

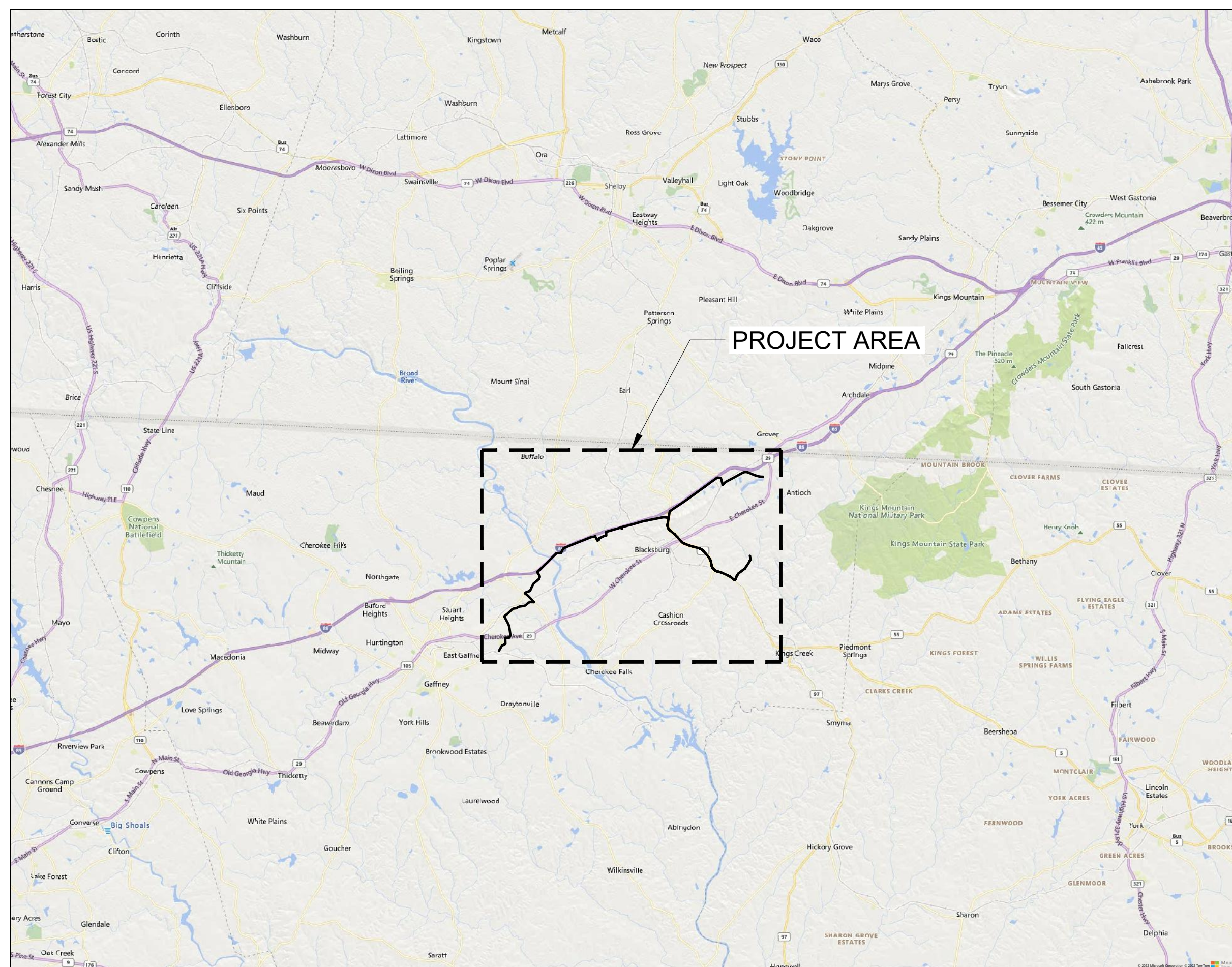
GAFFNEY BOARD OF PUBLIC WORKS

PROJECT GATEWAY VOLUME 1: SEWAGE PUMP STATIONS

60% SUBMITTAL

JUNE 2022

B&V PROJECT NO. 410381



LOCATION MAP



Gaffney, South Carolina

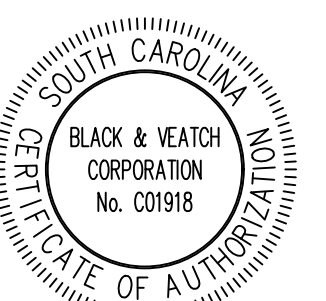
BPW

Board of Public Works



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Black & Veatch Corporation
Greenville, South Carolina



PRELIMINARY - NOT FOR CONSTRUCTION

SUBCONSULTANT:

GAFFNEY
BOARD OF
PUBLIC WORKSPROJECT GATEWAY
VOLUME 1 : SEWAGE
PUMP STATIONSPRELIMINARY
NOT FOR
CONSTRUCTION

REVISIONS AND RECORD OF ISSUE

DESIGNED: DJM
DETAILED: ---
CHECKED: RTC, CMW, DLC
APPROVED: ---
DATE: JUNE 2022
PROJECT NO.: 410381

FACILITY OR AREA CODE

SHEET DISCIPLINE

SHEET TITLE

G-00-001

XXX
OF
XXXVOLUME 1 SHEET LIST

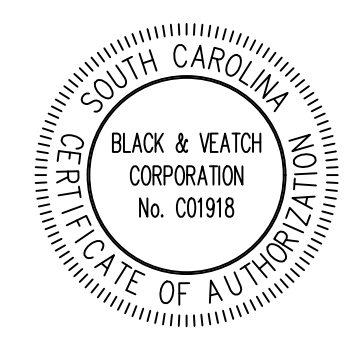
NO.	SHEET	TITLE
<u>GENERAL</u>		
1	G-00-000	COVER SHEET & LOCATION MAP
2	G-00-001	GENERAL ANNOTATION, SYMBOL, AND CALLOUT LEGENDS
3	G-00-002	INDEX OF DRAWINGS
4	G-00-003	GENERAL, CIVIL, AND PROCESS MECHANICAL ABBREVIATIONS
5	G-00-004	OVERALL SITE PLAN
<u>CIVIL</u>		
6	C-00-401	EROSION CONTROL DETAILS
7	C-00-402	PUMP STATION DETAILS - MULTIPLE STATIONS
8	C-01-101	QUARRY SPS - SITE PLAN
9	C-01-102	QUARRY SPS - PUMP STATION PLANS AND SECTIONS
10	C-01-103	QUARRY SPS - PUMP STATION PLANS AND SECTIONS
11	C-02-101	GIBBONS SPS - SITE PLAN
12	C-02-102	GIBBONS SPS - PUMP STATION PLANS AND SECTIONS
13	C-02-103	GIBBONS SPS - PUMP STATION PLANS AND SECTIONS
14	C-03-101	SITE PLAN - JUMPING BRANCH SPS
15	C-03-102	JUMPING BRANCH SPS - PUMP STATION PLANS AND SECTIONS
16	C-03-103	JUMPING BRANCH SPS - PUMP STATION PLANS AND SECTIONS
17	C-04-101	BEAR DEN SPS - SITE PLAN
18	C-04-102	BEAR DEN SPS - PUMP STATION PLANS AND SECTIONS
19	C-04-103	BEAR DEN SPS - PUMP STATION PLANS AND SECTIONS
<u>STRUCTURAL</u>		
20	S-00-001	GENERAL, LEGEND, NOTES
21	S-00-002	LOADING
22	S-01-100	QUARRY SPS - PLANS
23	S-01-300	QUARRY SPS - SECTIONS
24	S-02-100	GIBBONS SPS - PLANS
25	S-02-300	GIBBONS SPS - SECTIONS
26	S-03-100	JUMPING BRANCH SPS - PLANS
27	S-03-300	JUMPING BRANCH SPS - SECTIONS
28	S-04-100	BEAR DEN SPS - PLANS
29	S-04-300	BEAR DEN SPS - SECTIONS
30	S-99-101	DETAILS
31	S-99-102	CONCRETE REINFORCING
32	S-99-103	CONCRETE JOINT
33	S-99-104	MISCELLANEOUS FOUNDATION
<u>ELECTRICAL</u>		
34	E-00-001	LEGEND, ABBREVIATIONS, AND NOTES (1 OF 2)
35	E-00-002	LEGEND, ABBREVIATIONS, AND NOTES (2 OF 2)
36	E-01-002	QUARRY SPS - SITE PLAN
37	E-01-003	QUARRY SPS - POWER AND LIGHTING PLAN
38	E-01-101	QUARRY SPS - ONE-LINE DIAGRAM, SCHEMATICS, AND SCHEDULES
39	E-02-002	GIBBONS SPS - SITE PLAN
40	E-02-003	GIBBONS SPS - POWER AND LIGHTING PLAN
41	E-02-101	GIBBONS SPS - ONE-LINE DIAGRAM, SCHEMATICS, AND SCHEDULES
42	E-03-002	JUMPING BRANCH SPS - SITE PLAN
43	E-03-003	JUMPING BRANCH SPS - POWER AND LIGHTING PLAN
44	E-03-101	JUMPING BRANCH SPS - ONE-LINE DIAGRAM, SCHEMATICS, AND SCHEDULES
45	E-04-002	BEAR DEN SPS - SITE PLAN
46	E-04-003	BEAR DEN SPS - POWER AND LIGHTING PLAN
47	E-04-101	BEAR DEN SPS - ONE-LINE DIAGRAM, SCHEMATICS, AND SCHEDULES
48	E-99-101	DETAILS
<u>INSTRUMENTATION</u>		
49	I-00-001	LEGENDS AND ABBREVIATIONS (1 OF 3)
50	I-00-002	LEGENDS AND ABBREVIATIONS (2 OF 3)
51	I-00-003	LEGENDS AND ABBREVIATIONS (3 OF 3)
52	I-01-001	QUARRY SPS - PIDS
53	I-02-001	GIBBONS SPS - PIDS
54	I-03-001	JUMPING BRANCH SPS - PIDS
55	I-04-001	BEAR DEN SPS - PIDS
56	I-99-001	CONTROL SYSTEM BLOCK DIAGRAM
57	I-99-002	DETAILS

VOLUME 2 SHEET LIST

NO.	SHEET	TITLE
<u>GENERAL</u>		
-	G-00-000	COVER SHEET AND LOCATION MAP
1	G-00-001	INDEX OF DRAWINGS
2	G-00-002	GENERAL ANNOTATION, SYMBOL, AND CALLOUT LEGENDS
3	G-00-003	GENERAL, CIVIL, AND PROCESS MECHANICAL ABBREVIATIONS
4	G-00-004	OVERALL SITE PLAN
<u>CIVIL</u>		
5	C-01-001	SEGMENT 1- PLAN AND PROFILE STA 0+00 TO STA 10+00
6	C-01-002	SEGMENT 1- PLAN AND PROFILE STA 10+00 TO STA 20+00
7	C-01-003	SEGMENT 1- PLAN AND PROFILE STA 20+00 TO STA 27+37
8	C-02-004	SEGMENT 2- PLAN AND PROFILE STA 0+00 TO STA 10+00
9	C-02-005	SEGMENT 2- PLAN AND PROFILE STA 10+00 TO STA 20+00
10	C-02-006	SEGMENT 2- PLAN AND PROFILE STA 20+00 TO STA 30+00
11	C-02-007	SEGMENT 2- PLAN AND PROFILE STA 30+00 TO STA 40+00
12	C-02-008	SEGMENT 2- PLAN AND PROFILE STA 40+00 TO STA 50+00
13	C-02-009	SEGMENT 2- PLAN AND PROFILE STA 50+00 TO STA 60+00
14	C-02-010	SEGMENT 2- PLAN AND PROFILE STA 60+00 TO STA 70+00
15	C-02-011	SEGMENT 2- PLAN AND PROFILE STA 70+00 TO STA 80+00
16	C-02-012	SEGMENT 2- PLAN AND PROFILE STA 80+00 TO STA 90+00
17	C-02-013	SEGMENT 2- PLAN AND PROFILE STA 90+00 TO STA 100+00
18	C-02-014	SEGMENT 2- PLAN AND PROFILE STA 100+00 TO STA 110+00
19	C-02-015	SEGMENT 2- PLAN AND PROFILE STA 110+00 TO STA 120+00
20	C-02-016	SEGMENT 2- PLAN AND PROFILE STA 120+00 TO STA 130+00
21	C-02-017	SEGMENT 2- PLAN AND PROFILE STA 130+00 TO STA 140+00
22	C-02-018	SEGMENT 2- PLAN AND PROFILE STA 140+00 TO STA 150+00
23	C-02-019	SEGMENT 2- PLAN AND PROFILE STA 150+00 TO STA 160+00
24	C-02-020	SEGMENT 2- PLAN AND PROFILE STA 160+00 TO STA 170+00
25	C-02-021	SEGMENT 2- PLAN AND PROFILE STA 170+00 TO STA 180+00
26	C-02-022	SEGMENT 2- PLAN AND PROFILE STA 180+00 TO STA 190+00
27	C-02-023	SEGMENT 2- PLAN AND PROFILE STA 190+00 TO STA 200+00
28	C-02-024	SEGMENT 2- PLAN AND PROFILE STA 200+00 TO STA 210+00
29	C-02-025	SEGMENT 2- PLAN AND PROFILE STA 210+00 TO STA 220+00
30	C-02-026	SEGMENT 2- PLAN AND PROFILE STA 220+00 TO STA 230+00
31	C-02-027	SEGMENT 2- PLAN AND PROFILE STA 230+00 TO STA 240+00
32	C-02-028	SEGMENT 2- PLAN AND PROFILE STA 240+00 TO STA 250+00
33	C-02-029	SEGMENT 2- PLAN AND PROFILE STA 250+00 TO STA 260+00
34	C-02-030	SEGMENT 2- PLAN AND PROFILE STA 260+00 TO STA 270+00
35	C-02-031	SEGMENT 2- PLAN AND PROFILE STA 270+00 TO STA 280+00
36	C-02-032	SEGMENT 2- PLAN AND PROFILE STA 280+00 TO STA 290+00
37	C-02-033	SEGMENT 2- PLAN AND PROFILE STA 290+00 TO STA 300+00
38	C-02-034	SEGMENT 2- PLAN AND PROFILE STA 300+00 TO STA 310+00
39	C-02-035	SEGMENT 2- PLAN AND PROFILE STA 310+00 TO STA 320+00
40	C-02-036	SEGMENT 2- PLAN AND PROFILE STA 320+00 TO STA 330+00
41	C-02-037	SEGMENT 2- PLAN AND PROFILE STA 330+00 TO STA 340+00
42	C-02-038	SEGMENT 2- PLAN AND PROFILE STA 340+00 TO STA 350+00
43	C-02-039	SEGMENT 2- PLAN AND PROFILE STA 350+00 TO STA 358+53.46
44	C-03-040	SEGMENT 3- PLAN AND PROFILE STA 0+00 TO STA 10+00
45	C-03-041	SEGMENT 3- PLAN AND PROFILE STA 10+00 TO STA 20+00
46	C-03-042	SEGMENT 3- PLAN AND PROFILE STA 20+00 TO STA 30+00
47	C-03-043	SEGMENT 3- PLAN AND PROFILE STA 30+00 TO STA 40+00
48	C-03-044	SEGMENT 3- PLAN AND PROFILE STA 40+00 TO STA 50+00
49	C-03-045	SEGMENT 3- PLAN AND PROFILE STA 50+00 TO STA 60+00
50	C-03-046	SEGMENT 3- PLAN AND PROFILE STA 60+00 TO STA 70+00
51	C-03-047	SEGMENT 3- PLAN AND PROFILE STA 70+00 TO STA 80+00
52	C-03-048	SEGMENT 3- PLAN AND PROFILE STA 80+00 TO STA 83+85.67
53	C-04-049	SEGMENT 4- PLAN AND PROFILE STA 0+00 TO STA 10+00
54	C-04-050	SEGMENT 4- PLAN AND PROFILE STA 10+00 TO STA 20+00
55	C-04-051	SEGMENT 4- PLAN AND PROFILE STA 20+00 TO STA 30+00
56	C-04-052	SEGMENT 4- PLAN AND PROFILE STA 30+00 TO STA 40+00
57	C-04-053	SEGMENT 4- PLAN AND PROFILE STA 40+00 TO STA 50+00
58	C-04-054	SEGMENT 4- PLAN AND PROFILE STA 50+00 TO STA 60+00
59	C-04-055	SEGMENT 4- PLAN AND PROFILE STA 60+00 TO STA 70+00
60	C-04-056	SEGMENT 4- PLAN AND PROFILE STA 70+00 TO STA 80+00
61	C-04-057	SEGMENT 4- PLAN AND PROFILE STA 80+00 TO STA 90+00
62	C-04-058	SEGMENT 4- PLAN AND PROFILE STA 90+00 TO STA 100+00
63	C-04-059	SEGMENT 4- PLAN AND PROFILE STA 100+00 TO STA 110+00
64	C-04-060	SEGMENT 4- PLAN AND PROFILE STA 110+00 TO STA 120+00
65	C-04-061	SEGMENT 4- PLAN AND PROFILE STA 120+00 TO STA 130+00
66	C-04-062	SEGMENT 4- PLAN AND PROFILE STA 130+00 TO STA 140+00
67	C-04-063	SEGMENT 4- PLAN AND PROFILE STA 140+00 TO STA 150+00
68	C-04-064	SEGMENT 4- PLAN AND PROFILE STA 150+00 TO STA 160+00
69	C-04-065	SEGMENT 4- PLAN AND PROFILE STA 160+00 TO STA 170+00
70	C-04-066	SEGMENT 4- PLAN AND PROFILE STA 170+00 TO STA 180+00
71	C-04-067	SEGMENT 4- PLAN AND PROFILE STA 180+00 TO STA 190+00
72	C-04-068	SEGMENT 4- PLAN AND PROFILE STA 190+00 TO STA 200+00
73	C-04-069	SEGMENT 4- PLAN AND PROFILE STA 200+00 TO STA 210+00
74	C-04-070	SEGMENT 4- PLAN AND PROFILE STA 210+00 TO STA 220+51
75	C-05-071	SEGMENT 5- PLAN AND PROFILE STA 0+00 TO STA 10+00
76	C-05-072	SEGMENT 5- PLAN AND PROFILE STA 10+00 TO STA 20+00
77	C-05-073	SEGMENT 5- PLAN AND PROFILE STA 20+00 TO STA 30+00
78	C-05-074	SEGMENT 5- PLAN AND PROFILE STA 30+00 TO STA 40+00
79	C-05-075	SEGMENT 5- PLAN AND PROFILE STA 40+00 TO STA 50+00
80	C-05-076	SEGMENT 5- PLAN AND PROFILE STA 50+00 TO STA 60+00
81	C-05-077	SEGMENT 5- PLAN AND PROFILE STA 60+00 TO STA 70+00
82	C-05-078	SEGMENT 5- PLAN AND PROFILE STA 70+00 TO STA 80+00
83	C-05-079	SEGMENT 5- PLAN AND PROFILE STA 80+00 TO STA 84+29
84	C-06-080	SEGMENT 6- PLAN AND PROFILE STA 0+00 TO STA 10+00
85	C-06-081	SEGMENT 6- PLAN AND PROFILE STA 10+00 TO STA 20+00

VOLUME 2 SHEET LIST (CONT)

NO.	SHEET	TITLE
86	C-06-082	SEGMENT 6- PLAN AND PROFILE STA 20+00 TO STA 30+00
87	C-06-083	SEGMENT 6- PLAN AND PROFILE STA 30+00 TO STA 40+00
88	C-06-084	SEGMENT 6- PLAN AND PROFILE STA 40+00 TO STA 45+39
89	C-07-085	SEGMENT 7- PLAN AND PROFILE STA 0+00 TO STA 10+00
90	C-07-086	SEGMENT 7- PLAN AND PROFILE STA 10+00 TO STA 20+00
91	C-07-087	SEGMENT 7- PLAN AND PROFILE STA 20+00 TO STA 30+00
92	C-07-088	SEGMENT 7- PLAN AND PROFILE STA 30+00 TO STA 40+00
93	C-07-089	SEGMENT 7- PLAN AND PROFILE STA 40+00 TO STA 50+00
94	C-07-090	SEGMENT 7- PLAN AND PROFILE STA 50+00 TO STA 60+00
95	C-07-091	SEGMENT 7- PLAN AND PROFILE STA 60+00 TO STA 70+00
96	C-07-092	SEGMENT 7- PLAN AND PROFILE STA 70+00 TO STA 76+59
<u>STRUCTURAL</u>		
97	S-00-001	STANDARD NOTES
98	S-01-001	PLANS- BRIDGE HANGING- VICTORY TRAIL ROAD (SC-329)
99	S-01-002	PLANS- BRIDGE HANGING- BLACKSBURG HIGHWAY (S-83)
100	S-03-001	PLANS- BRIDGE HANGING- N MOUNTAIN STREET (SC-5)
101	S-00-501	DETAILS

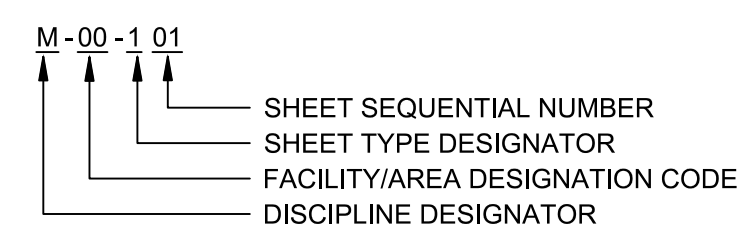


GENERAL ANNOTATION, SYMBOL, AND CALLOUT LEGENDS



Black & Veatch Corporation
Greenville, South Carolina

DRAWING NUMBERING SYSTEM



DISCIPLINE DESIGNATORS

- A ARCHITECTURAL
- C CIVIL
- D DEMOLITION
- E ELECTRICAL
- F FIRE PROTECTION
- G GENERAL
- H HVAC/BUILDING MECHANICAL
- I INSTRUMENTATION AND CONTROLS
- L LANDSCAPE
- M PROCESS MECHANICAL
- P PLUMBING
- S STRUCTURAL

AREA/FACILITY DESIGNATION CODES

REFER TO THE PROJECT SITE PLAN FOR AREA OR FACILITY DESIGNATIONS.

