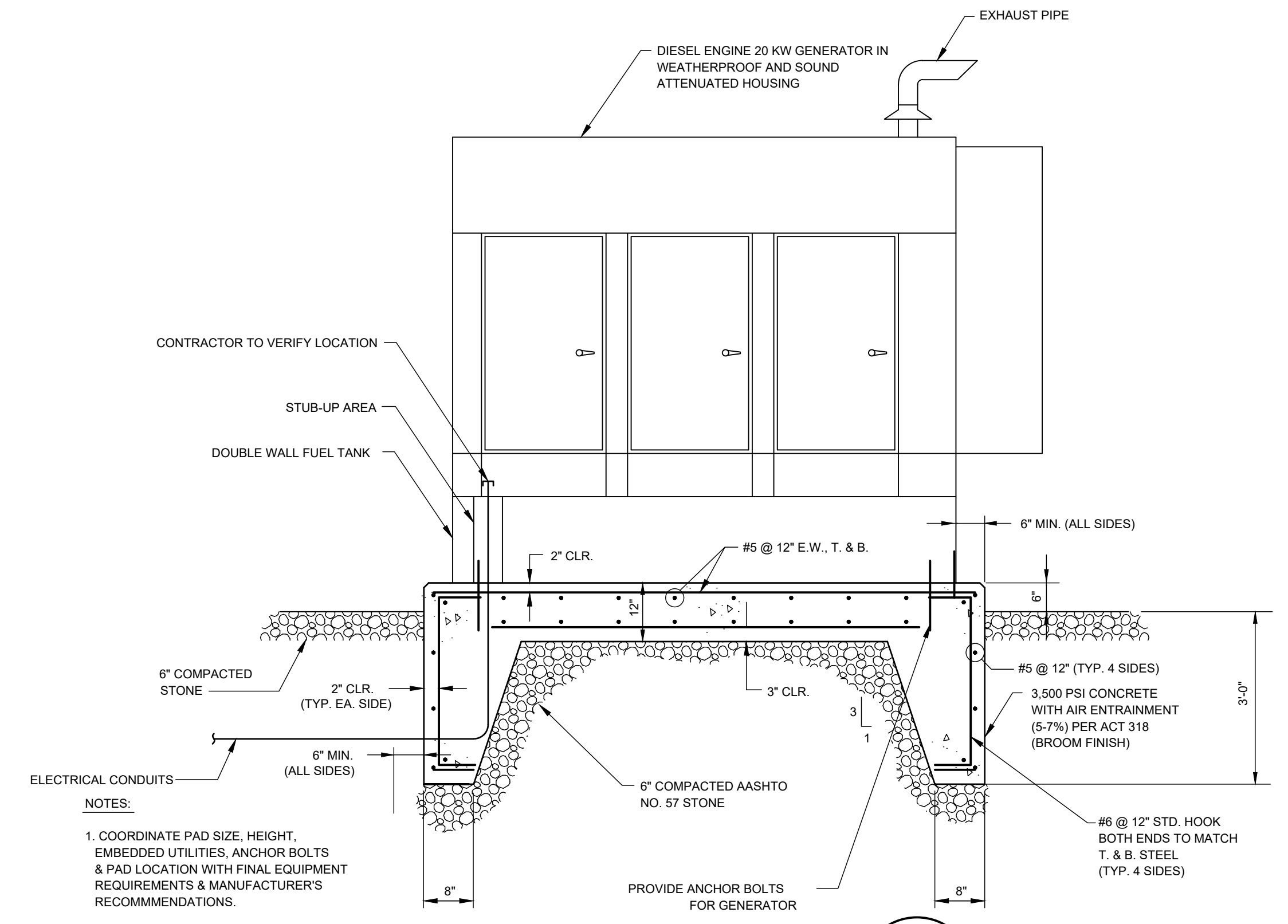
DETAIL- SITE LIGHTING SCHEMATIC
NOT TO SCALE
PS1707