SHEET TYPE DESIGNATORS

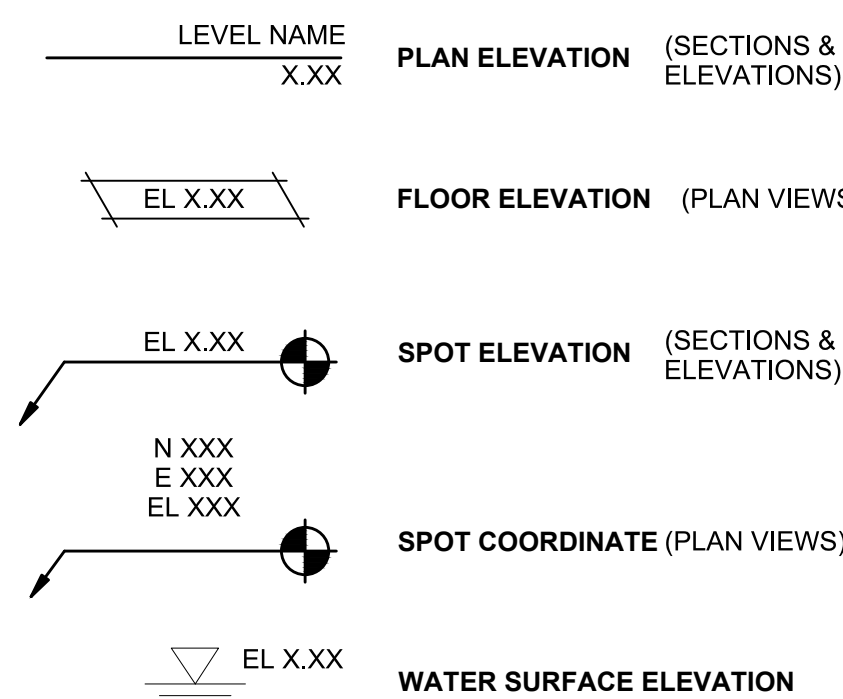
- 0 GENERAL (SYMBOLS, LEGENDS, NOTES, ETC.)
- 1 PLANS AND SECTIONS
- 2 ELEVATIONS
- 3 SCHEDULES, DIAGRAMS, SCHEMATICS
- 4 DETAILS

FILL PATTERNS

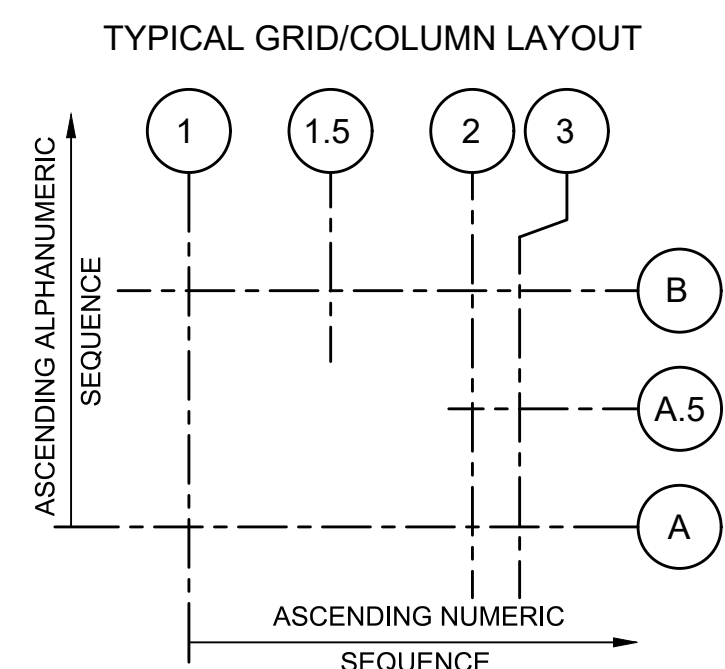
- EARTH OR GRADE
- BEDROCK
- GRANULAR FILL (CRUSHED ROCK OR GRAVEL)
- SAND
- CONCRETE
- ENGINEERED FILL
- RIPRAP
- STONE
- BRICK
- CMU
- FACE BLOCK
- CHECKERED PLATE
- GRATE
- STEEL
- ALUMINUM
- DEMOLITION

ELEVATION & GRID CALLOUTS

ELEVATION CALLOUTS



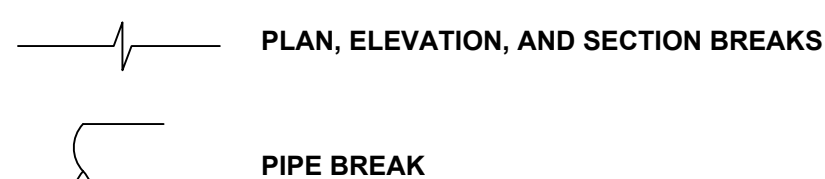
GRID/COLUMN CALLOUTS



LINE STYLES

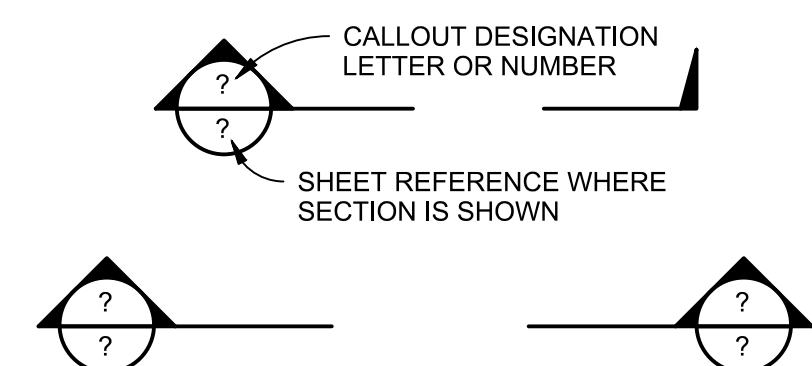
EXISTING FACILITY	_____
NEW FACILITY	_____
OTHER DISCIPLINE NEW FACILITY BACKGROUND	_____
GRID LINE OR CENTERLINE	-----
MATCH LINE	-----
EXAMPLE BOUNDARY LINE (SEE CIVIL LEGEND)	_____ PL _____
SILT FENCE LINE	_____ SF _____
EXISTING SEWER LINE (# = DIAMETER) (<-> FLOW)	----- #S -----
EXISTING STORM DRAIN CULVERT	----- X" RCP -----
EXISTING GAS LINE	----- G -----
EXISTING WATER LINE	----- WL -----
EXISTING UNDERGROUND TELEPHONE	----- UT -----
EXISTING OVERHEAD POWER	----- OHP -----

BREAKS

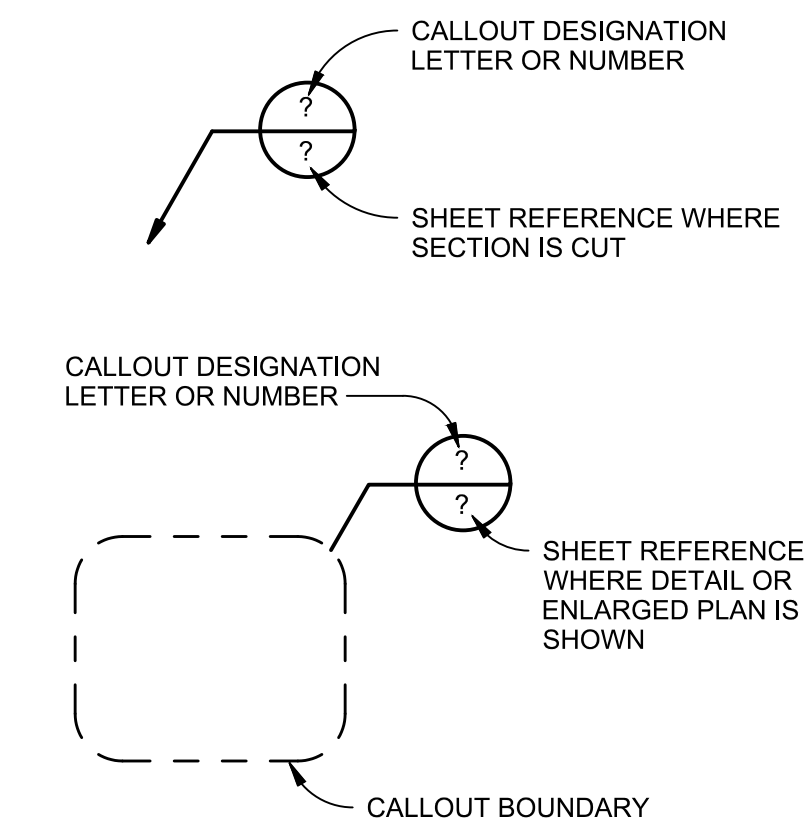


VIEW CALLOUTS

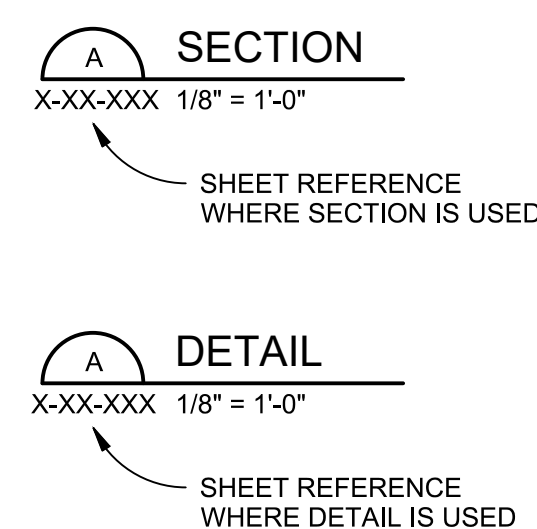
SECTION CALLOUTS



DETAIL/ENLARGED PLAN AREA CALLOUTS

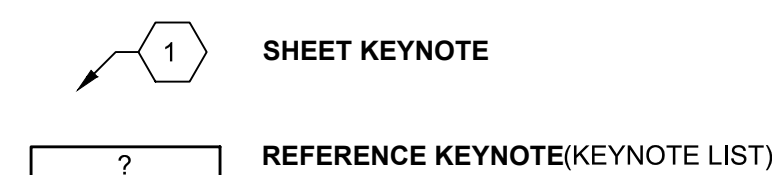


SECTION & DETAIL VIEW TITLES

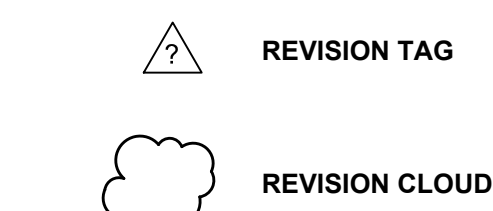


ANNOTATION

SHEET NOTES



REVISIONS



GENERAL NOTES

- SHEET G-00-003 IS COMPRISED OF STANDARD ABBREVIATIONS WHICH ARE PERTINENT TO THE CONDITIONS OF THIS SET OF DRAWINGS TO THE EXTENT APPLICABLE. ADDITIONAL OR SUPPLEMENTARY LEGENDS AND ABBREVIATIONS MAY APPEAR IN THIS SET OF DRAWINGS AND ARE TO PREVAIL IN LIEU OF SYMBOLS SHOWN ON THIS SHEET IN THE EVENT OF DIFFERENCES. SOME SYMBOLS, MATERIALS AND ABBREVIATIONS MAY NOT BE UTILIZED ON THIS SPECIFIC PROJECT.
- FIELD SURVEYS AND BASE MAPPING WERE PROVIDED BY VAUGHN & MELTON CONSULTING ENGINEERS, INC. SURVEY WAS COMPLETED IN (TO BE DETERMINED). CONTRACTOR SHALL BE AWARE THAT FIELD CONDITIONS MAY HAVE CHANGED AND SHOULD REVIEW SITE CONDITIONS ACCORDINGLY PRIOR TO BID.
- HORIZONTAL CONTROL: COORDINATES ARE IN THE SC STATE PLANE COORDINATE SYSTEM. COORDINATES ARE BASED ON NAD 83 (2011).
- VERTICAL CONTROL: ELEVATIONS ARE BASED ON NAVD 88 USGS DATUM.
- WATER, GAS, TELEPHONE, ELECTRICAL, CABLE AND SEWER SERVICE CONNECTIONS HAVE NOT BEEN LOCATED AND ARE NOT SHOWN ON THE DRAWINGS. CONTRACTOR SHALL FIELD VERIFY THE LOCATION, DEPTH AND ALIGNMENT OF ALL EXISTING UTILITIES AT LEAST 400 FEET AHEAD OF THE PIPE TRENCH AND NOTIFY ENGINEER IF RELOCATION OF SERVICE LINES IS REQUIRED. ALL COSTS OF SUCH RELOCATION SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. CALL SC811 AT 811. CONTRACTOR SHALL ALSO NOTIFY THE UTILITY OWNERS OF ANTICIPATED WORK NEAR THEIR LINES. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR THE UTILITY LOCATIONS SHOWN, AND IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE UTILITY LOCATIONS WITHIN THE LIMITS OF THIS WORK. ALL DAMAGES MADE TO EXISTING UTILITIES BY THE CONTRACTOR SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. CONTRACTOR SHALL ADOPT MEANS AND METHODS TO PROTECT THESE UTILITIES AND MINIMIZE DISRUPTION OF SERVICES. SHOULD UTILITY RELOCATION BE REQUIRED, CONTRACTOR SHALL COORDINATE WITH THE RESPECTIVE UTILITY OWNER TO PERFORM RELOCATION. CONTRACTOR SHALL COORDINATE WITH ALL UTILITIES BEFORE START OF WORK AND MAINTAIN COORDINATION DURING CONSTRUCTION.
- CONTRACTOR SHALL NOT ACCESS PROPERTY OUTSIDE OF RIGHT-OF-WAY, PERMANENT EASEMENTS, AND TEMPORARY CONSTRUCTION EASEMENTS WITHOUT WRITTEN PERMISSION FROM PROPERTY OWNER. CONTRACTOR SHALL PROVIDE TO ENGINEER A WRITTEN STATEMENT FROM PROPERTY OWNER THAT PROPERTY OWNER IS SATISFIED WITH CONTRACTOR'S REPAIR OF AFFECTED AREA OUTSIDE OF RIGHT-OF-WAY, PERMANENT EASEMENTS, AND TEMPORARY CONSTRUCTION EASEMENTS.
- CONTRACTOR SHALL CONTACT PROPERTY OWNERS 72-HOURS PRIOR TO WORKING IN RIGHT-OF-WAY, PERMANENT EASEMENTS, OR TEMPORARY CONSTRUCTION EASEMENTS ON THAT PROPERTY, AND TO SCHEDULE CONSTRUCTION ACROSS DRIVEWAYS. ACCESS TO DRIVEWAYS SHALL BE RESTORED IMMEDIATELY AFTER INSTALLATION OF TRANSMISSION MAIN.
- "SCREENED" (LIGHT) DELINEATION INDICATED ON THE DRAWINGS DENOTES EXISTING FACILITIES. "SCREENED" INFORMATION WAS TAKEN FROM EXISTING CONSTRUCTION DRAWINGS AND DATA AND SURVEYS, IS FOR REFERENCE ONLY, AND SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO THE ORDERING OF MATERIALS AND BEGINNING OF CONSTRUCTION. "BOLD" DELINEATION IS NEW WORK TO BE CONSTRUCTED UNDER THIS
- CONTRACTOR SHALL FIELD VERIFY PRECISE LOCATION, ELEVATION, AND ARRANGEMENT OF CONNECTIONS OF NEW PIPELINES WITH EXISTING PIPELINES BASED ON FIELD CONDITIONS, INCLUDING EXPOSING EXISTING PIPING TO VERIFY MATERIAL AND DIMENSIONS PRIOR TO FABRICATING NEW PIPING. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE EXISTING PIPELINES WITH NO ASSISTANCE FROM THE OWNER. CONTRACTOR SHALL PROVIDE FITTINGS, ADAPTERS, SOLID SLEEVE CLOSURES, AND HARNESS MECHANICAL COUPLING; ROTATE FITTINGS; DEFLECT JOINTS; AND MODIFY EXISTING PIPING AS APPLICABLE AND AS REQUIRED TO MAKE CONNECTIONS, INCLUDING ADJUSTMENTS FOR ANY OFFSETS IN CENTERLINE ELEVATIONS BETWEEN PIPELINES. CONTRACTOR SHALL PROVIDE TEMPORARY PLUG WITH FACTORY OUTLET SIZED AS REQUIRED FOR CONTRACTORS TESTING AND DISINFECTION WORK BEFORE MAKING CONNECTION, WHEN APPLICABLE. CONTRACTOR SHALL COORDINATE MAKING EACH CONNECTION WITH THE OWNER.
- CONTRACTOR SHALL MAINTAIN REQUIRED SEPARATION OF UTILITIES AS DESCRIBED HEREIN. CONTRACTOR SHALL IMMEDIATELY NOTIFY ENGINEER IF CONFLICTS SHOULD ARISE.
- SEWER SHALL BE LAID AT LEAST 10 FEET HORIZONTALLY FROM ANY EXISTING OR PROPOSED WATER MAIN. THE DISTANCE SHALL BE MEASURED EDGE TO EDGE. IN CASES WHERE IT IS NOT PRACTICAL TO MAINTAIN A TEN FOOT SEPARATION, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY. ENGINEER MAY ALLOW INSTALLATION OF THE SEWER CLOSER TO A WATER MAIN PROVIDED THAT THE SEWER IS LAID IN A SEPARATE TRENCH OR ON AN UNDISTURBED EARTH SHELF LOCATED ON ONE SIDE OF THE WATER MAIN AT SUCH AN ELEVATION THAT THE BOTTOM OF THE WATER MAIN IS AT LEAST 18-INCHES ABOVE THE TOP OF THE SEWER. IN CASES WHERE THE EXISTING SEWER(S) FALLS WITHIN THESE CLEARANCES, ANY DEVIATION FROM THE ALIGNMENT SHALL BE MADE IN A MANNER TO ENHANCE THESE CLEARANCES. SEWER CROSSING WATER MAIN SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL SEPARATION OF 18-INCHES BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF THE SEWER. THIS SHALL BE THE CASE WHETHER THE WATER MAIN IS EITHER ABOVE OR BELOW THE SEWER LINE. WHENEVER POSSIBLE, THE WATER MAIN SHALL BE LOCATED ABOVE THE SEWER LINE. WHERE A NEW SEWER CROSSES AN EXISTING WATER MAIN, ONE FULL LENGTH OF SEWER PIPE SHALL BE LOCATED SO BOTH JOINTS WILL BE AS FAR FROM THE WATER MAIN LINE AS POSSIBLE. WHERE A SEWER CROSSES UNDER A WATER MAIN, ADEQUATE STRUCTURAL SUPPORT SHALL BE PROVIDED FOR THE WATER MAIN TO PREVENT DAMAGE TO THE SEWER. TWELVE-INCHES OF VERTICAL CLEARANCE SHALL BE PROVIDED FROM ALL OTHER UTILITIES UNLESS OTHERWISE NOTED.
- AFTER CONSTRUCTION IS COMPLETE IN AN AREA, CONTRACTOR SHALL REPLACE ANY REMOVED OR DAMAGED PROPERTY PINS ON ANY AFFECTED PROPERTIES BY A PROFESSIONAL LAND SURVEYOR LICENSED IN THE STATE OF SOUTH CAROLINA, AT NO ADDITIONAL COST TO OWNER.
- CONTRACTOR MAY DEFLECT JOINTS AS REQUIRED TO STAY ON ALIGNMENT. DEFLECTION SHALL NOT EXCEED THE ALLOWABLE DEFLECTION OF THE MANUFACTURER. FITTINGS MUST BE INSTALLED AS SHOWN ON THE DRAWINGS UNLESS DELETION OR SUBSTITUTION IS APPROVED BY THE OWNER.
- MAIL BOXES, SIGNS, RETAINING WALLS, HEADWALLS, FENCES, OUTLET STRUCTURES, DRIVEWAY CULVERTS, GUARDRAILS, DRIVEWAYS, ETC. SHALL BE REMOVED AND REPLACED WITHOUT DAMAGE BY THE CONTRACTOR WHEN NECESSARY FOR PIPE INSTALLATION. IF DAMAGED BY CONTRACTOR, CONTRACTOR SHALL REPLACE TO THE SATISFACTION OF PROPERTY OWNER AND ENGINEER AT NO ADDITIONAL COST TO OWNER.
- UNLESS OTHERWISE NOTED, ALL ROADS AND HIGHWAYS HAVE ASPHALT SURFACE. CONTRACTOR SHALL VERIFY SUBSURFACE MATERIAL. CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL AND DISPOSAL OF EXISTING PAVEMENT AND SUBBASE REGARDLESS OF THICKNESS AND MATERIALS ENCOUNTERED.
- ALL EXCESS EXCAVATED MATERIAL OR UNSUITABLE MATERIAL SHALL BE DISPOSED OF BY CONTRACTOR AT NO ADDITIONAL COST TO OWNER.
- CONTRACTOR SHALL CONTACT PROPERTY OWNERS IN ADVANCE OF DRIVEWAY CROSSINGS TO DISCUSS SCHEDULING OF ANY CONSTRUCTION ACTIVITIES THAT WOULD INHIBIT ACCESS USING EXISTING DRIVEWAYS. CONTRACTOR SHALL COORDINATE WITH PROPERTY OWNERS TO MINIMIZE TIMES OF INACCESSIBILITY.
- LIMITS OF CLEARING AND DISTURBANCE SHALL BE CONFINED TO THE EXTENTS OF THE PERMANENT/TEMPORARY EASEMENTS AND/OR RIGHT-OF-WAY.
- THE LOCATION OF TEST HOLES INDICATED ON THE DRAWINGS IS APPROXIMATE. CONTRACTOR SHALL REFER TO THE GEOTECHNICAL REPORT FOR ACTUAL TEST HOLE LOCATIONS AND THE FINDINGS OF THE GEOTECHNICAL INVESTIGATIONS.
- CONTRACTOR SHALL COMPLY WITH THE GOVERNING AGENCY NPDES CONSTRUCTION REQUIREMENTS, AND SHALL PROVIDE APPROPRIATE MITIGATION MEASURES OR PROTECTION AND RESTORATION AT ALL LOCATIONS AS REQUIRED BY THEIR OPERATIONS, AND AS DIRECTED BY ENGINEER. SPECIAL CONSTRUCTION REQUIREMENTS, TEMPORARY PROTECTIVE FENCING OR BARRICADES, SHEETING, SHORING, EROSION PROTECTION, AND SURFACE RESTORATION AT CERTAIN LOCATIONS ARE INDICATED ON THE DRAWINGS AND SPECIFIED TO BRING THE CONTRACTOR'S ATTENTION TO SENSITIVE AREAS.
- UNLESS OTHERWISE SPECIFIED, INDICATED ON THE DRAWINGS, OR DIRECTED BY THE ENGINEER, INSTALL PIPELINES SLOPING DOWNWARD FROM AN AIR VALVE. HIGH POINTS IN PIPELINES WILL NOT BE PERMITTED EXCEPT AT LOCATIONS OF AIR VALVES AS INDICATED ON THE DRAWINGS.