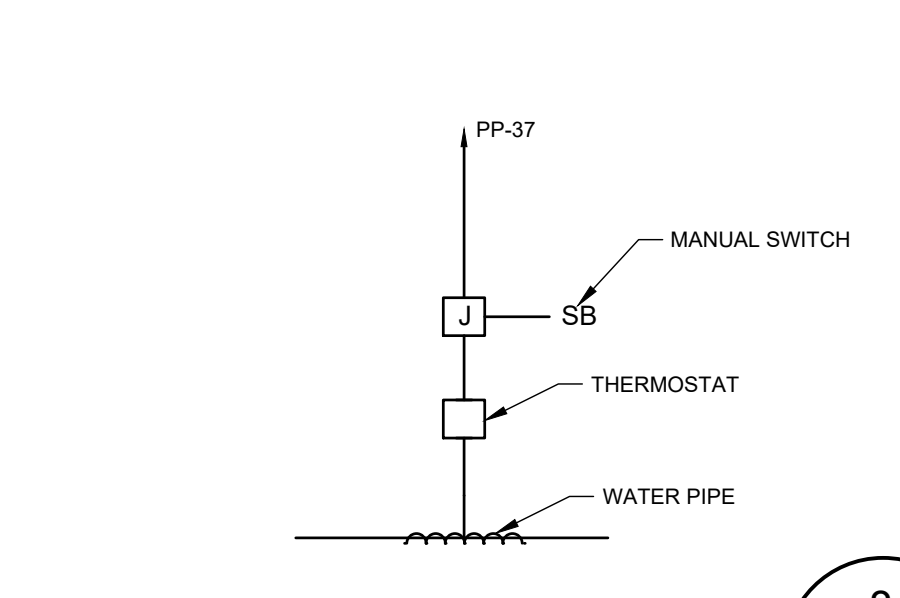
DETAIL- FLOWMETER SCHEMATIC DIAGRAM
NOT TO SCALE
PS1707



DETAIL- FAN SCHEMATIC DIAGRAM
NOT TO SCALE
PS1707



DETAIL- GENERATOR FOUNDATION
NOT TO SCALE
PS1707



DETAIL- HOT BOX HEAT TRACE DIAGRAM
NOT TO SCALE
PS1707

- NOTES:**
1. COORDINATE PAD SIZE, HEIGHT, EMBEDDED UTILITIES, ANCHOR BOLTS & PAD LOCATION WITH FINAL EQUIPMENT REQUIREMENTS & MANUFACTURER'S RECOMMENDATIONS.
 2. ALL PADS TO HAVE 1", 45° CHAMFERED EDGES, ALL AROUND.
 3. PAD DIMENSIONS SHALL PROJECT 6" (MIN.) PAST UNIT, ALL AROUND.

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

BALLENGER SUBDIVISION
234-11.00-103.00 & 234-11.00-103.01
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DATE	2024-05-29
DRAWING SCALE	AS SHOWN
DRAWN BY	DTR
APPROVED BY	AMD