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PUMP STATIONS

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DESIGNED:	DJM
DETAILED:	---
CHECKED:	RTC, CMW, DLC
APPROVED:	---
DATE:	JUNE 2022
PROJECT NO.:	410381

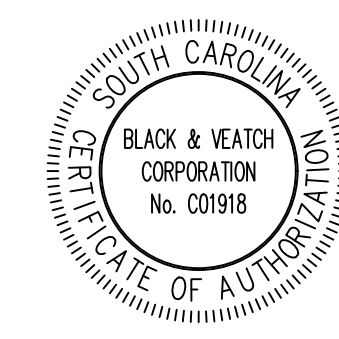
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GENERAL, CIVIL, AND PROCESS MECHANICAL ABBREVIATIONS



Black & Veatch Corporation
Greenville, South Carolina

A	AB AGGREGATE BASE ABV ABOVE AC ASPHALT CONCRETE ACP ASBESTOS CEMENT PIPE AD AREA DRAIN, ANODE ADD ADDITIONAL ADJ ADJUSTABLE, ADJACENT ADMIN ADMINISTRATION ADWF AVERAGE DRY-WEATHER FLOW AFF ABOVE FINISHED FLOOR AFG ABOVE FINISHED GRADE AH AHEAD ALT ALTERNATE, ALTERNATIVE ANC ANCHOR AP ACCESS PANEL, ANGLE POINT APPR APPROACH APPROX APPROXIMATE, APPROXIMATELY AR ANCHOR ROD ARCH ARCHITECTURAL ASSY ASSEMBLY ATM ATMOSPHERE, ATMOSPHERIC AUTO AUTOMATIC AUX AUXILIARY AVG AVERAGE AWG AMERICAN WIRE GAUGE AWWA AMERICAN WATER WORKS ASSOCIATION AWWF AVERAGE WET-WEATHER FLOW	E	E EAST, EASTING EA EACH ECC ECCENTRIC ECC RED ECCENTRIC REDUCER EFF EFFLUENT, EFFICIENCY EG EXISTING GRADE EJ EXPANSION JOINT EL ELEVATION ELB ELBOW ELL ELBOW ELEC ELECTRIC, ELECTRICAL EMER EMERGENCY ENC ENCLOSURE ENCL ENCLOSURE EOL END OF LINE EOP EDGE OF PAVEMENT EOS EDGE OF SLAB EQ EQUAL EQUIP EQUIPMENT EVC END OF VERTICAL CURVE EW EACH WAY EXH EXHAUST EXIST EXISTING EXP EXPANSION, EXPOSED EXT EXTENSION, EXTERIOR, EXTERNAL	L	L LENGTH, LONG, LOW LAT LATERAL, LATITUDE LB(S) POUND(S) LC LENGTH OF CURVE LF LINEAR FEET LH LEFT HAND LIN LINEAL, LINEAR LONG LONGITUDE LP LOW POINT, LOW PRESSURE LT LEFT	REQD REQUIRED RET RETURN REV REVISION, REVISED, REVERSED RH RIGHT HAND RO REVERSE OSMOSIS RPM REVOLUTIONS PER MINUTE RR RAILROAD RS RISING STEM RT RIGHT ROW RIGHT OF WAY	
B	B BORE HOLE B TO B BACK TO BACK BAL BALANCE BC BACK OF CURB BET BETWEEN BF BLIND FLANGE BHP BRAKE HORSEPOWER BITUM BITUMINOUS BLDG BUILDING BLK BLOCK BM BENCHMARK BNR BIOLOGICAL NUTRIENT REMOVAL BOD BIOLOGICAL/BIOCHEMICAL OXYGEN DEMAND BOF BOTTOM OF FOOTING BOP BOTTOM OF PIPE BOT BOTTOM BP BACK PRESSURE BRG BEARING BS BOTH SIDES BU BELL-UP BVC BEGINNING OF VERTICAL CURVE	F	F FAHRENHEIT, FACE F TO F FACE TO FACE FAB FABRICATE(D)TION FC FACE OF CONCRETE, FAIL CLOSED FCA FLANGED COUPLING ADAPTER FD FLOOR DRAIN FF FINISHED FLOOR FG FINISHED GRADE FH FIRE HYDRANT FIG FIGURE FL FLOOR, FLOW LINE FLEX FLEXIBLE FLG FLANGE(D) FM FORCE MAIN FMH FLEXIBLE METAL HOSE FO FAIL OPEN FOB FLAT ON BOTTOM FOM FACE OF MASONRY FOT FLAT ON TOP FPS FEET PER SECOND FRP FIBERGLASS REINFORCED PLASTIC FS FAR SIDE, FLOOR SLEEVE FT FOOT, FEET FTG FOOTING FURN FURNISH, FURNISHED FWD FORWARD	M	MAINT MAINTENANCE MAN MANUAL(LY) MAX MAXIMUM MBR MEMBRANE BIOREACTOR MC MECHANICAL COUPLING MECH MECHANICAL MED MEDIUM MF MICROFILTRATION MFR MANUFACTURER MG MILLION GALLONS MG/L MILLIGRAMS PER LITER MGD MILLION GALLONS PER DAY MH MAINTENANCE HOLE, MANHOLE MIN MINIMUM, MINUTE MISC MISCELLANEOUS MJ MECHANICAL JOINT MJRG MECHANICAL JOINT RETAINER GLAND MJTR MECHANICAL JOINT WITH TIE ROD MO MOTOR OPERATED MSL MEAN SEA LEVEL MTD MOUNTED MTL MATERIAL MTR MOTOR MW MONITORING WELL	S	S SECOND, SLOPE, SOUTH SCHED SCHEDULE SCFM STANDARD CUBIC FEET PER MINUTE SD STORM DRAIN SEC SECOND SECT SECTION SF SQUARE FEET SH SHEET SIM SIMILAR SP STEEL PIPE SPA SPACING, SPACES SPEC(S) SPECIFICATION(S) SPL SPECIAL SPLY SUPPLY SQ SQUARE SS STAINLESS STEEL SS SANITARY SEWER ST SWR STORM SEWER STA STATION STD STANDARD STL STEEL STOR STORAGE STR STRUCTURAL SUSP SUSPENDED SYM SYMMETRICAL SYS SYSTEM
C	C CURVE C TO C CENTER TO CENTER CB CATCH BASIN CF CUBIC FEET CFM CUBIC FEET PER MINUTE CFS CUBIC FEET PER SECOND C&G CURB AND GUTTER CIP CAST IRON PIPE CISP CAST IRON SOIL PIPE CL CLASS C/L CENTERLINE CLG CEILING CLR CLEAR, CLEARANCE CLSM CONTROLLED LOW STRENGTH MATERIAL CMC CEMENT MORTAR COATED CML CEMENT MORTAR LINED CMP CORRUGATED METAL PIPE CO CLEAN OUT, COMPANY COD CHEMICAL OXYGEN DEMAND COL COLUMN COMB COMBINATION COMB SWR COMBINED SEWER CONC CONCRETE CONN CONNECTION CONST CONSTRUCTION CONT CONTINUED, CONTINUOUS, CONTINUATION, CONTROL CONTR CONTRACTOR COR CORNER CORR CORRIDOR, CORRUGATED CP CONTROL POINT, CATHODIC PROTECTION, CATCH POINT CPLG COUPLING CPVC CHLORINATED POLYVINYL CHLORIDE CSP CORRUGATED STEEL PIPE CTR(S) CENTER(S) CTS CORROSION/CATHODIC TEST STATION CU CUBIC, COPPER CY CUBIC YARD	G	G GAS GA GAUGE GAL GALLON GALV GALVANIZED GB GRADE BREAK GC GROOVED COUPLING GEN GENERAL, GENERATOR GL GLASS GM GAS METER GPD GALLONS PER DAY GPM GALLONS PER MINUTE GR GRADE	N	N NORTH, NORTHING, NITROGEN (TOTAL AS N) N/A NOT APPLICABLE NAD NORTH AMERICAN DATUM (HORIZONTAL) NAVD NORTH AMERICAN VERTICAL DATUM NC NORMALLY CLOSED NF NEAR FACE NIC NOT IN CONTRACT NO NORMALLY OPEN NO. NUMBER(S) NOM NOMINAL NPSH NET POSITIVE SUCTION HEAD NPSSH NET POSITIVE SUCTION HEAD REQUIRED NPT NATIONAL PIPE THREAD NRS NON-RISING STEM NS NEAR SIDE NTS NOT TO SCALE	T	T TELEPHONE, TOP TAN TANGENT TBC TOP BACK OF CURB TBD TO BE DETERMINED TBM TEMPORARY BENCHMARK TC TOP OF CURB TDS TOTAL DISSOLVED SOLIDS TEMP TEMPERATURE, TEMPORARY TH TEST HOLE THD THREADED THK THICK, THICKNESS TOC TOP OF CONCRETE, TABLE OF CONTENTS, TOTAL ORGANIC CARBON TOF TOP OF FOOTING TOM TOP OF MASONRY TOP TOP OF PIPE TOW TOP OF WALL TP TEST PIT TRANS TRANSFORMER TS TOTAL SOLIDS TSS TOTAL SUSPENDED SOLIDS TYP TYPICAL
D	D DOOR DB DUCT BANK DBL DOUBLE DEG DEGREE DEPT DEPARTMENT DET DETAIL DI DROP INLET, DUCTILE IRON DIA DIAMETER DIFF DIFFUSER DIM DIMENSION DIP DUCTILE IRON PIPE DISCH DISCHARGE DIST DISTRIBUTION DIV DIVISION DMJ DISMANTLING JOINT DN DOWN DR DRAIN DW DRY WELL DWG(S) DRAWING(S)	H	H HIGH, HOUR HDG HOT-DIPPED GALVANIZED HDPE HIGH DENSITY POLYETHYLENE HEX HEAT EXCHANGER HGT HEIGHT HH HANDHOLE HMC HARNESSED MECHANICAL COUPLING HMJ HARNESSED MECHANICAL JOINT HORIZ HORIZONTAL HP HIGH POINT, HIGH PRESSURE, HORSEPOWER HR HOUR, HANDRAIL HS HIGH STRENGTH HVAC HEATING, VENTILATING AND AIR CONDITIONING HWY HIGHWAY HYDRO HYDRO-PNEUMATIC, HYDROGENERATION	O	OC ON CENTER, ODOR CONTROL OD OUTSIDE DIAMETER OF OUTSIDE FACE, OVERFLOW OH OVERHEAD OPER OPERATING OPNG OPENING OPP OPPOSITE OZ OUNCE	U	UB UTILITY BOX UF ULTRAFILTRATION UG UNDERGROUND UNO UNLESS NOTED OTHERWISE UP UTILITY POLE USGS UNITED STATES GEOLOGICAL SURVEY UV ULTRAVIOLET
J	J JOINT	I	I INSIDE DIAMETER IE INVERT ELEVATION IF INSIDE FACE IN INCH(ES) INCL INCLUDING INCR INCREASE INST INSTRUMENT, INSTRUMENTATION INSUL INSULATE, INSULATED, INSULATING INT INTERIOR, INTERNAL INV INVERT IPS IRON PIPE SIZE	P	P&ID PIPING/PROCESS AND INSTRUMENTATION DIAGRAM P PHOSPHORUS (TOTAL AS P) PPM PARTS PER MILLION PC POINT OF CURVATURE PCC POINT OF COMPOUND CURVATURE PCCP PRESTRESSED CONCRETE CYLINDER PIPE PE PLAIN END PG PRESSURE GAUGE PH PIPE HANGER PI POINT OF INTERSECTION PNI(S) PANEL(S), PANEL BOARD(S) POC POINT ON CIRCULAR CURVE, POINT OF CONNECTION POT POINT ON TANGENT PP POWER POLE PROJ PROJECTION PRS PRESSURE REDUCING STATION PS PIPE SUPPORT PSF POUNDS PER SQUARE FOOT PSI POUNDS PER SQUARE INCH PSIA POUNDS PER SQUARE INCH ABSOLUTE PSIG POUNDS PER SQUARE INCH GAUGE PT POINT OF TANGENCY, POINT PVC POLYVINYL CHLORIDE, POINT OF VERTICAL CURVATURE PVT POINT OF VERTICAL TANGENCY PVCP POLYVINYL CHLORIDE PIPE PVI POINT OF VERTICAL INTERSECTION PVMT PAVEMENT	V	V VALVE (SEE P&ID ABBREVIATIONS), VERTICAL, VOLT, VENT VAC VACUUM VB VALVE BOX VC VERTICAL CURVE VCP VITRIFIED CLAY PIPE VERT VERTICAL VIF VERIFY IN FIELD VOCs VOLATILE ORGANIC COMPOUNDS VP VAPOR PRESSURE
K	KVA KILOVOLT AMPERE	Q	Q RATE OF FLOW QCPLG QUICK COUPLING	R	R RADIUS, RISER R/W RIGHT OF WAY RCP REINFORCED CONCRETE PIPE RCPP REINFORCED CONCRETE CYLINDER PIPE RECIRC RECIRCULATING RED REDUCER, REDUCING REF REFERENCE REINF REINFORCED, REINFORCING REM REMOVABLE, REMOVE	W	W WEST, WIDE, WATER W/ WITH WC WATER COLUMN WEF WATER ENVIRONMENT FEDERATION W WATER LEVEL WM WATER METER W/O WITHOUT WP WATERPROOF WS WATERSTOP WS WATER SURFACE WSL WATER SURFACE LEVEL WT WEIGHT WW WETWELL

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PROJECT GATEWAY
VOLUME 1 : SEWAGE
PUMP STATIONS

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NOT FOR
CONSTRUCTION

REVISIONS AND RECORD OF ISSUE

DESIGNED:	DJM
DETAILED:	----
CHECKED:	RTC, CMW, DLC
APPROVED:	----
DATE:	JUNE 2022
PROJECT NO.:	410381

FACILITY OR AREA CODE

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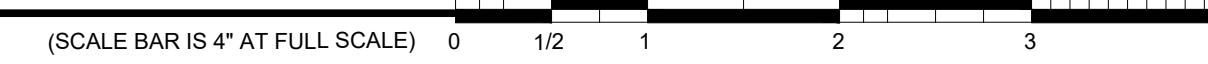
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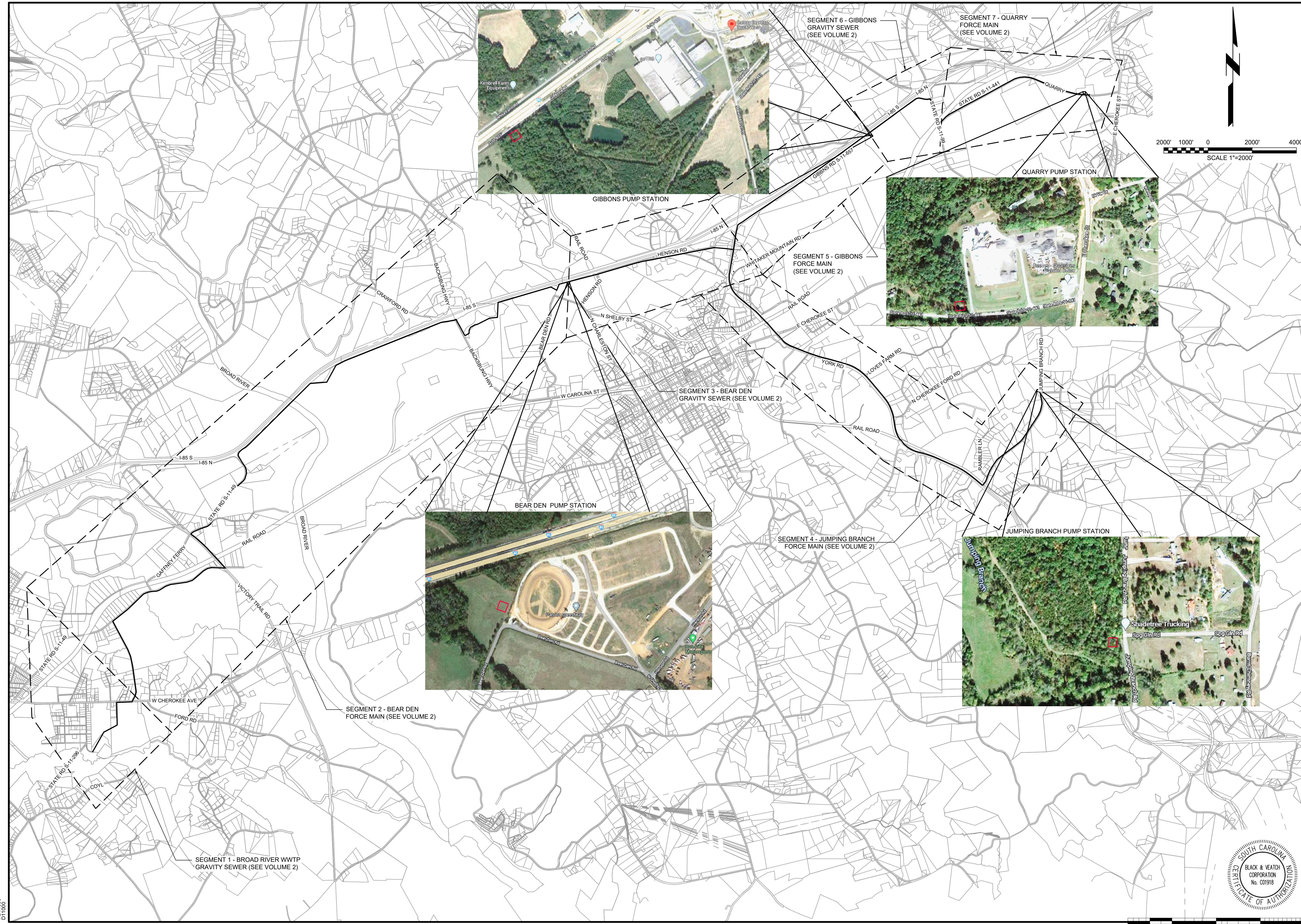
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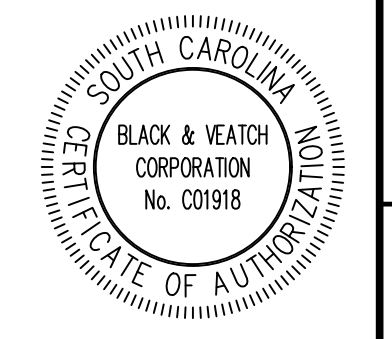
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CIVIL

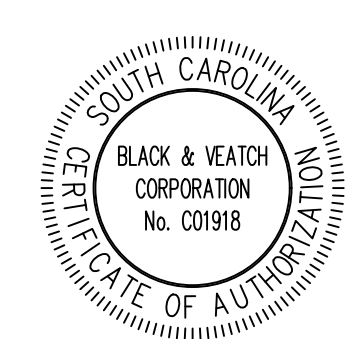
QUARRY SPS - SITE PLAN

C-01-101

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SITE PLAN



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VOLUME 1 : SEWAGE
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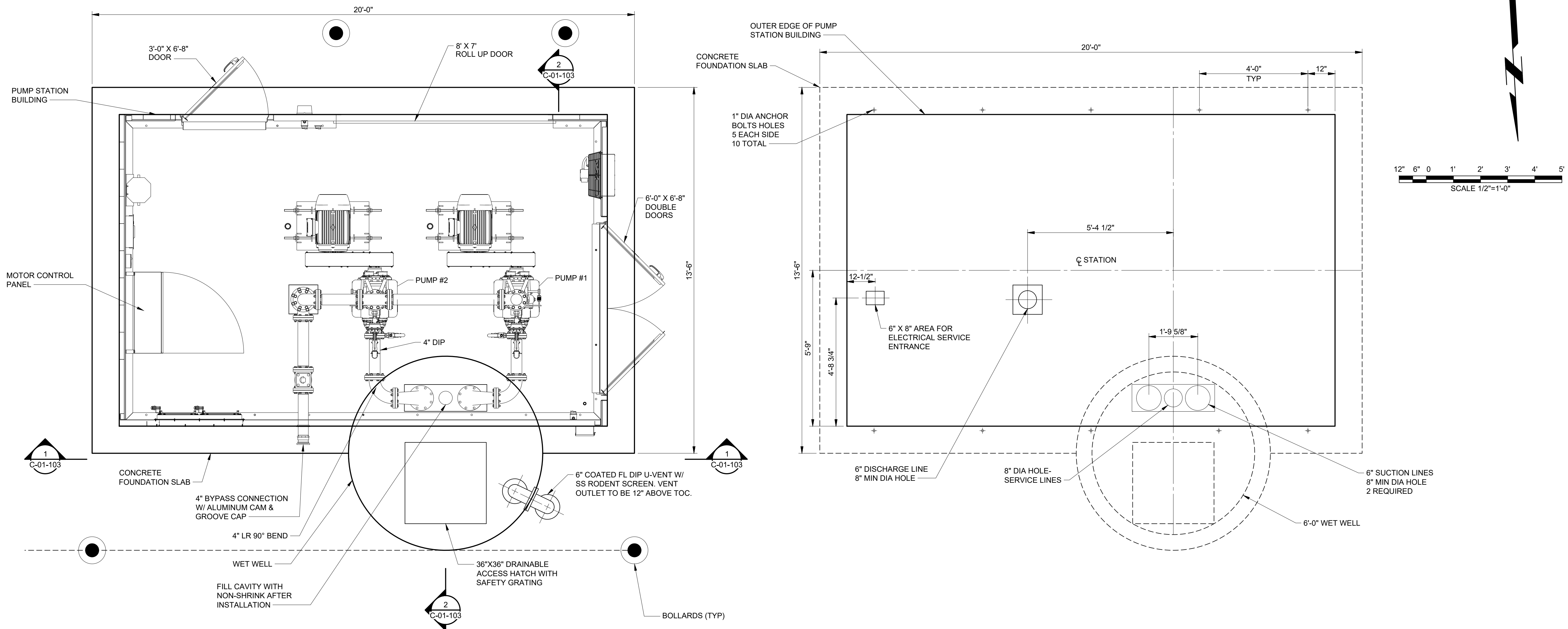
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QUARRY SPS - PUMP
STATION PLANS

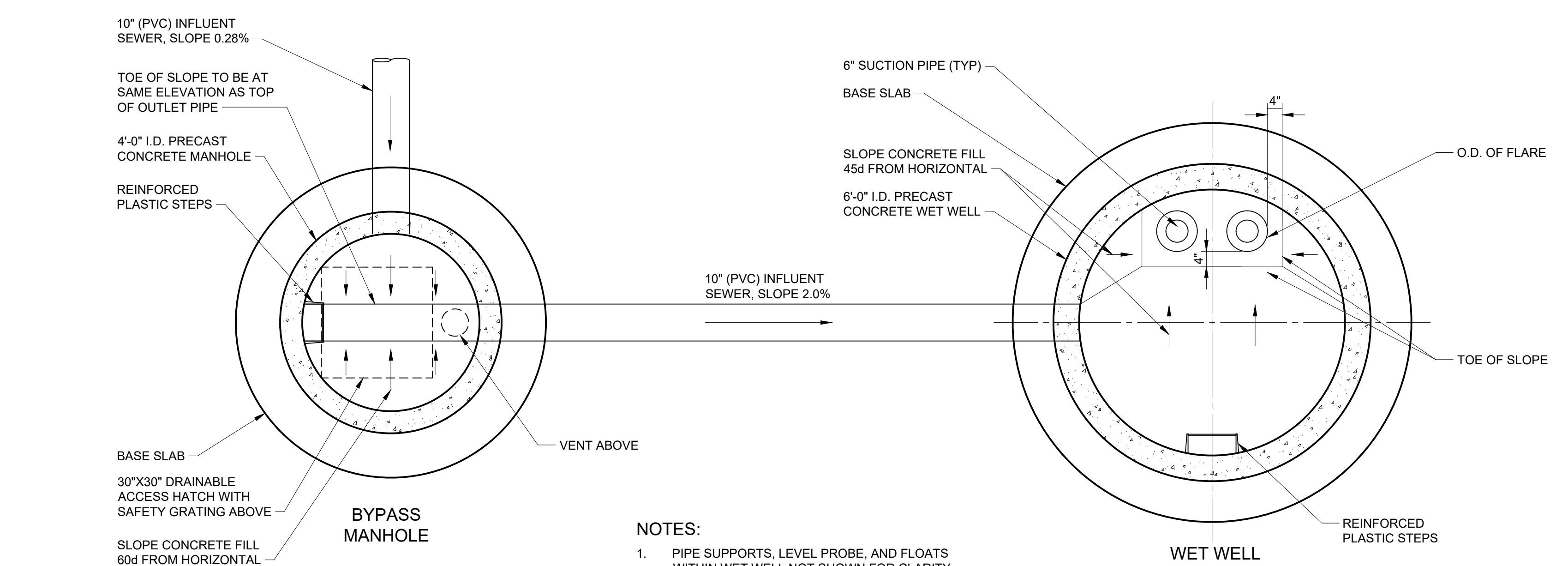
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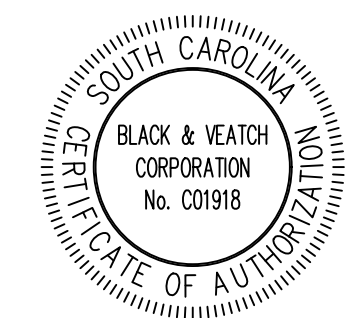
QUARRY SPS FLOOR PLAN

QUARRY SPS BASE FLOOR PLAN



- NOTES:**
- PIPE SUPPORTS, LEVEL PROBE, AND FLOATS WITHIN WET WELL NOT SHOWN FOR CLARITY.

**QUARRY SPS WET WELL AND
BYPASS MANHOLE PLAN**



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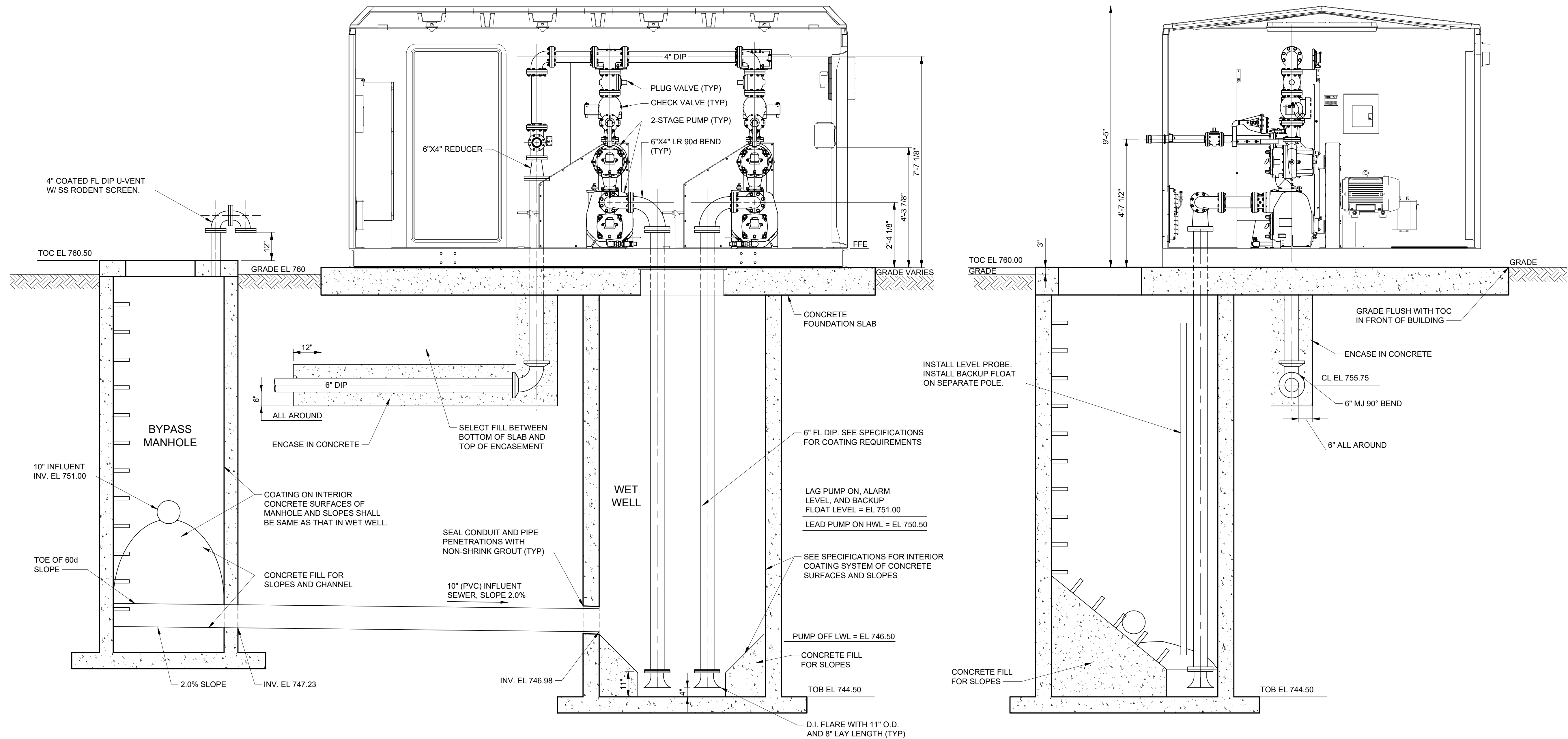
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QUARRY SPS - PUMP
STATION SECTIONS

C-01-103

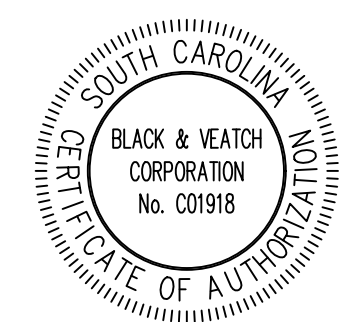
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- NOTES:**
- PIPE SUPPORTS ARE NOT SHOWN. PROVIDE PIPE SUPPORTS IN ACCORDANCE WITH SPECIFICATION SECTION 15140.

SECTION 1
C-01-102

SECTION 2
C-01-102



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SITE PLAN



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PROJECT GATEWAY
VOLUME 1 : SEWAGE
PUMP STATIONS

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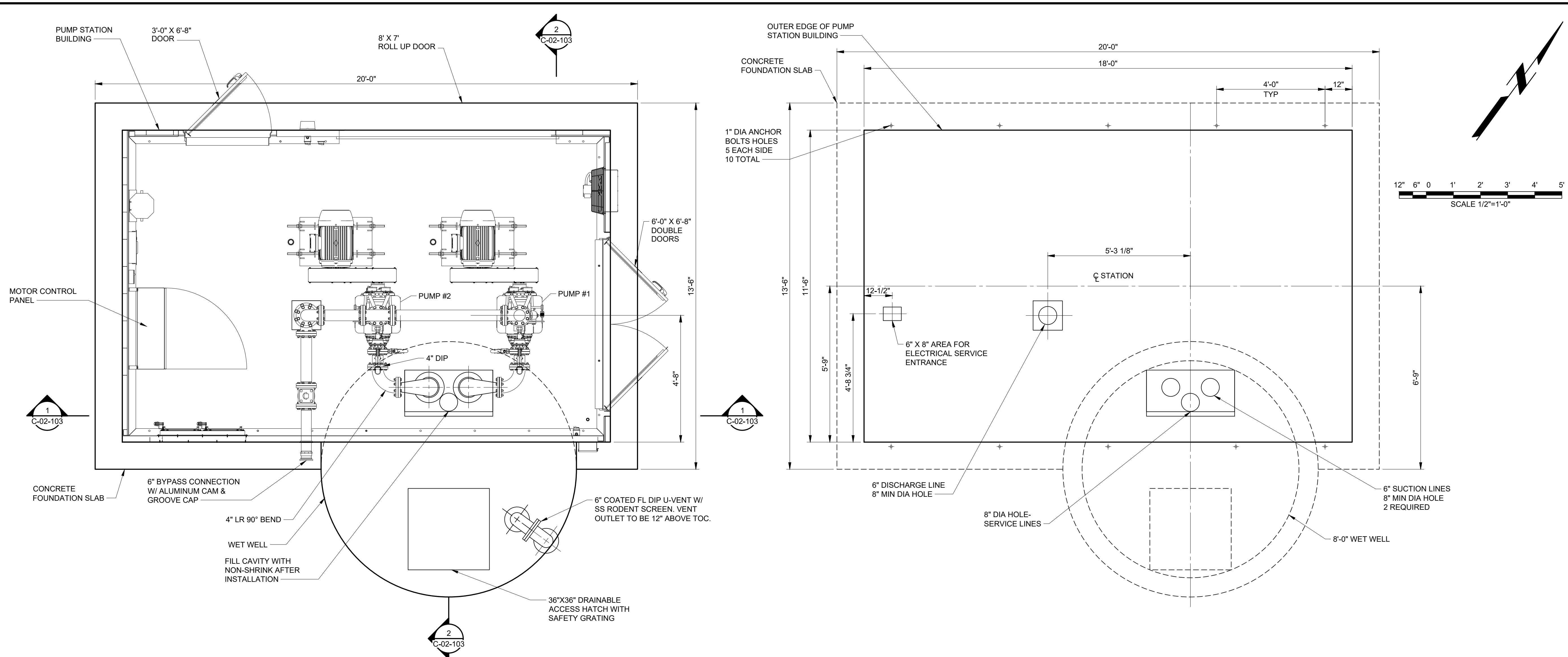
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GIBBONS SPS - PUMP
STATION PLANS

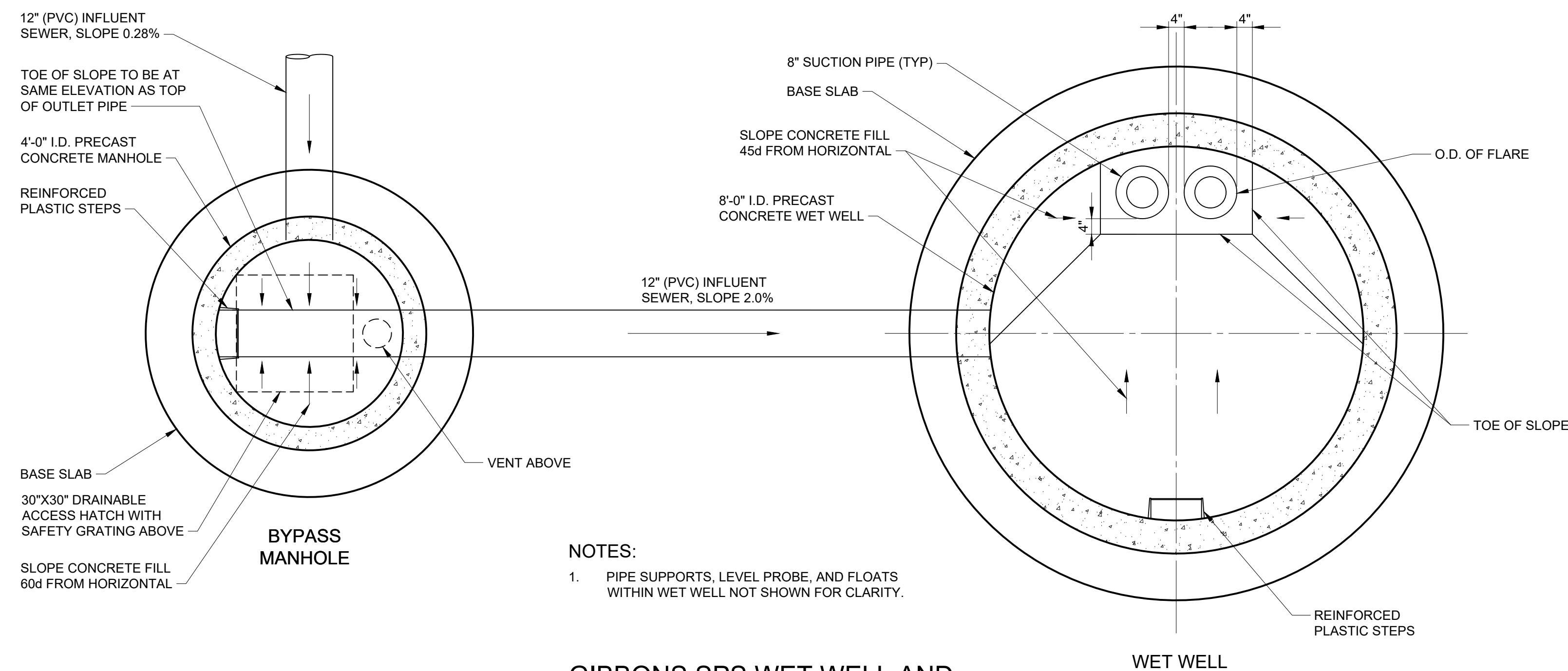
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GIBBONS SPS FLOOR PLAN

GIBBONS SPS BASE FLOOR PLAN



- NOTES:**
- PIPE SUPPORTS, LEVEL PROBE, AND FLOATS WITHIN WET WELL NOT SHOWN FOR CLARITY.

**GIBBONS SPS WET WELL AND
BYPASS MANHOLE PLAN**

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PROJECT GATEWAY
VOLUME 1 : SEWAGE
PUMP STATIONS

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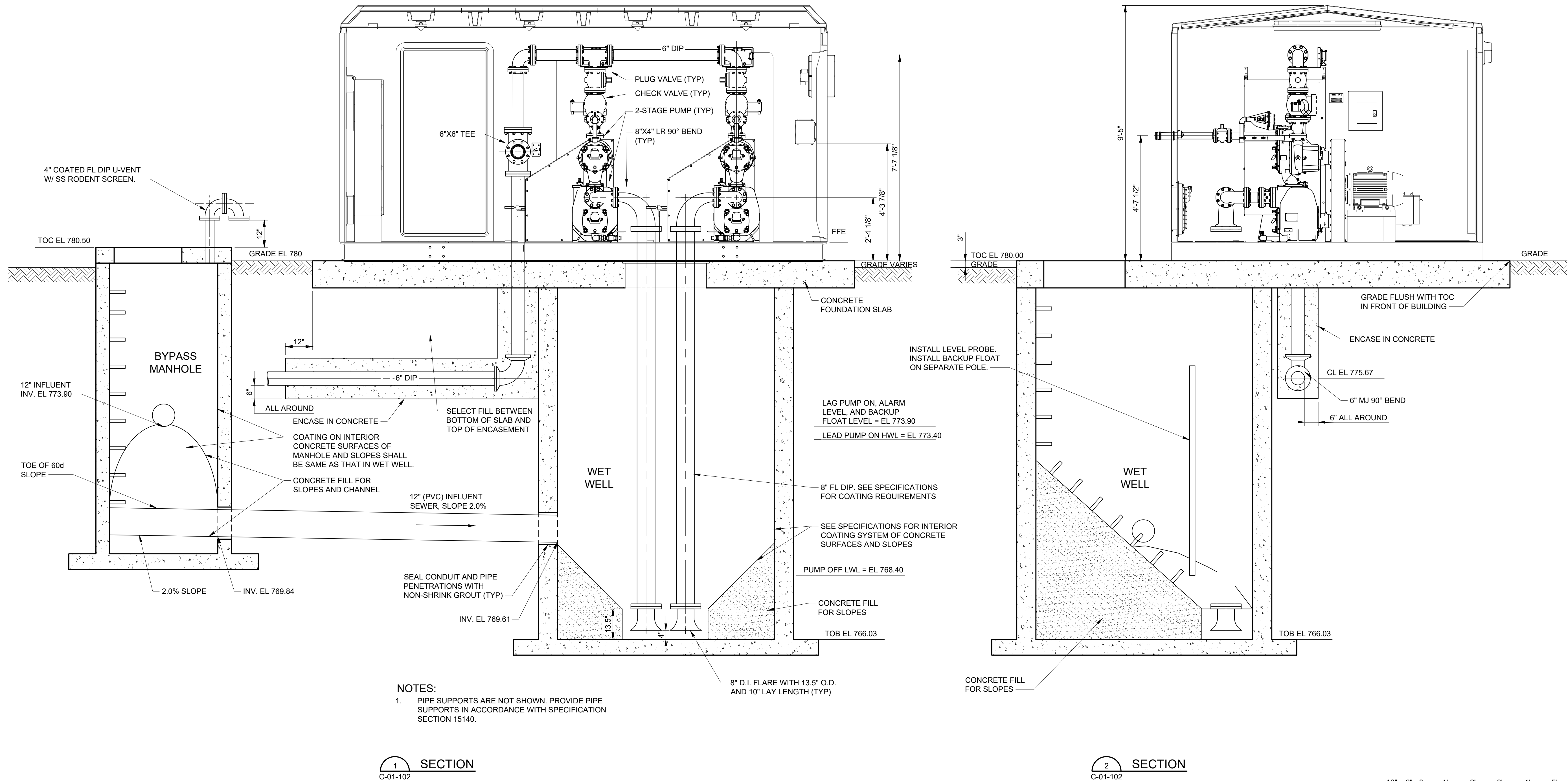
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GIBBONS SPS - PUMP
STATION SECTIONS

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VOLUME 1 : SEWAGE
PUMP STATIONS

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REVISIONS AND RECORD OF ISSUE

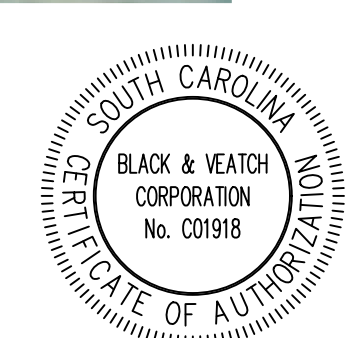
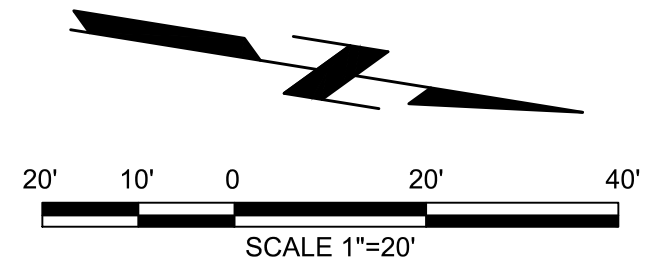
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DETAILED:	--
CHECKED:	RTC, CMW, DLC
APPROVED:	----
DATE:	JUNE 2022
PROJECT NO.:	410381

CIVIL

JUMPING BRANCH SPS -
SITE PLAN

C-03-101

XXX
OF
XXX



SUBCONSULTANT:

GAFFNEY BOARD OF PUBLIC WORKS

PROJECT GATEWAY
VOLUME 1 : SEWAGE
PUMP STATIONS

**PRELIMINARY
NOT FOR
CONSTRUCTION**

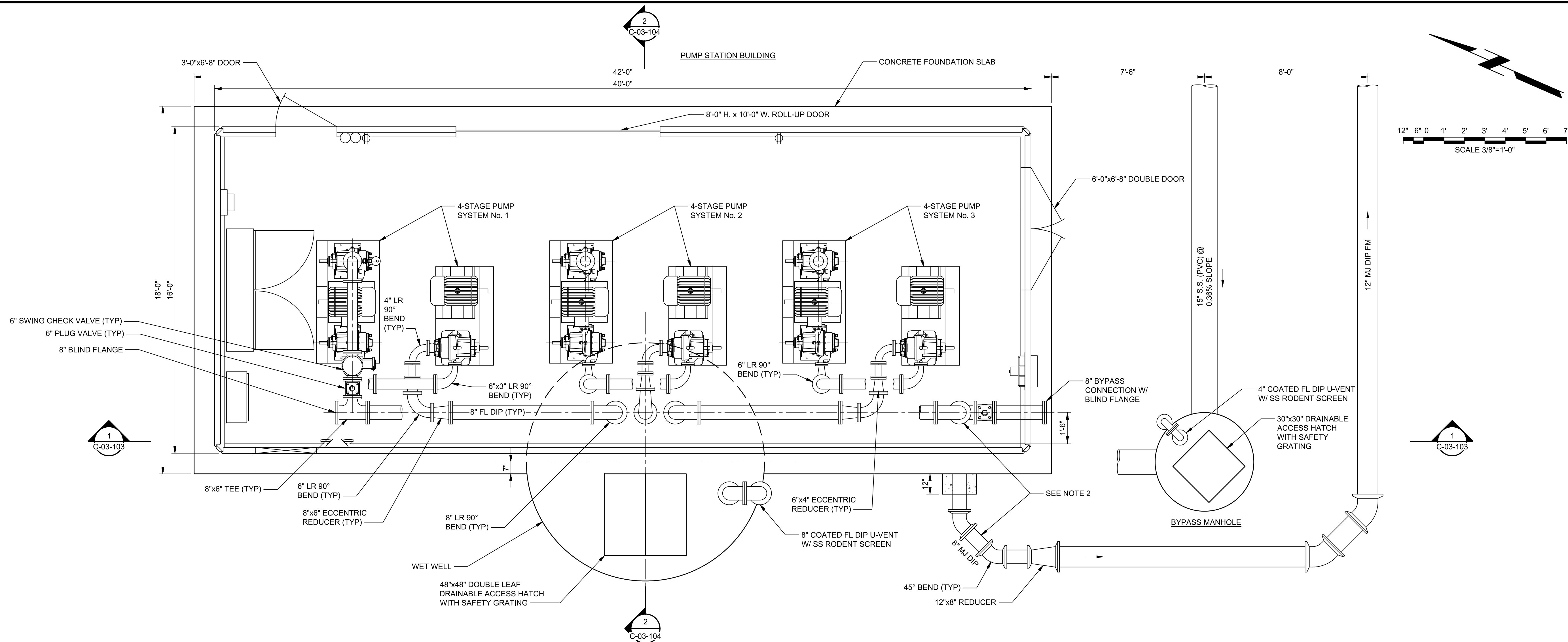
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DESIGNED:	DJM
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DATE:	JUNE 2022
PROJECT NO.:	410381