PS1707
SHEET 8 OF 10

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: ANSINEMA 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 CONDUIT TYPE INSTALLED OR FOR TYPE THIN 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 APPARATUS.
- 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 FASTENED 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 PROVIDING 100% COVERAGE, A STRANDED TINNED COPPER DRAIN WIRE, AND A CHROME PVC JACKET. THE CABLE SHALL HAVE A NOMINAL CAPACITANCE OF 24 PFF/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 12 AWG TINNED COPPER DRAIN WIRE, AND AN OVERALL HIGH DENSITY BLACK POLYETHYLENE JACKET. THE CABLE SHALL HAVE A NOMINAL CAPACITANCE OF 23 PFF/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 FERROUS. 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 S-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. 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-368 OR A-153. THE SUPPORT AND HANGER SYSTEM SHALL BE INSTALLED FOLLOWING THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. EXTERIOR CHANNELS SHALL BE STAINLESS STEEL.
- 4. ALL SCREWS AND NUTS USED TO FASTEN DEVICE COVERS, ENCLOSURE COVERS, AND SIMILAR APPLICATIONS WHERE SCREWS MUST BE USED FOR SERVICING OR REPLACEMENT OF EQUIPMENT SHALL BE STAINLESS STEEL. ALL OTHER SCREWS AND BOLTS SHALL BE ZINC OR CADMIUM PLATED OR HOT-DIPPED GALVANIZED.
- 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 (DELAWARE ELECTRIC COOPERATIVE) HAS CONFIRMED THAT 240 V POWER WILL BE AVAILABLE AT SITE. EVERY BIDDER SHALL BE RESPONSIBLE TO CONTACT THE UTILITY COMPANY TO VERIFY ALL ELECTRIC SERVICE REQUIREMENTS. ADDITIONAL EQUIPMENT, MATERIALS AND LABOR REQUIRED THROUGH FAILURE TO FOLLOW THESE INSTRUCTIONS SHALL BE PROVIDED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
- 3. INSTALL SERVICE ENTRANCE IN ACCORDANCE WITH THE UTILITY COMPANY RULES AND REGULATIONS.
- 4. METERS: FURNISHED BY UTILITY COMPANY. INSTALLED BY CONTRACTOR, PER UTILITY COMPANY REQUIREMENTS.
- 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/PAV: 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, IN-LINE, 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 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 LOWER 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: ANSINEMA MG 1, THREE PHASE, FOUR POLE, RECONNECTIBLE BRUSHLESS SYNCHRONOUS GENERATOR WITH PMG EXCITATION.
- b. RATING: 20 KW, 25 KVA, AT 0.8 POWER FACTOR, 240/120 VOLTS, 3 PHASE, 4 WIRE, 60 HZ AT 1800 RPM.
- c. MOTOR STARTING KVA SHALL BE 46 KVA, BASED ON SUSTAINED RMS VOLTAGE DROP OF NO MORE THAN 10% OF NO LOAD VOLTAGE WITH THE SPECIFIED LOAD KVA AT NEAR ZERO POWER MONITOR, FACTOR APPLIED TO THE ENGINE-GENERATOR SET.
- d. INSULATION: ANSINEMA 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 +/- 2.0 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: 46 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 ANSINEMA 250; TYPE 12 REQUIREMENTS.
- f. ENGINE-GENERATOR CONTROL PANEL: ANSINEMA 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. OUTPUT CURRENT 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 INTERVAL. SUBMIT FULL LOAD TEST RESULTS TO THE OWNER.
- 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 SYSTEMS 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:
 - 1. VOLTAGE: 240 VOLTS, THREE PHASE, FOUR WIRE, 60 HZ, SOLID NEUTRAL.
 - 2. SWITCHED POLES: 3.
- b. LOAD INRUSH RATING: COMBINATION, MOTORS, ELECTRIC DISCHARGE LIGHTING, AND RESISTIVE LOADS.
- c. CONTINUOUS RATING: 100 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. A. INITIATE TIME DELAY TO START ALTERNATE SOURCE ENGINE GENERATOR: UPON INITIATION BY NORMAL SOURCE MONITOR.
- b. TIME DELAY TO START ALTERNATE SOURCE ENGINE GENERATOR: 0 TO 10 SECONDS, ADJUSTABLE.
- c. INITIATE TRANSFER LOAD TO ALTERNATE SOURCE: UPON INITIATION BY NORMAL SOURCE MONITOR AND PERMISSION BY ALTERNATE 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 A. 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 PULLING TOAST POSITION.
- 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:
 - 1. SERVICES OF QUALIFIED TECHNICIAN TO SUPERVISE INSTALLATIONS, ADJUSTMENTS, FINAL CONNECTIONS, AND SYSTEM STARTUP AND TESTING.
 - 2. MANUFACTURER'S LETTER CERTIFYING THAT THE SYSTEMS INSTALLATION, START-UP, AND TESTING ARE ACCEPTABLE AND THAT THE SYSTEM IS OPERATING PROPERLY.
- h. 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 XYLEM/LYGT AND THE SYSTEM INTEGRATOR SHALL CONFORM TO ALL ARTESIAN WASTEWATER MANAGEMENT SPECIFICATIONS REQUIREMENTS.