CIVIL

JUMPING BRANCH SPS -
PUMP STATION PLANS

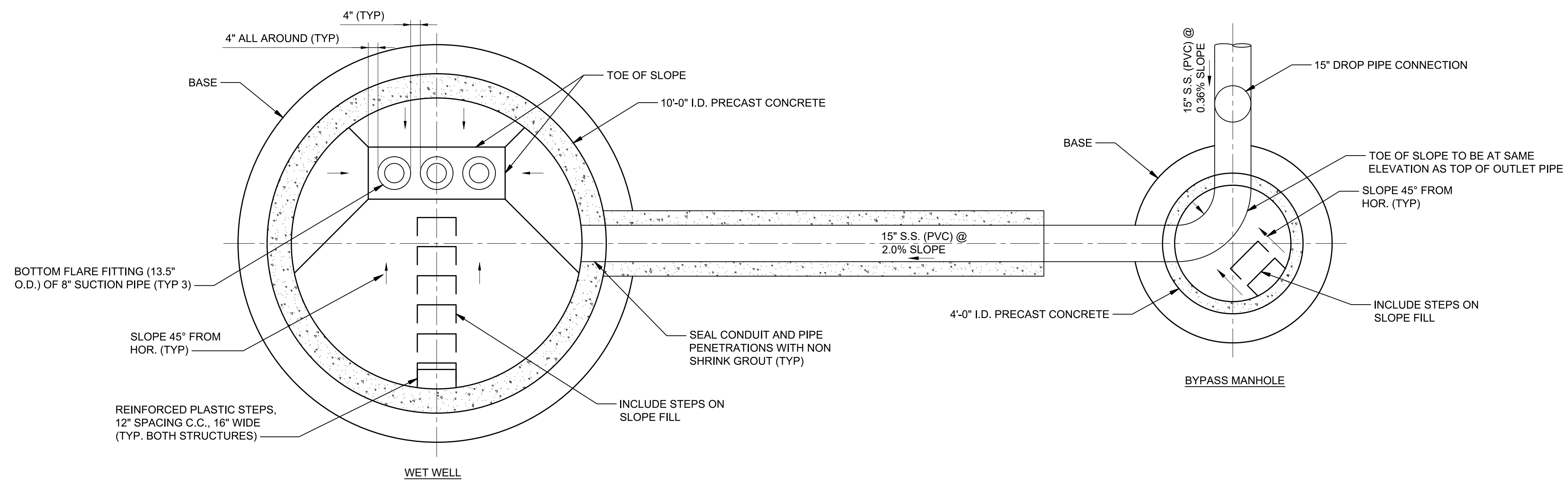
C-03-102

XXX
OF
XXX



JUMPING BRANCH SPS FLOOR PLAN

- NOTES:
1. ALL JOINTS ON DISCHARGE PIPING AND FORCE MAIN SHALL BE RESTRAINED TYPE WITHIN SITE PROPERTY.
 2. SEE SPECIFICATIONS FOR INTERIOR LINING REQUIREMENTS OF DIP EXPOSED TO SEWAGE.



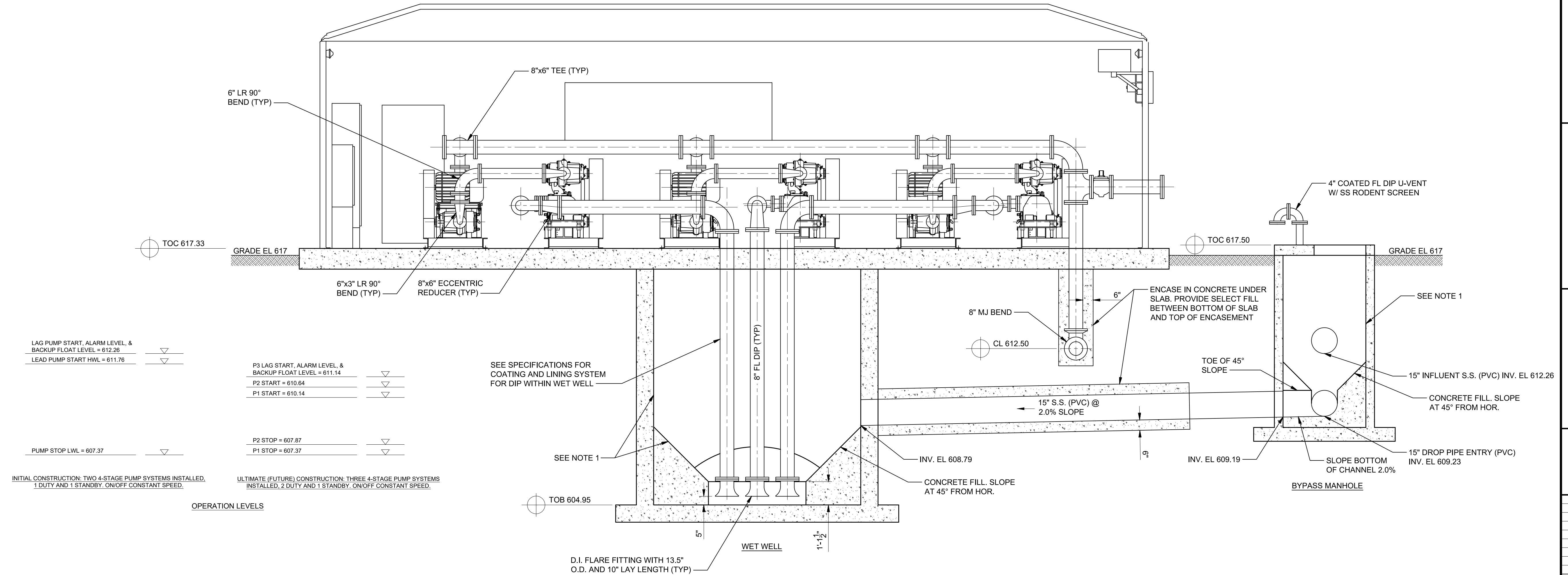
JUMPING BRANCH SPS WET WELL AND BYPASS MANHOLE PLAN

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- NOTES:
- SEE SPECIFICATIONS FOR INTERIOR COATING SYSTEM FOR CONCRETE SURFACES AND SLOPES WITHIN WET WELL. APPLY SAME COATING TO INTERIOR SURFACES OF BYPASS MANHOLE.
 - PIPE SUPPORTS ARE NOT SHOWN. PROVIDE PIPE SUPPORTS IN ACCORDANCE WITH SPECIFICATION SECTION 15140.

PUMP STATION BUILDING



LAG PUMP START, ALARM LEVEL, & BACKUP FLOAT LEVEL = 612.26
LEAD PUMP START HWL = 611.76

P3 LAG START, ALARM LEVEL, & BACKUP FLOAT LEVEL = 611.14
P2 START = 610.64
P1 START = 610.14

PUMP STOP LWL = 607.37

P2 STOP = 607.87
P1 STOP = 607.37

INITIAL CONSTRUCTION: TWO 4-STAGE PUMP SYSTEMS INSTALLED, 1 DUTY AND 1 STANDBY, ON/OFF CONSTANT SPEED.

ULTIMATE (FUTURE) CONSTRUCTION: THREE 4-STAGE PUMP SYSTEMS INSTALLED, 2 DUTY AND 1 STANDBY, ON/OFF CONSTANT SPEED.

OPERATION LEVELS

SEE SPECIFICATIONS FOR COATING AND LINING SYSTEM FOR DIP WITHIN WET WELL

SEE NOTE 1

CONCRETE FILL, SLOPE AT 45° FROM HOR.

D.I. FLARE FITTING WITH 13.5\"/>

SECTION 1
C-03-102

GAFFNEY BOARD OF PUBLIC WORKS

PROJECT GATEWAY VOLUME 1 : SEWAGE PUMP STATIONS

PRELIMINARY NOT FOR CONSTRUCTION

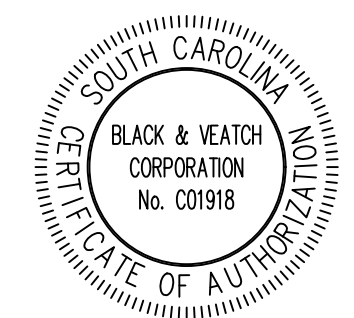
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DETAILED:	--
CHECKED:	RTC, CMW, DLC
APPROVED:	----
DATE:	JUNE 2022
PROJECT NO.:	410381

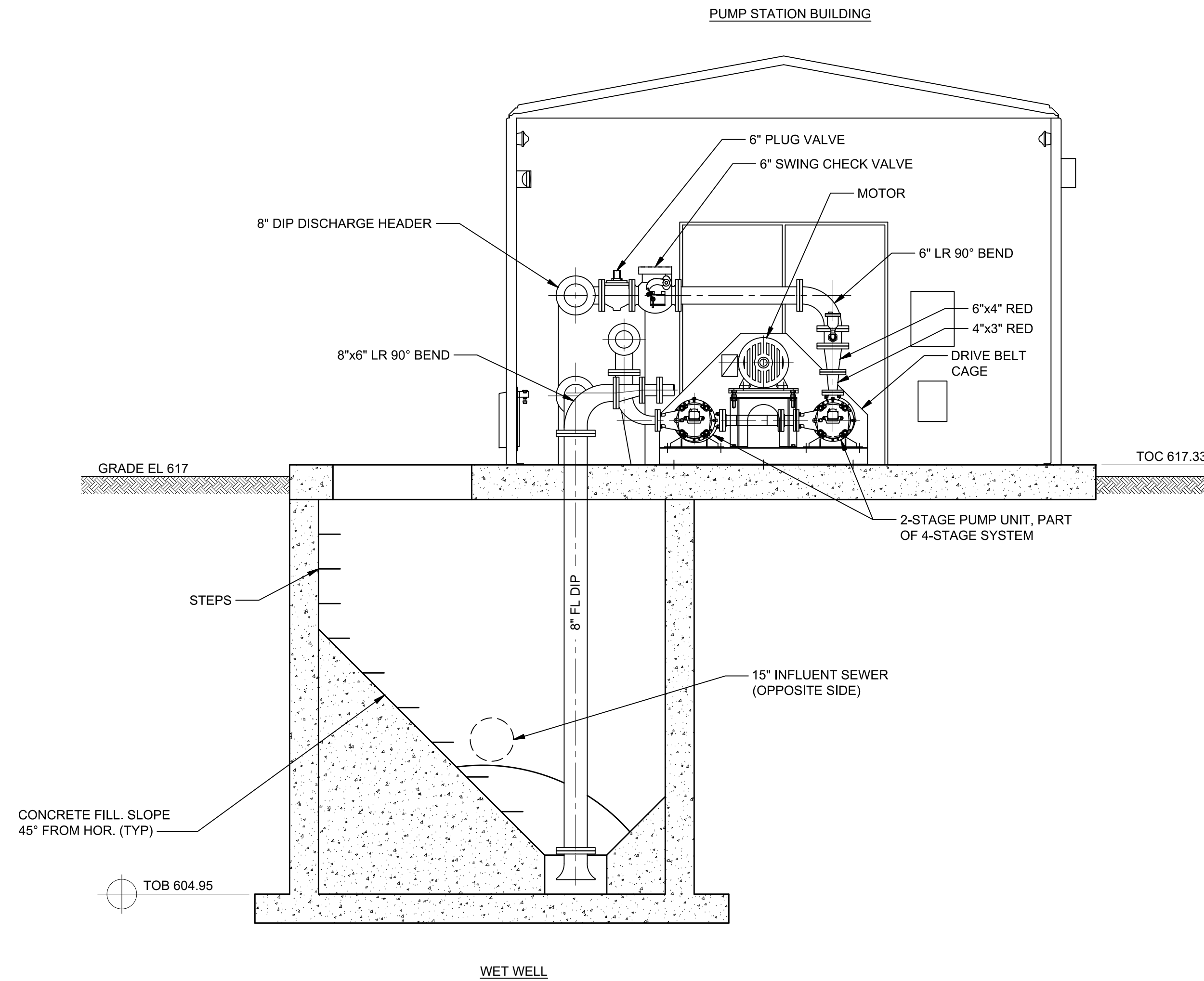
CIVIL

JUMPING BRANCH SPS - PUMP STATION SECTIONS

C-03-103

XXX OF XXX





SECTION
C-03-102

SUBCONSULTANT:

GAFFNEY BOARD OF PUBLIC WORKS

PROJECT GATEWAY
VOLUME 1 : SEWAGE
PUMP STATIONS

**PRELIMINARY
NOT FOR
CONSTRUCTION**

REVISIONS AND RECORD OF ISSUE

DESIGNED:	DJM
DETAILED:	--
CHECKED:	RTC, CMW, DLC
APPROVED:	----
DATE:	JUNE 2022
PROJECT NO.:	410381

CIVIL

JUMPING BRANCH SPS -
PUMP STATION SECTIONS

C-03-104

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OF
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SUBCONSULTANT:

GAFFNEY BOARD OF PUBLIC WORKS

PROJECT GATEWAY
VOLUME 1 : SEWAGE
PUMP STATIONS

PRELIMINARY
NOT FOR
CONSTRUCTION

REVISIONS AND RECORD OF ISSUE

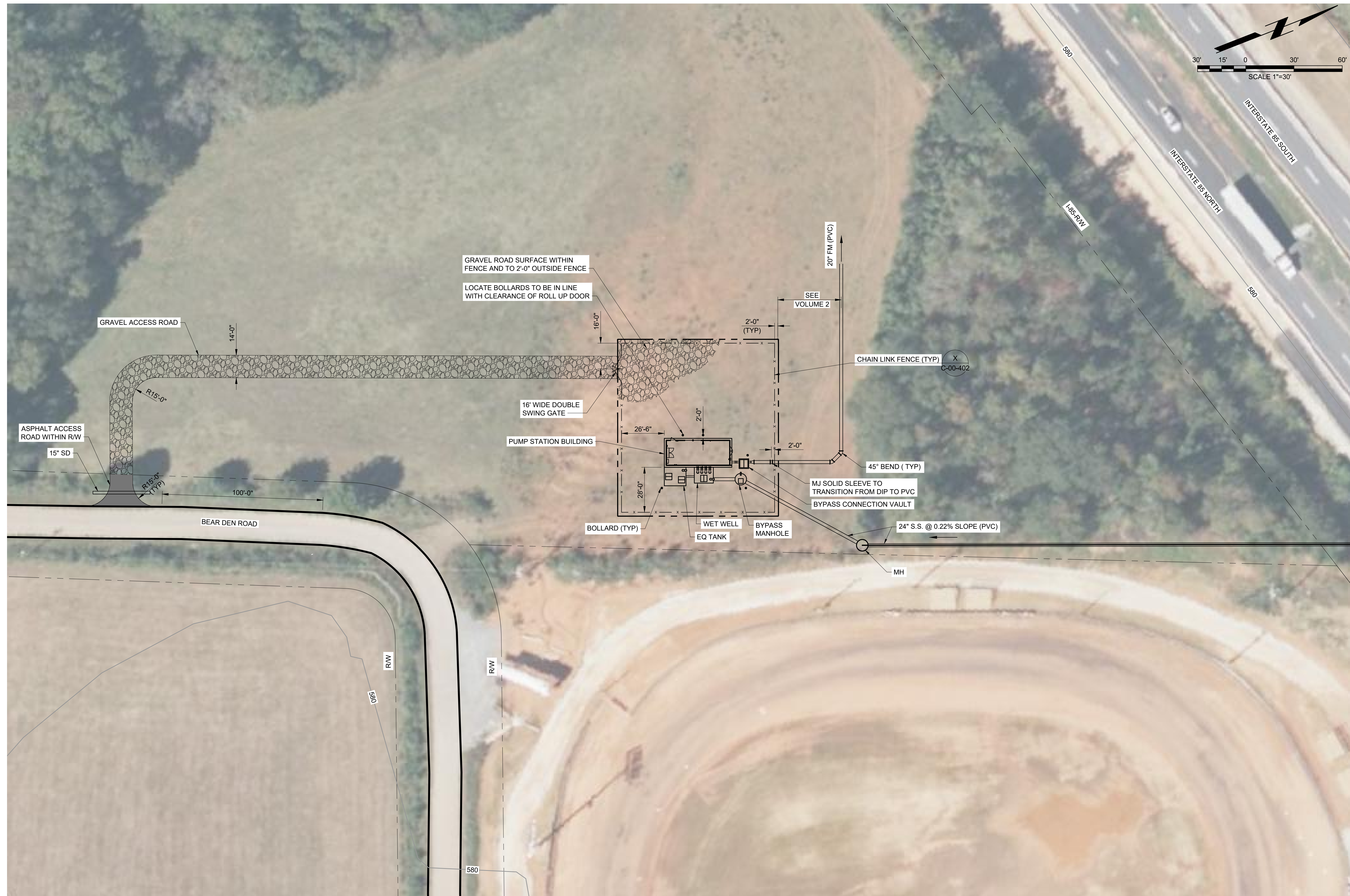
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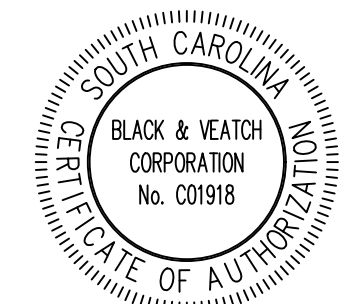
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PLAN

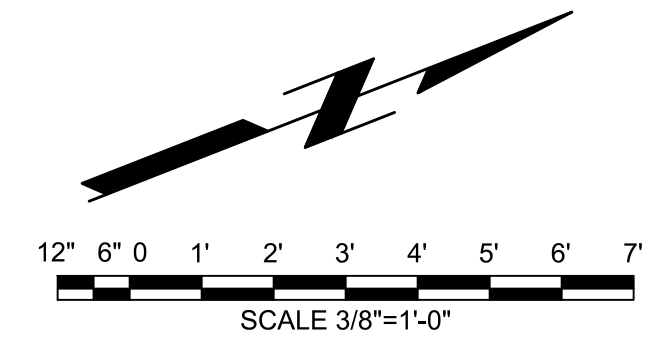
C-04-101

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OF
XXX



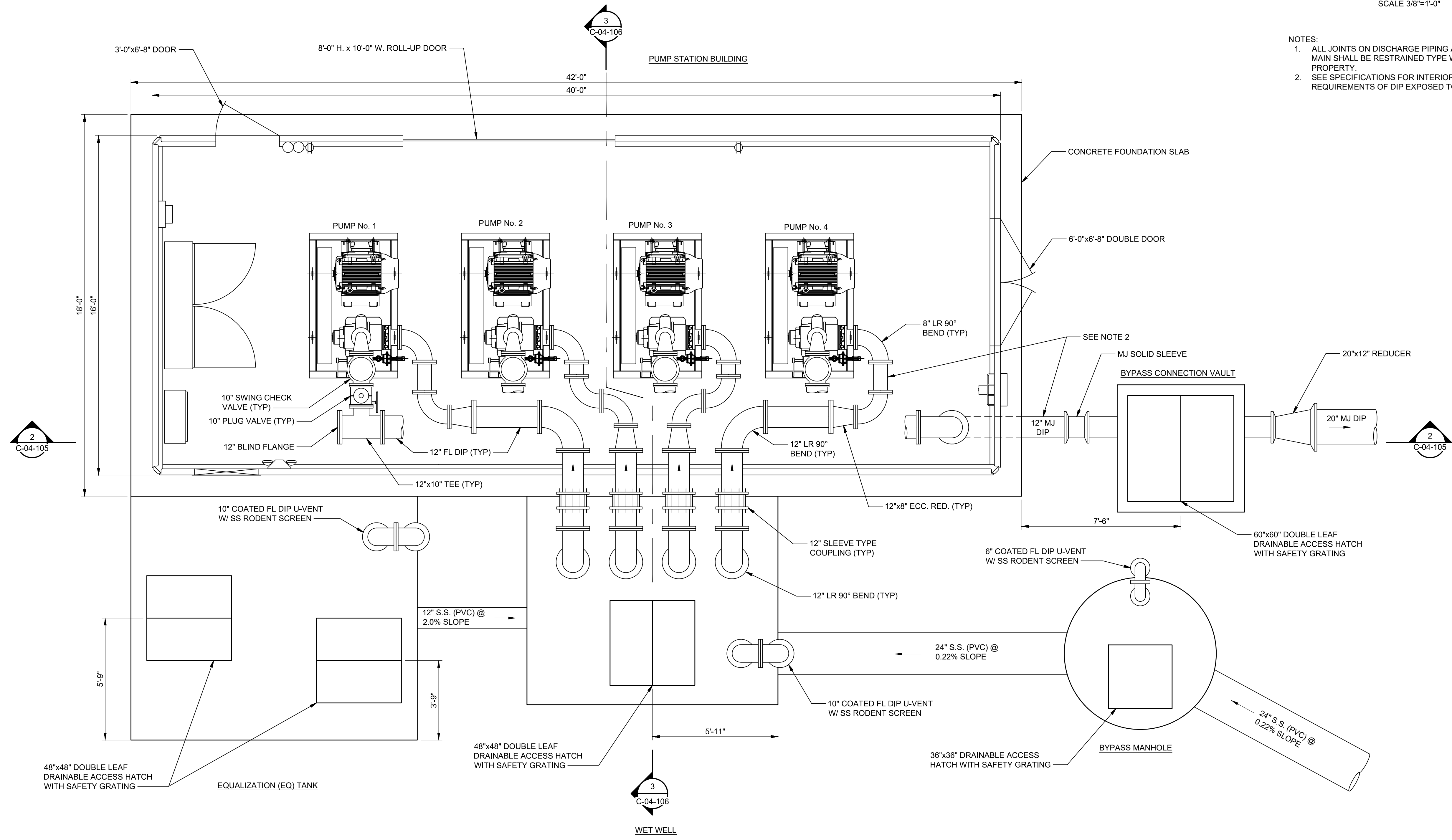
SITE PLAN





NOTES:

1. ALL JOINTS ON DISCHARGE PIPING AND FORCE MAIN SHALL BE RESTRAINED TYPE WITHIN SITE PROPERTY.
2. SEE SPECIFICATIONS FOR INTERIOR LINING REQUIREMENTS OF DIP EXPOSED TO SEWAGE.



BEAR DEN SPS FLOOR PLAN, WET WELL PLAN, EQ TANK PLAN, AND BYPASS SYSTEM PLAN

SUBCONSULTANT:

GAFFNEY BOARD OF PUBLIC WORKS

PROJECT GATEWAY
VOLUME 1 : SEWAGE
PUMP STATIONS

**PRELIMINARY
NOT FOR
CONSTRUCTION**

REVISIONS AND RECORD OF ISSUE

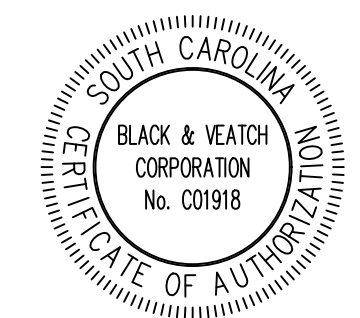
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APPROVED:	---
DATE:	JUNE 2022
PROJECT NO.:	410381

CIVIL

BEAR DEN SPS - PUMP
STATION PLANS

C-04-102

XXX
OF
XXX



SUBCONSULTANT:

GAFFNEY BOARD OF PUBLIC WORKS

PROJECT GATEWAY VOLUME 1 : SEWAGE PUMP STATIONS

PRELIMINARY NOT FOR CONSTRUCTION

REVISIONS AND RECORD OF ISSUE

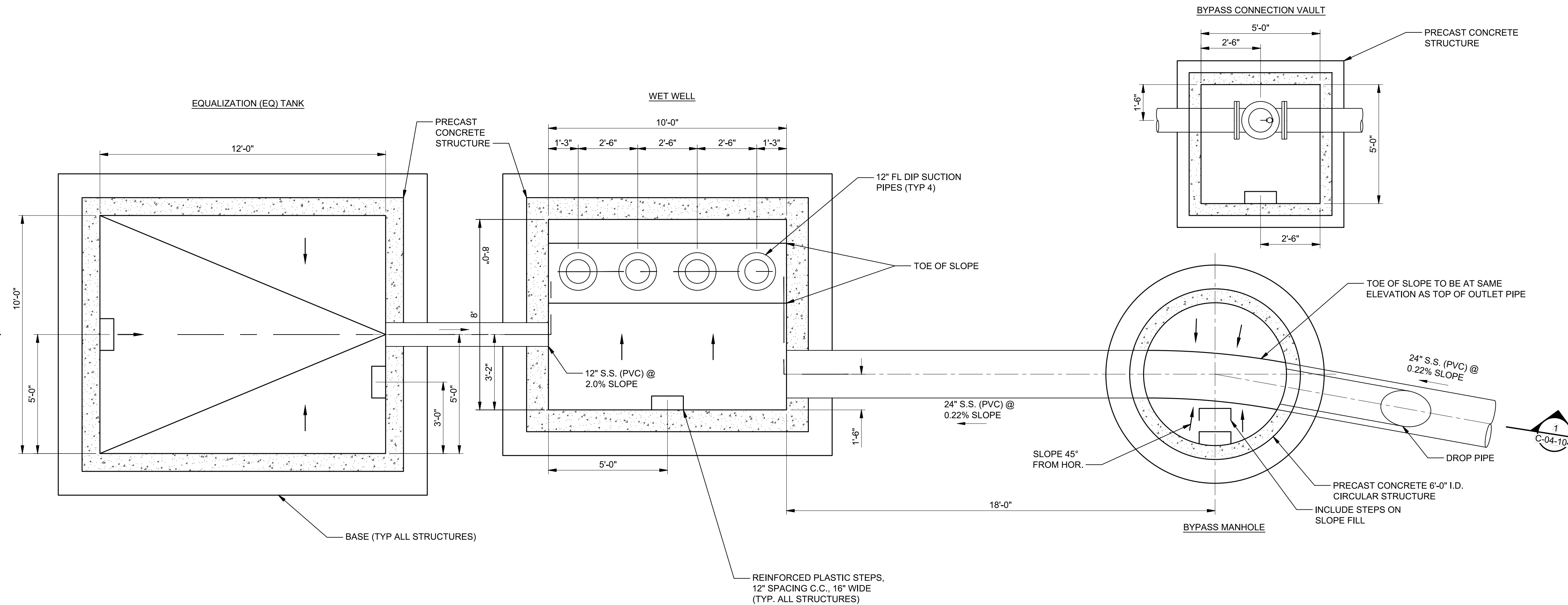
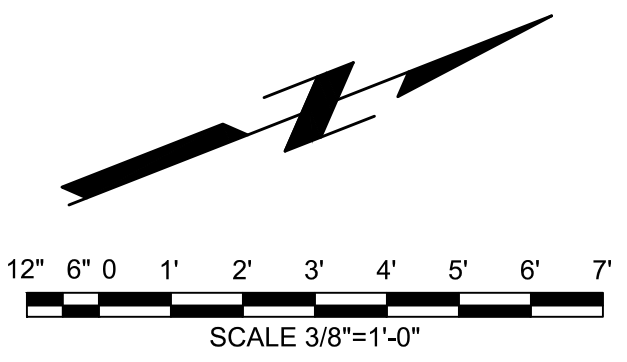
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APPROVED:	----
DATE:	JUNE 2022
PROJECT NO.:	410381

CIVIL

BEAR DEN SPS - PUMP STATION PLANS

C-04-103

XXX
OF
XXX



BEAR DEN INTERIOR PLANS FOR WET WELL, EQ TANK, AND BYPASS SYSTEM

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Black & Veatch Corporation
Greenville, South Carolina

OPERATION LEVELS

INITIAL CONSTRUCTION: TWO PUMPS INSTALLED, 1 DUTY AND 1 STANDBY. NORMALLY OPERATE ON/OFF AT 694 GPM (1 MGD)

ULTIMATE (FUTURE) CONSTRUCTION: FOUR PUMPS INSTALLED, 3 DUTY AND 1 STANDBY. NORMALLY OPERATE W/ VARIABLE FLOW TO MATCH OUTFLOW TO INFLOW

MINIMUM FILL LEVEL BEFORE INITIATING FORCE MAIN CLEANING SEQUENCE = 575.00
LAG PUMP ON ALARM LEVEL AND BACKUP FLOAT LEVEL = 574.35
LEAD PUMP ON HWL = 573.85

HWL IN EQ TANK = 577.00 B1

3 PUMPS ON FULL SPEED = 573.35 B2

PUMP OFF LWL = 571.35 A4

PUMP(S) OFF LWL = 571.35 B3

NOTES:

- SEE SPECIFICATIONS FOR INTERIOR COATING SYSTEM FOR CONCRETE SURFACES AND SLOPES WITHIN WET WELL. APPLY SAME SAME COATING TO INTERIOR SURFACES OF EQ TANK AND BYPASS MANHOLE.
- PIPE SUPPORTS ARE NOT SHOWN. PROVIDE PIPE SUPPORTS IN ACCORDANCE WITH SPECIFICATION SECTION 15140.

SUBCONSULTANT:

GAFFNEY BOARD OF PUBLIC WORKS

PROJECT GATEWAY VOLUME 1 : SEWAGE PUMP STATIONS

PRELIMINARY NOT FOR CONSTRUCTION

REVISIONS AND RECORD OF ISSUE

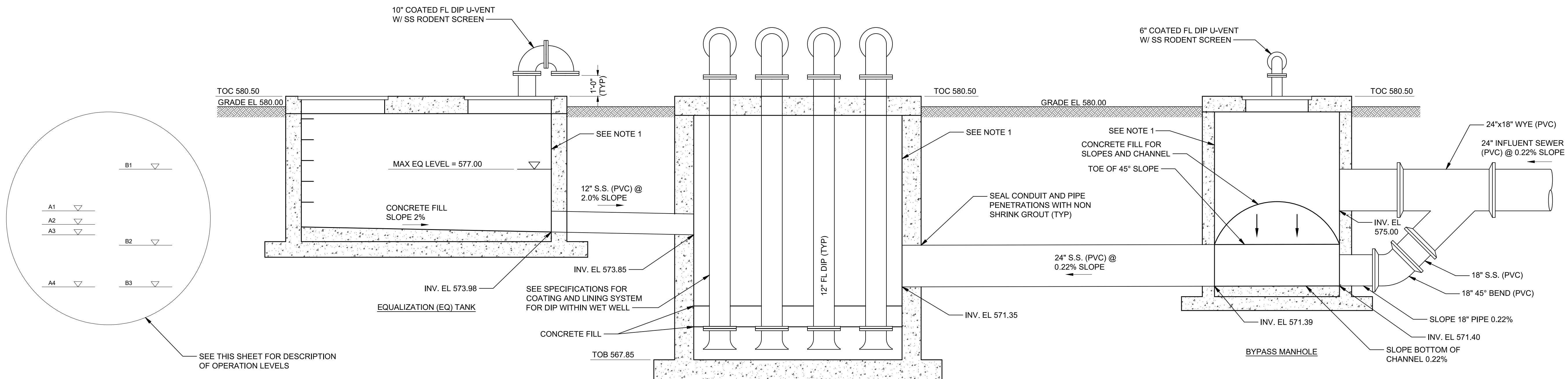
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PROJECT NO.:	410381

CIVIL

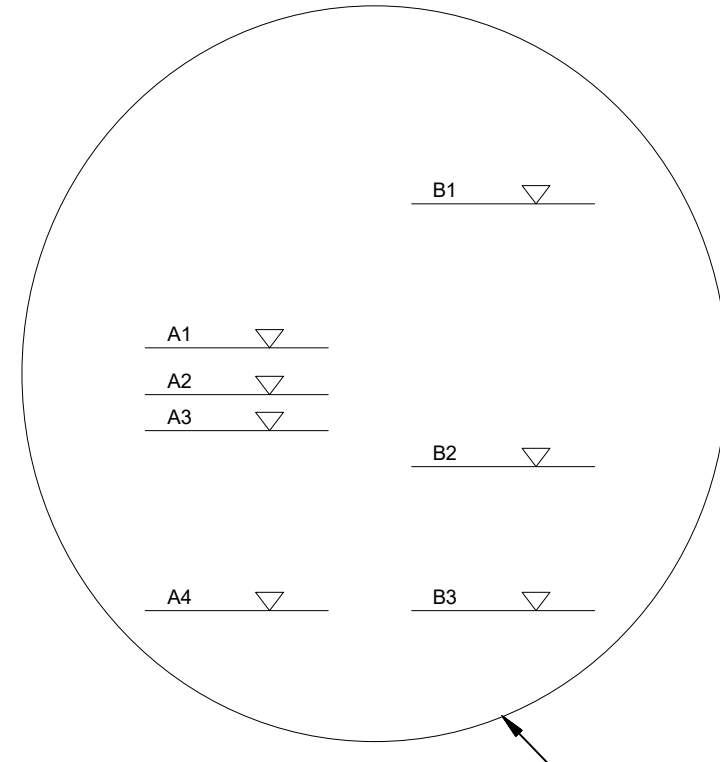
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C-04-104

XXX OF XXX

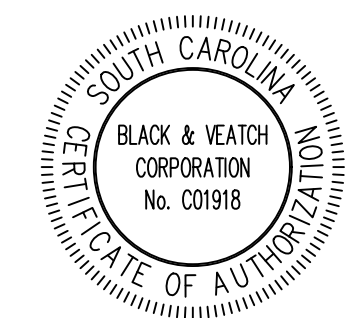


SECTION 1
C-04-103



SEE THIS SHEET FOR DESCRIPTION OF OPERATION LEVELS

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 FD1000
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12' 6" 0' 1' 2' 3' 4' 5' 6' 7'
SCALE 3/8"=1'-0"



Black & Veatch Corporation
Greenville, South Carolina

SUBCONSULTANT:

GAFFNEY
BOARD OF
PUBLIC WORKS

PROJECT GATEWAY
VOLUME 1 : SEWAGE
PUMP STATIONS

PRELIMINARY
NOT FOR
CONSTRUCTION

REVISIONS AND RECORD OF ISSUE

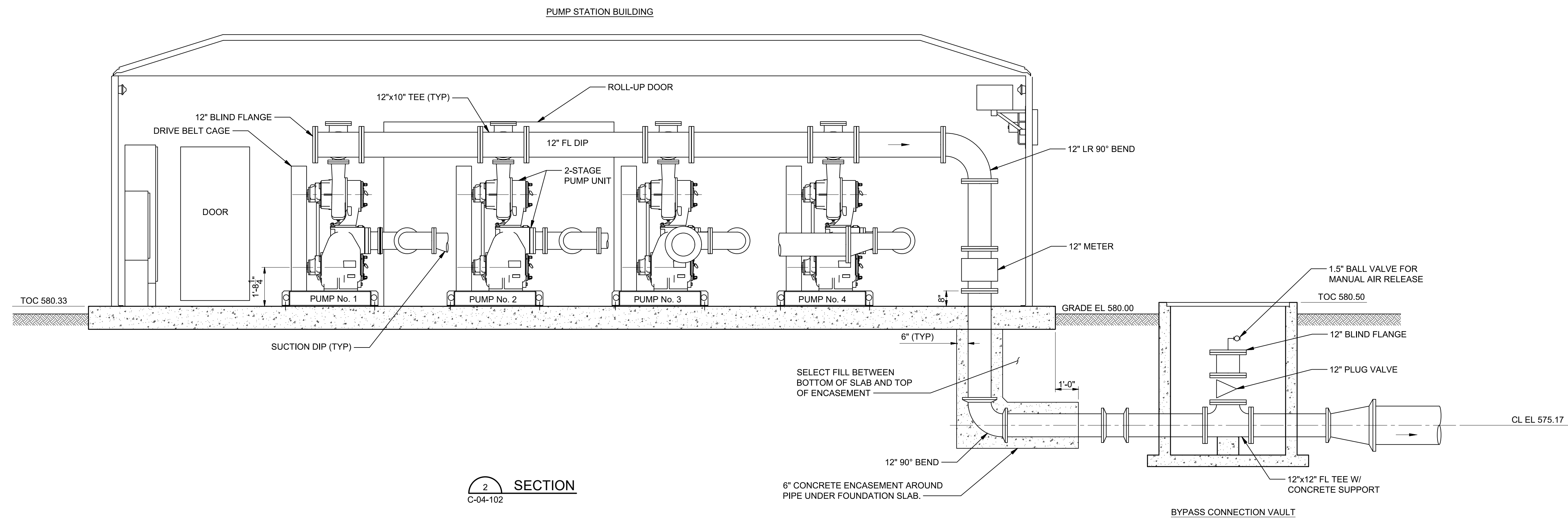
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PROJECT NO.:	410381

CIVIL

BEAR DEN SPS - PUMP
STATION SECTIONS

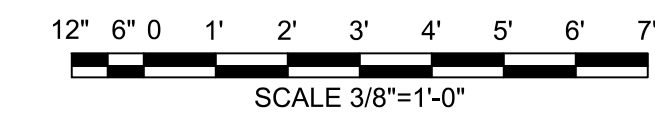
C-04-105

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OF
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(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4



SUBCONSULTANT:

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PROJECT GATEWAY
VOLUME 1 : SEWAGE
PUMP STATIONS

**PRELIMINARY
NOT FOR
CONSTRUCTION**

REVISIONS AND RECORD OF ISSUE

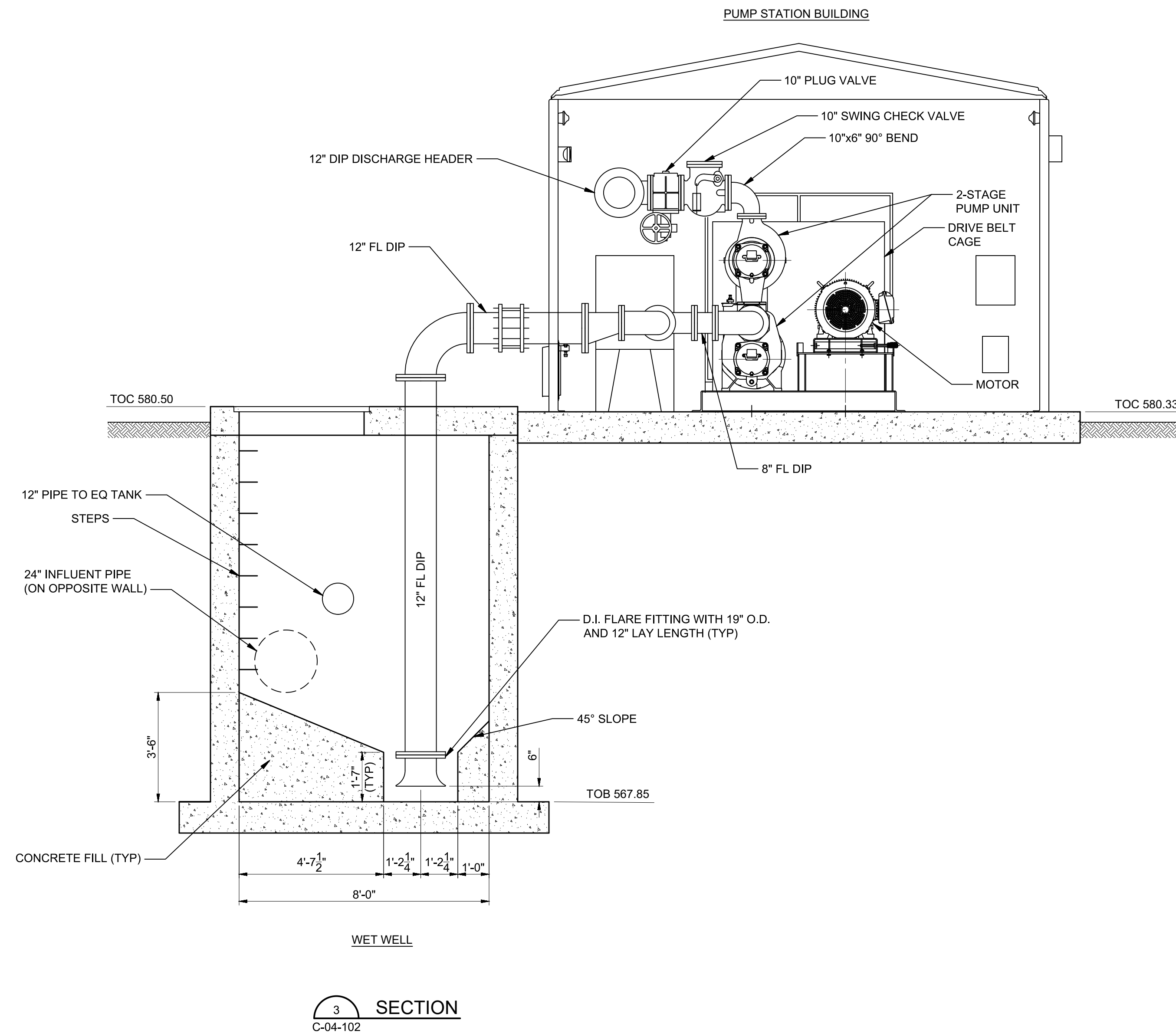
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PROJECT NO.:	410381