EQUIPMENT LIST:

MAIN CIRCUIT BREAKER (MCB): 125A-3P MOLDED CASE CIRCUIT BREAKER WITH NEMA TYPE 1 ENCLOSURE. SERVICE ENTRANCE RATED; MANUFACTURER - SQUARE-D, MODEL NO. HJL36126 WITH ENCLOSURE MODEL NO. J2655 OR AN ACCEPTABLE EQUIVALENT.

POWER PANEL (PP): 125A, 240/120V, 3-PHASE, 4-WIRE, 42-POLE RATED, 125A-3P MAIN CIRCUIT BREAKER WITH NEMA TYPE 1 ENCLOSURE; MANUFACTURER - SQUARE D, MODEL NO. NF430L1C WITH ENCLOSURE MODEL NO. MH44 OR AN ACCEPTABLE EQUIVALENT. (SEE PANEL SCHEDULE FOR INDIVIDUAL CIRCUIT BREAKERS.)

PUMP CONTROL PANEL(PCP): PLC INTEGRATED AND SCADA COMPATIBILITY PUMP CONTROL PANEL SHALL BE MANUFACTURED BY TRUXT SYSTEM INC. AS PER ARTESIAN WASTEWATER MANAGEMENT, INC. STANDARDS & SPECIFICATION SECTION 3.2.

TRANSIENT VOLTAGE SURGE SUPPRESSOR (TVSS-SPD) UNIT: 160KA PER PHASE SURGE CAPACITY, 240/120V, 3-PHASE, 4-WIRE WITH NEMA TYPE 1 ENCLOSURE; MANUFACTURER: ASCO, MODEL SSP025BA 160 OR AN ACCEPTABLE EQUIVALENT

PUMP MOTOR CONTROLLER: COMBINATION STYLE VFD SIZED FOR 3HP, 240V, 3-PHASE SUBMERSIBLE PUMP MOTOR, FURNISHED WITH THERMAL-MAGNETIC CIRCUIT BREAKER DISCONNECT, 120V FUSED CONTROL POWER TRANSFORMER, HAND-OFF-AUTOMATIC SELECTOR SWITCH, RUN AND FAULT STATUS LIGHTS, 6-DIGIT RUNNING TIME METER, AND AUXILIARY CONTACTS IN NEMA TYPE 1 ENCLOSURE. MANUFACTURER - SQUARE-D, MODEL NO. ATV330U55M3 OR AN ACCEPTABLE EQUIVALENT..

CABINET ELECTRIC HEATER: 200W, 120V, SINGLE-PHASE, NEMA TYPE 1 ENCLOSURE; MANUFACTURER - HOFFMAN MODEL NO. D-4H2001A OR AN ACCEPTABLE EQUIVALENT.

DIESEL GENERATOR SET: 20KW/25KVA, 240/120V, 3-PHASE, 4-WIRE, 60HZ AT 1800 RPM WITH PMG EXCITATION; MANUFACTURER - CUMMINS MODEL NO. C2006 WITH 46 GALLON (NOMINAL) DUAL-WALL SUB-BASE FUEL TANK, AND LEVEL-2 SOUND-ATTENUATED, WEATHERPROOF ENCLOSURE OR AN ACCEPTABLE EQUIVALENT.

AUTOMATIC TRANSFER SWITCH (ATS): 100A-3P-SOLID NEUTRAL, 240/120V, 3-PHASE, 4-WIRE, NEMA TYPE 1 ENCLOSURE; MANUFACTURER - CUMMINS MODEL NO. OTEC OR AN ACCEPTABLE EQUIVALENT.