CIVIL

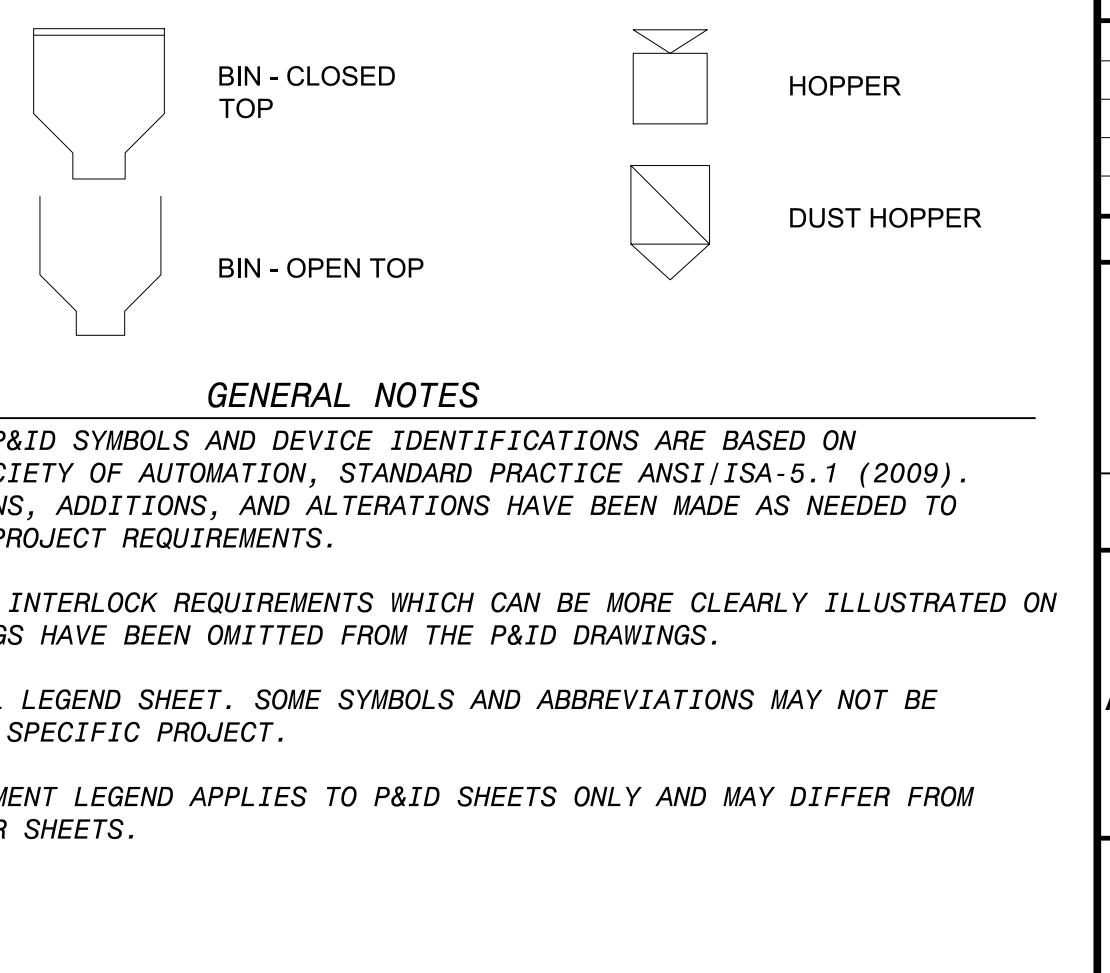
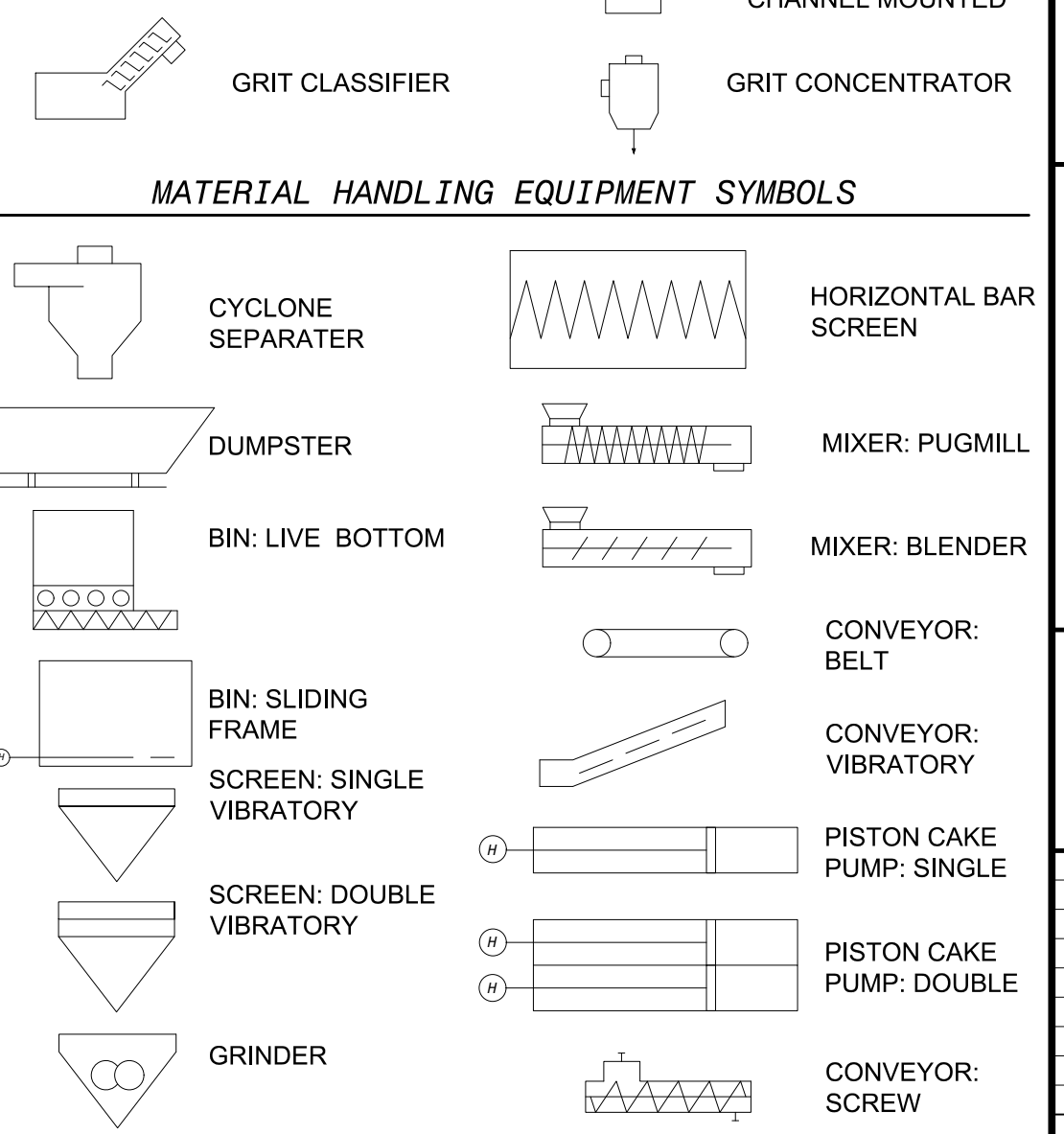
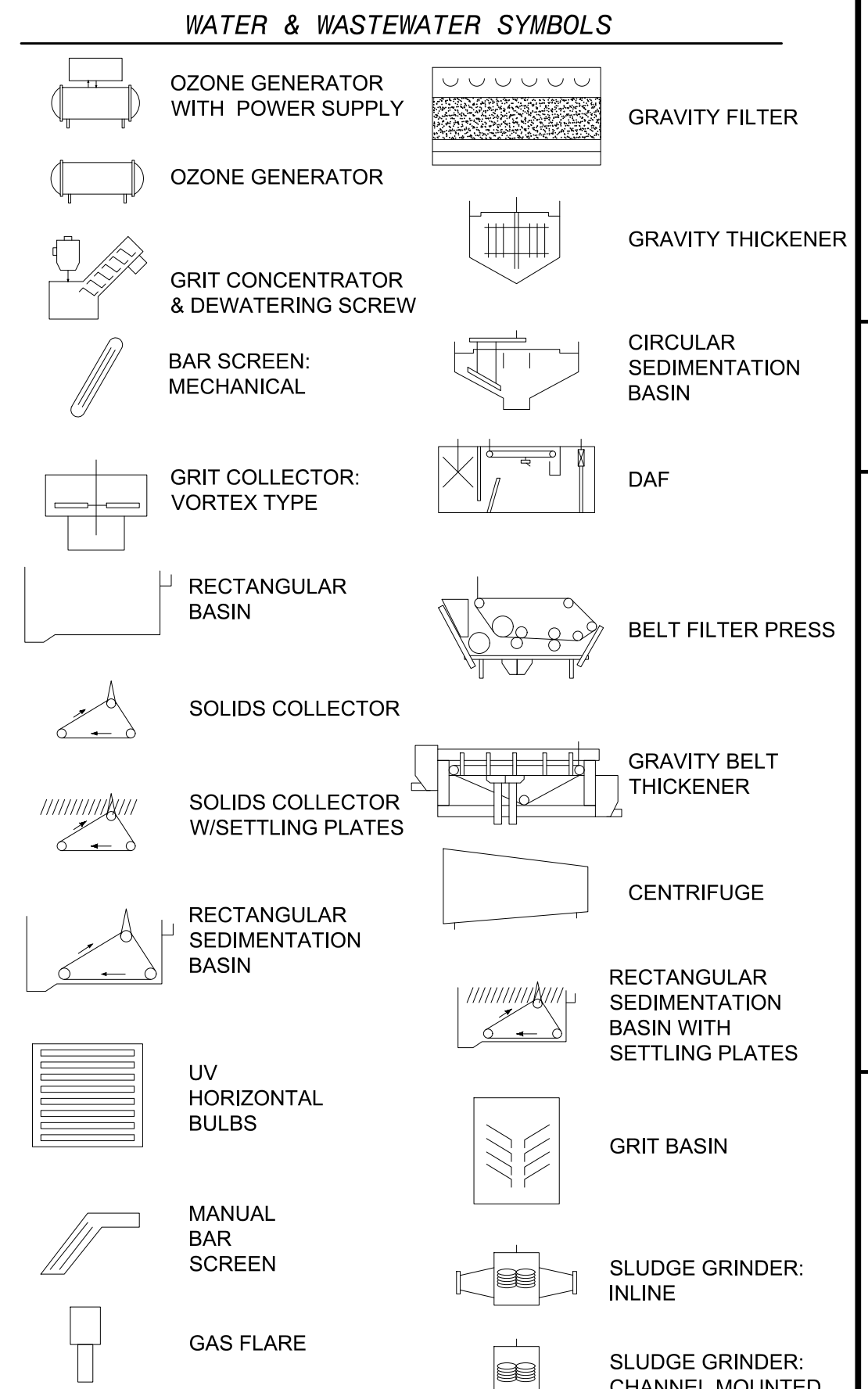
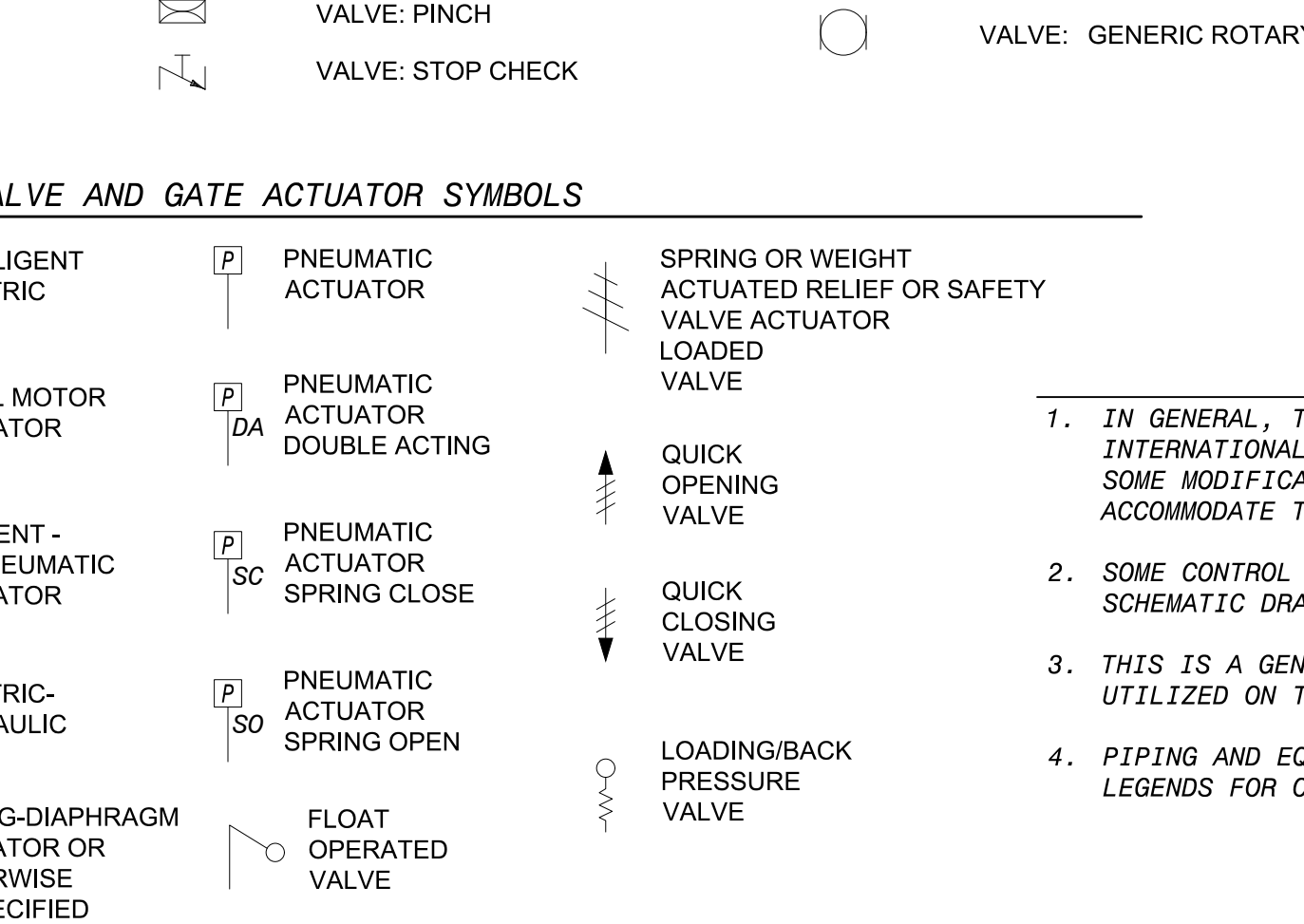
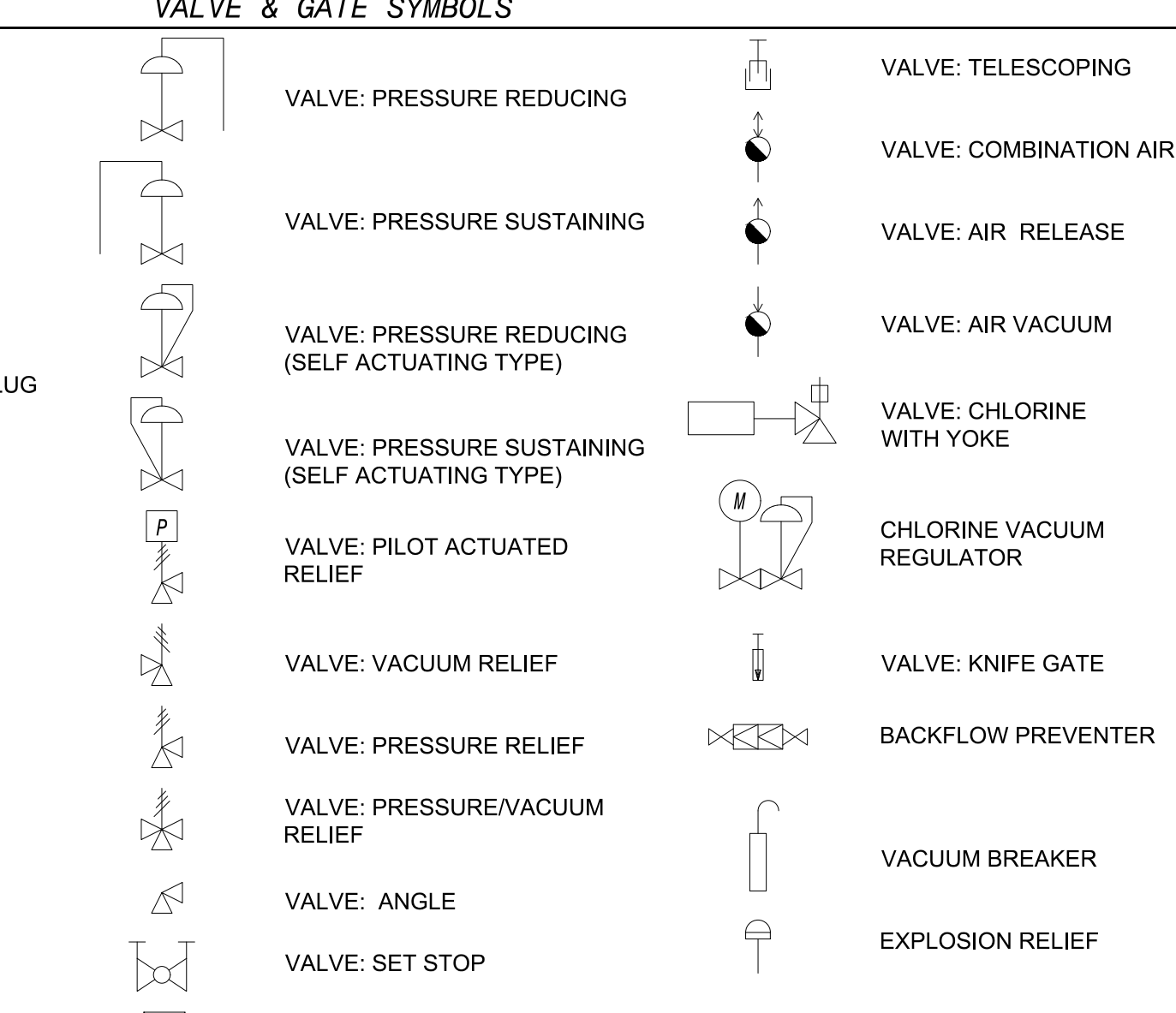
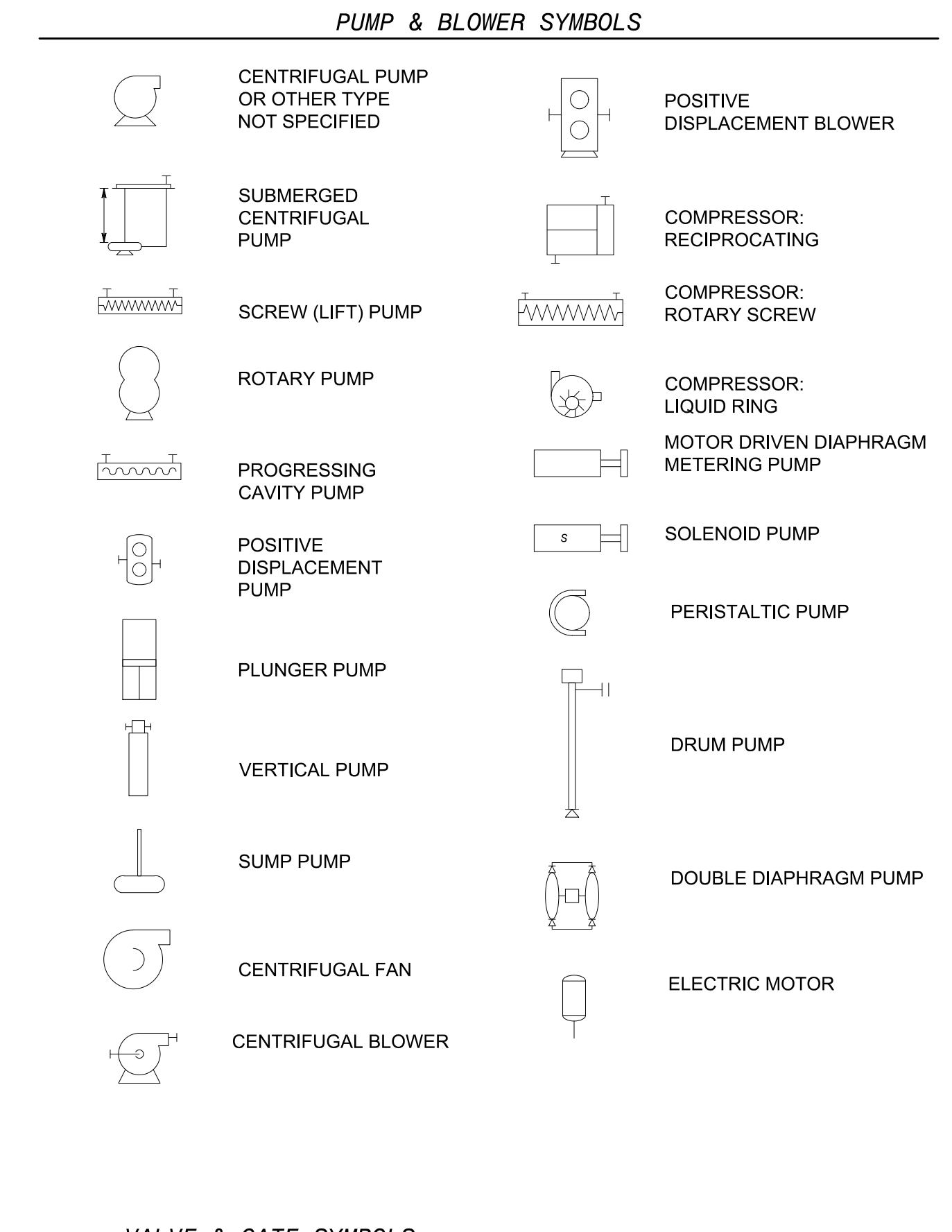
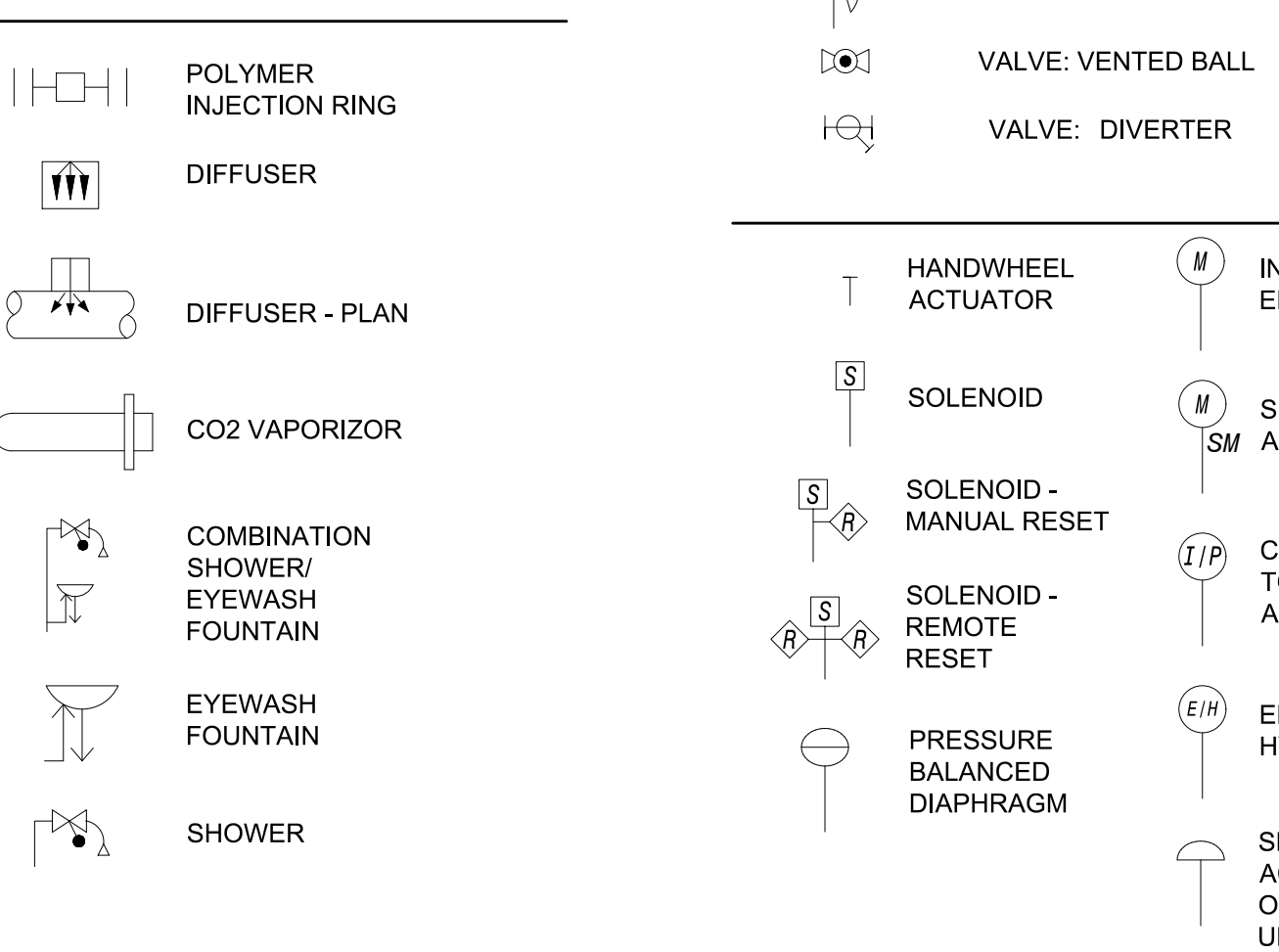
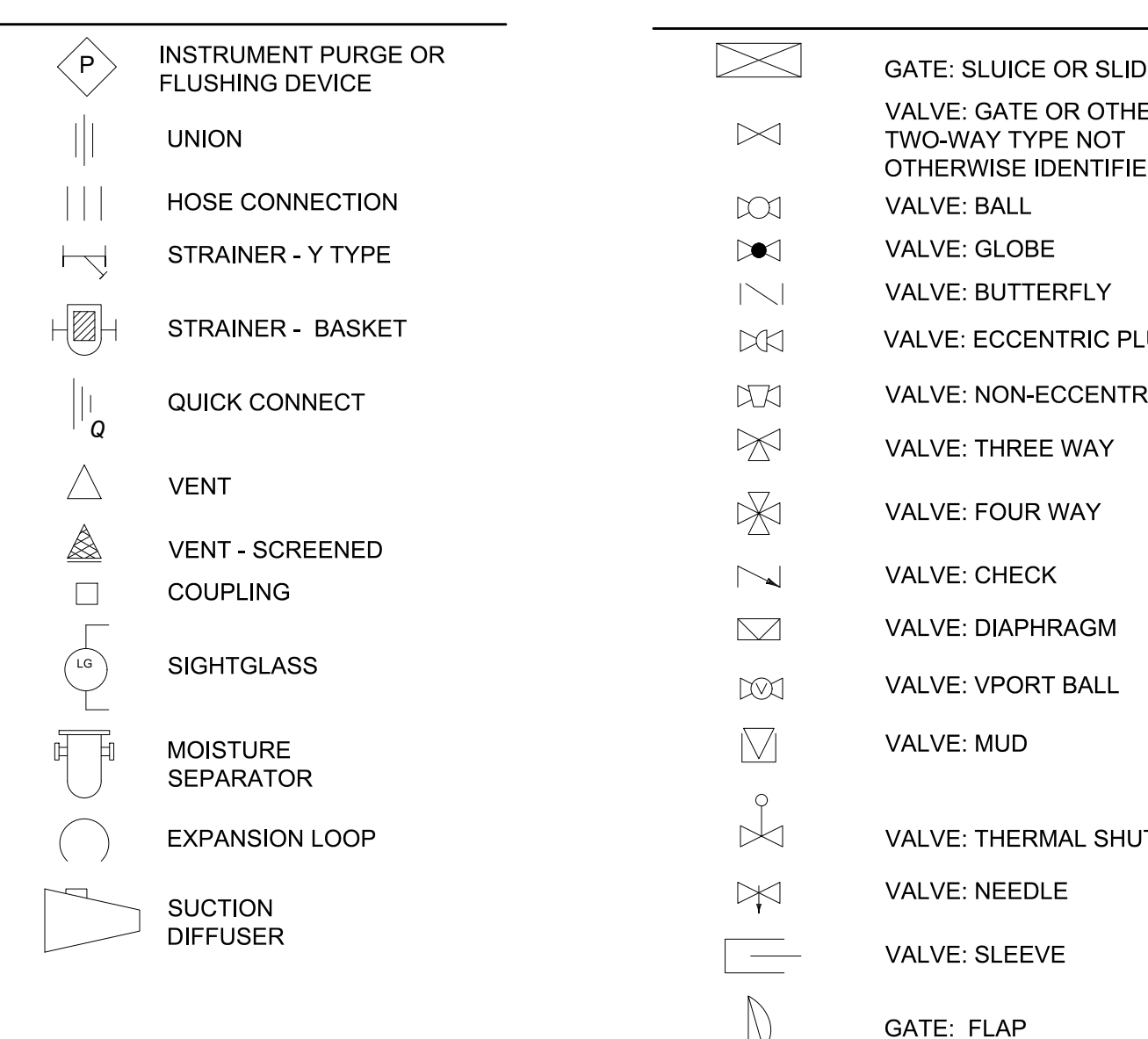
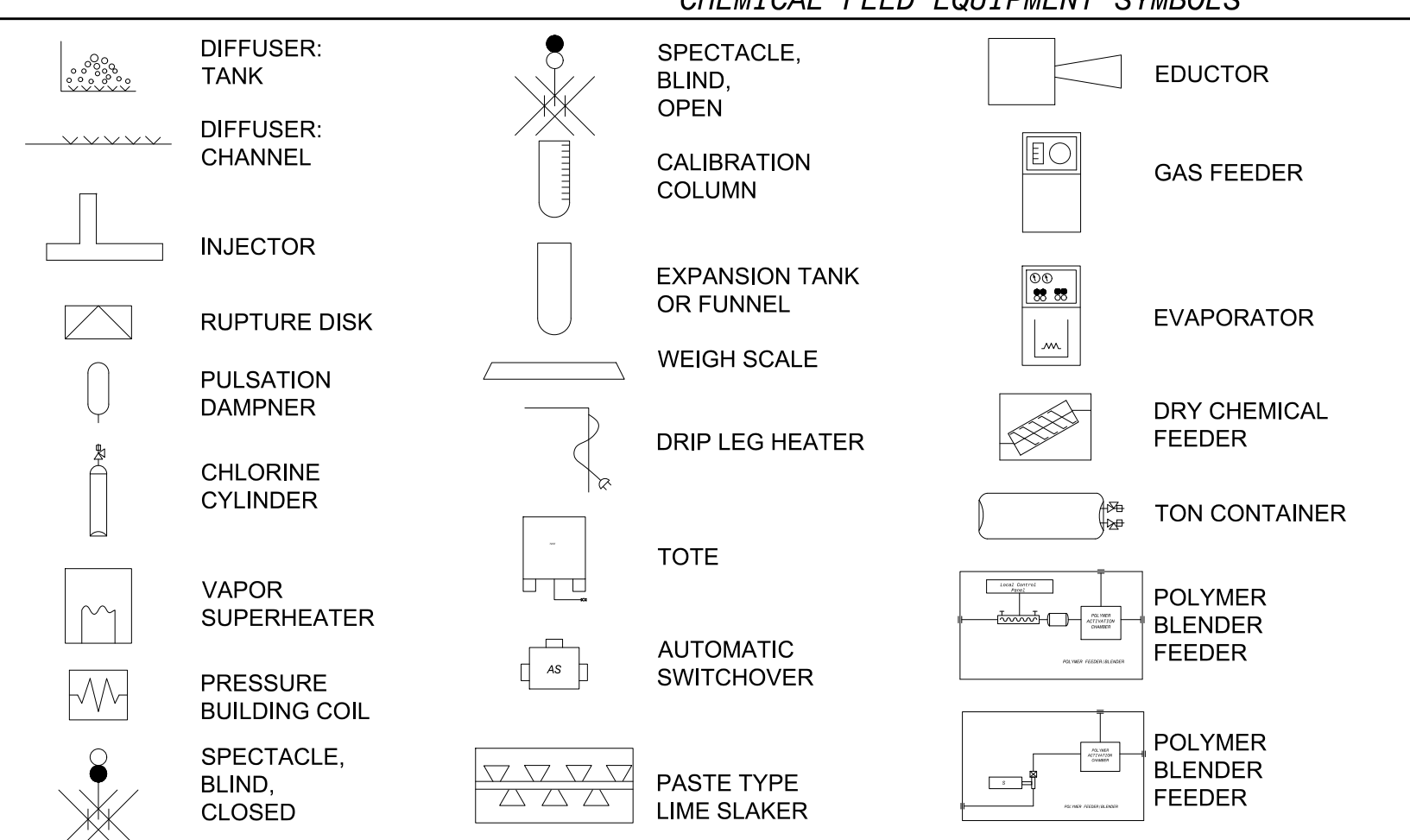
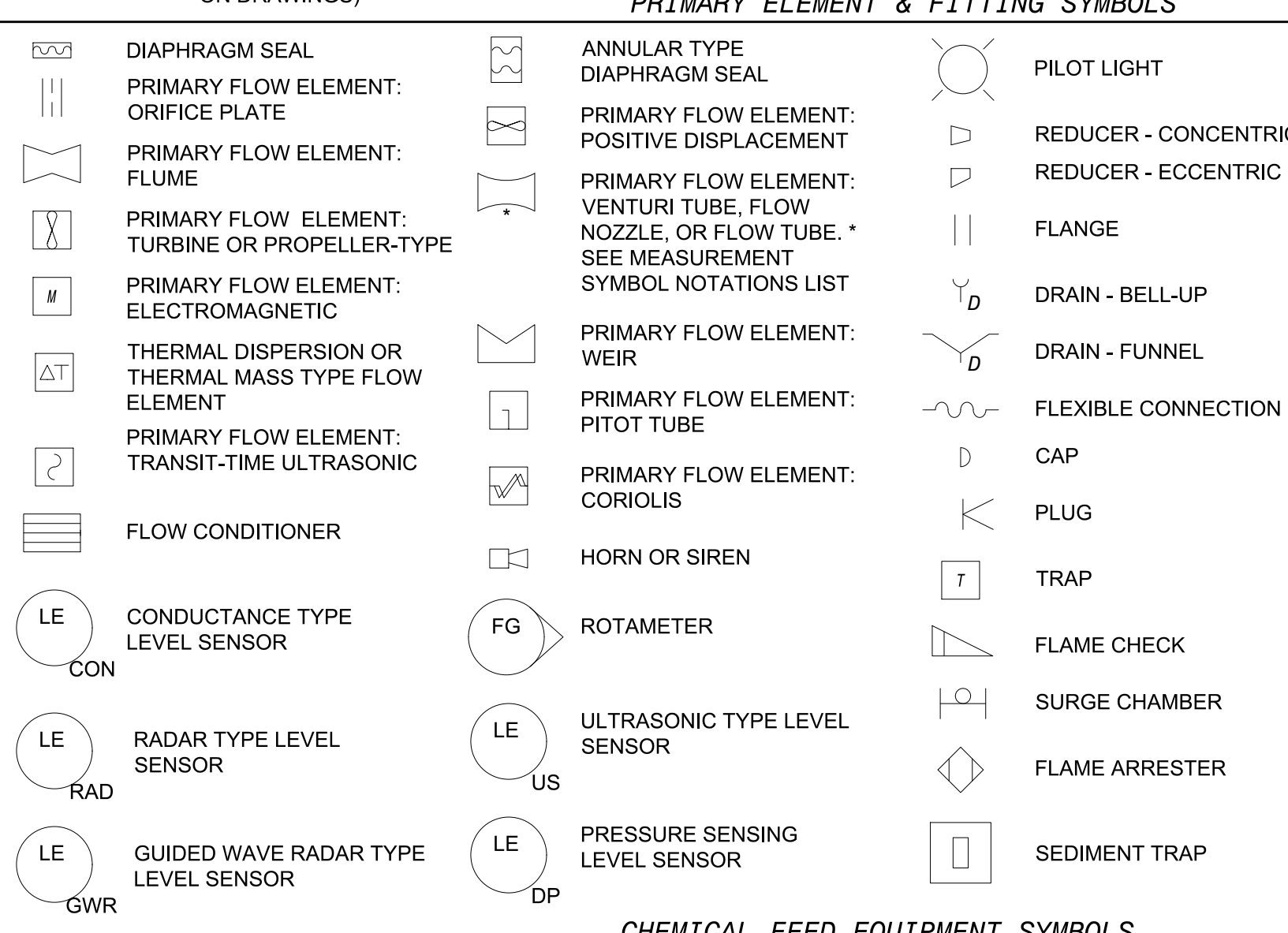
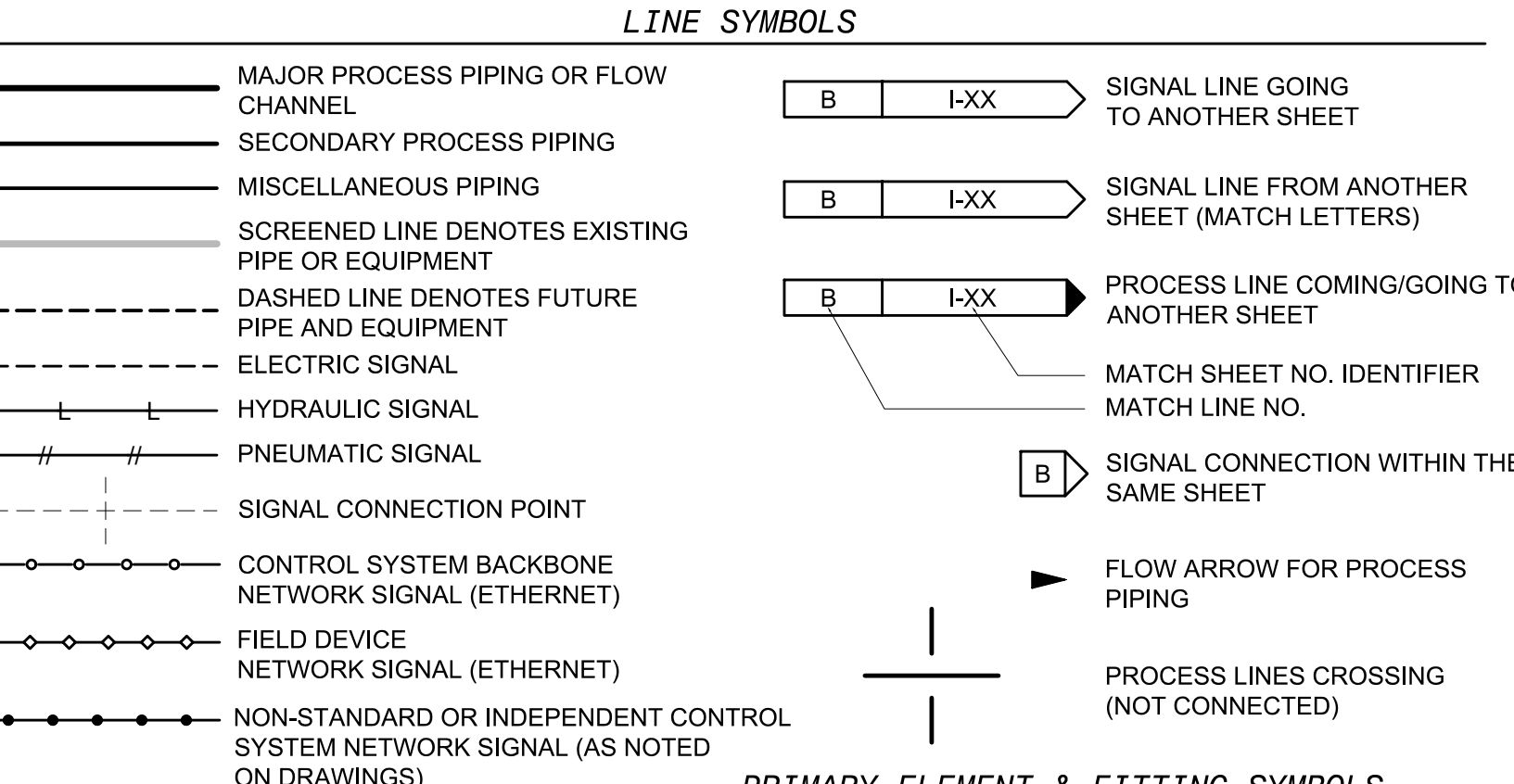
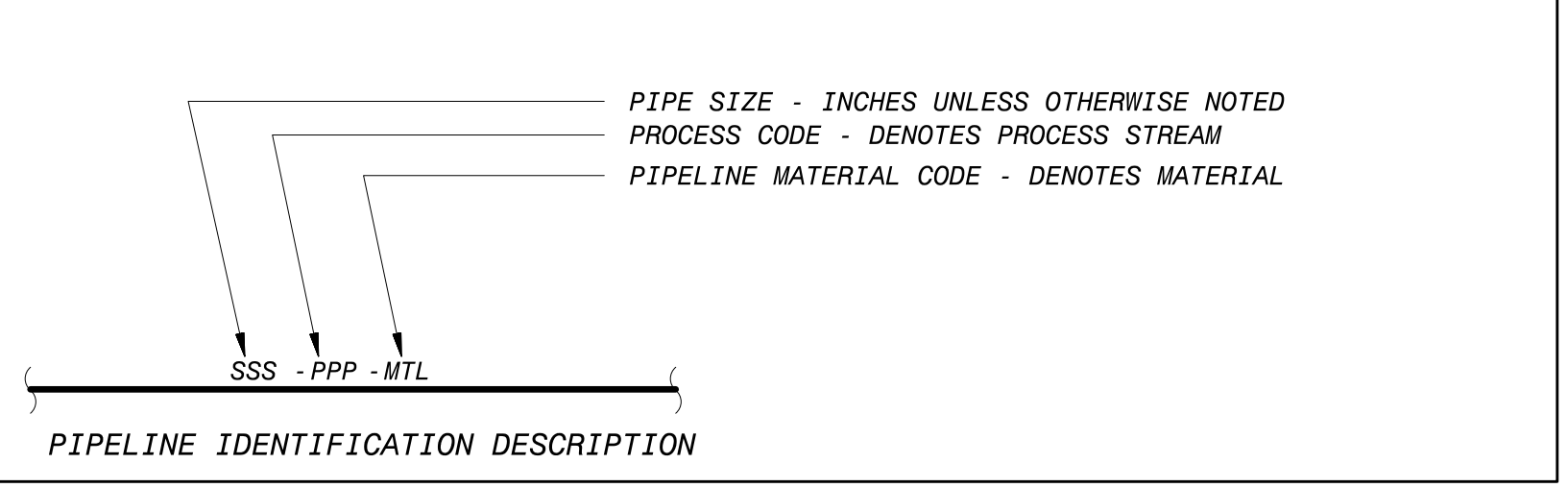
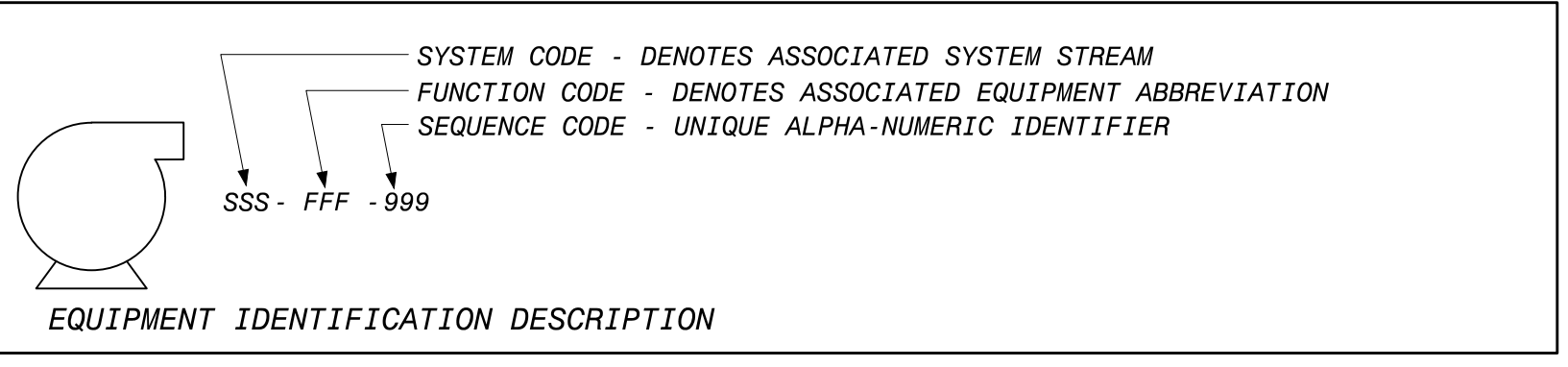
**BEAR DEN SPS - PUMP
STATION SECTIONS**