ELECTRICAL EQUIPMENT CABINETS: DOUBLE-DOOR, FREESTANDING, NEMA TYPE 4X STAINLESS STEEL CABINET WITH INTERIOR MOUNTING PANELS; MANUFACTURER - APX ENCLOSURES, INC. OR AN ACCEPTABLE EQUIVALENT.

SERVICE DISCONNECT SWITCH: 200A, 600V, 3-PHASE, 4 WIRE, NEMA 4 ENCLOSURE; MANUFACTURER- SQUARE D, HEAVY DUTY SAFETY SWITCH MODEL NUMBER VHS64R OR AN ACCEPTABLE EQUIVALENT.

NOTE:

ALL MATERIALS, EQUIPMENT AND FITTINGS SHALL COMPLY WITH THE ARTESIAN WASTEWATER MANAGEMENT, INC. WASTEWATER STANDARDS AND SPECIFICATIONS DATED MARCH 5TH, 2019 OR LATEST VERSION.



PENNONI ASSOCIATES INC.
18072 Davidson Drive
Milton, DE 19968
T 302.684.9030 F 302.684.8054

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

BALLENGER SUBDIVISION
234-11.00-103.00 & 234-11.00-103.01
HOLLYMOUNT ROAD (SCR 048)
HARBESON, DE 19951

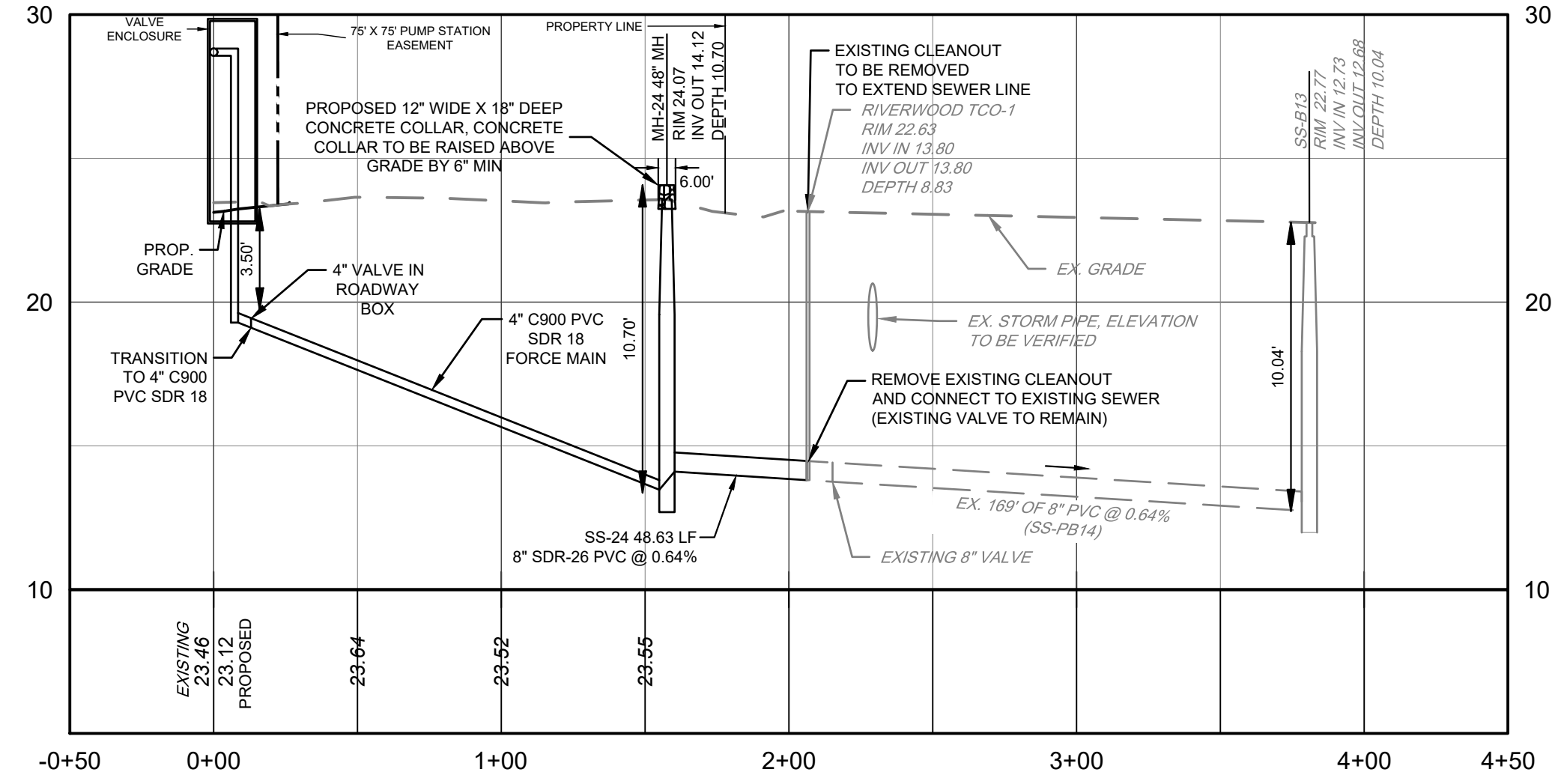
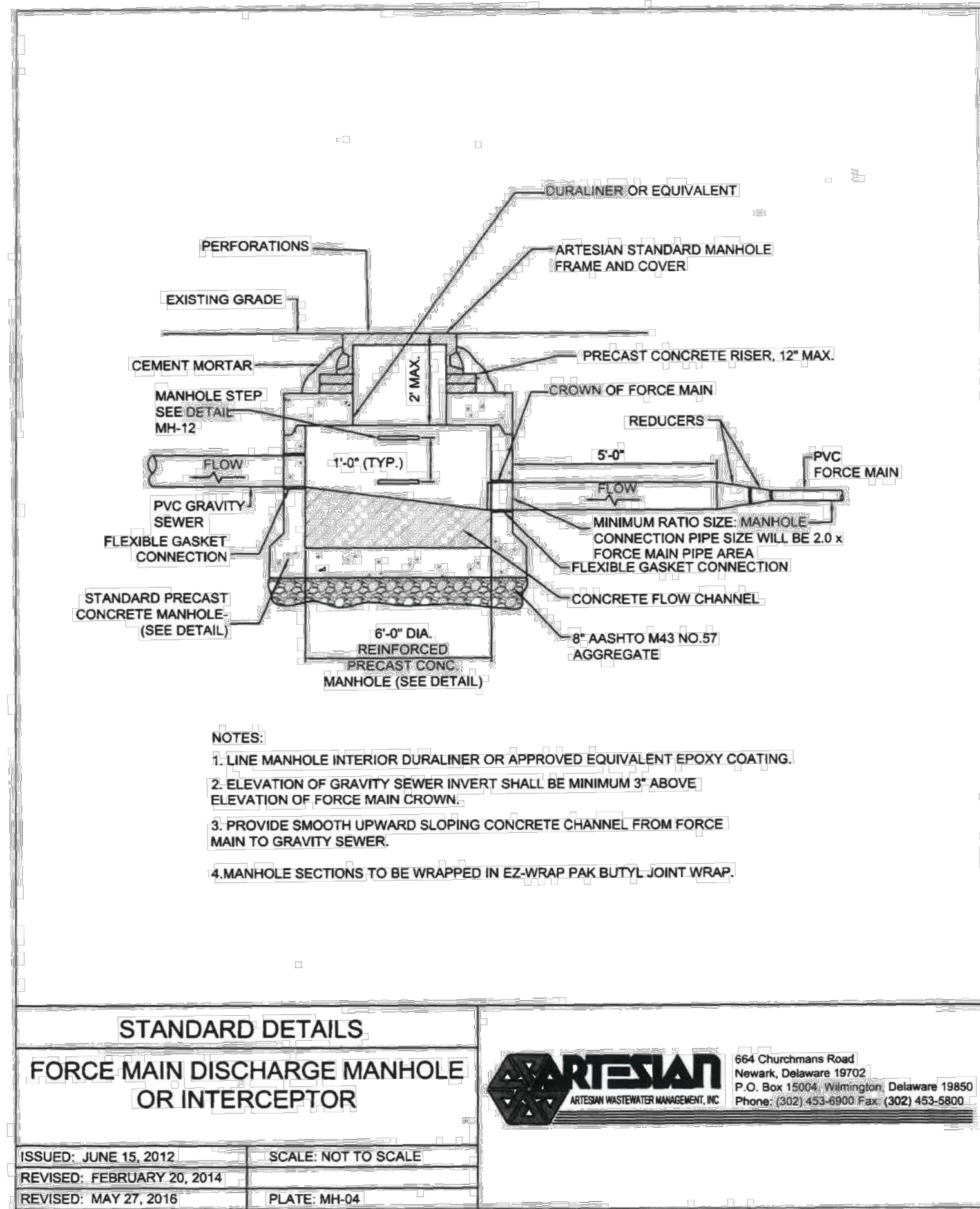
ELECTRICAL NOTES

RIBERA DEVELOPMENT, LLC
8664 VETERANS HIGHWAY, SUITE 203
MILLERSVILLE, MD 21108

NO.	DATE	REVISIONS	BY
2	10/24/2024	REVISED PER ARTESIAN COMMENTS	LFS
1	10/24/2024	ADDRESS ARTESIAN VOLTAGE COMMENTS	VPL

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 PERMISSION OR ADAPTATION BY PENNONI ASSOCIATES FOR THE SPECIFIC PURPOSE INTENDED WILL BE AT OWNERS SOLE RISK AND WITHOUT LIABILITY OR LEGAL RESCUE TO PENNONI ASSOCIATE. OWNER SHALL SYSTEM IS OPERATING PROPERLY. MANUFACTURER'S LETTER CERTIFYING THAT THE SYSTEMS INSTALLATION, START-UP, AND TESTING ARE ACCEPTABLE AND THAT THE MANUFACTURER FOR FIELD SERVICES INVOLVED WITH THE PROJECT. THE CONTRACTOR'S BID SHALL INCLUDE ALL MANUFACTURER'S CHARGES.

PROJECT: **RIBER21006**
DATE: 2024-05-29
DRAWING SCALE: AS SHOWN
DRAWN BY: DTR
APPROVED BY: AMD
PS1708
SHEET 9 OF 10



PROFILE - 8" SEWER EXTENSION (DISCHARGE SIDE)
 H: 1" = 50', V: 1" = 5'

NOTE:
 1. MH 24 AS PER DETAIL (THIS SHEET) "FORCEMAIN DISCHARGE MANHOLE OR INTERCEPTOR"
 2. MANHOLE SLAB TO BE 6-INCHES ABOVE NATURAL GROUND LEVEL AND HAVE 6" DIAMETER OF SQUARE CONCRETE COLLAR

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

BALLENGER SUBDIVISION
 234-11.00-103.00 & 234-11.00-103.01
 HOLLYMOUNT ROAD (SCR 048)
 HARBESON, DE 19951

SANITARY PROFILE AND DETAIL
RIBERA DEVELOPMENT, LLC
 8684 VETERANS HIGHWAY, SUITE 203
 MILLERSVILLE, MD 21108

DATE	NO.	REVISIONS	BY
2024-10-07	2	REVISED PER ARTESIAN COMMENTS	LFS
2024-07-29	1	REVISED PER AVMH COMMENTS	VPL

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PROJECT: **RIBER21006**
 DATE: 2024-05-29
 DRAWING SCALE: **AS SHOWN**
 DRAWN BY: **DTR**
 APPROVED BY: **AMD**

U:\Amd\BIBER\BIBER21006 - Harbeson Pump - Hollymount\04-05-2024_S&ES\PS1709.dwg PLOTTED: 10/8/2024 4:41 PM BY: Lupton, S. Michael PLOT STYLE: Pennoni MCD.ctb