C-04-106

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OF
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INSTRUMENT AND I/O ABBREVIATIONS
MEANINGS OF IDENTIFICATION LETTERS

LETTER	FIRST LETTER		SUCCEEDING LETTERS		
	MEASURED OR INITIATING VARIABLE	VARIABLE MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT OR ACTIVE FUNCTION	FUNCTION MODIFIER
A	ANALYSIS		ALARM		
B	BURNER, COMBUSTION		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
C	USER'S CHOICE			CONTROL	CLOSE
D	USER'S CHOICE	DIFFERENTIAL			DEVIATION
E	VOLTAGE (EMF)		SENSOR, PRIMARY ELEMENT		
F	FLOW, FLOW RATE	RATIO (FRACTION)			
G	USER'S CHOICE		GLASS, GAUGE, VIEWING DEVICE		
H	HAND (MANUALLY INITIATED)				HIGH
I	CURRENT (ELECTRICAL)		INDICATE		
J	POWER		SCAN		
K	TIME OR TIME-SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT		LOW
M	USER'S CHOICE	MOMENTARY			MIDDLE OR INTERMEDIATE
N	USER'S CHOICE		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
O	USER'S CHOICE		ORIFICE (RESTRICTION)		OPEN
P	PRESSURE OR VACUUM		POINT (TEST CONNECTION)		
Q	QUANTITY	INTEGRATE OR TOTALIZE	INTEGRATE OR TOTALIZE		
R	RADIATION		RECORD		RUN
S	SPEED OR FREQUENCY	SAFETY		SWITCH	STOP
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	
V	VIBRATION OR MECHANICAL ANALYSIS			VALVE, DAMPER OR LOUVER	
W	WEIGHT OR FORCE		WELL, PROBE		
X	UNCLASSIFIED	X-AXIS	ACCESSORY DEVICES OR UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y	EVENT, STATE, OR PRESENCE	Y-AXIS		AUXILIARY DEVICES	
Z	POSITION, DIMENSION	Z-AXIS		DRIVE, ACTUATOR OR FINAL CTRL ELEMENT	

GENERAL NOTES

1. IN GENERAL, THE P&ID SYMBOLS AND DEVICE IDENTIFICATIONS ARE BASED ON INTERNATIONAL SOCIETY OF AUTOMATION, STANDARD PRACTICE ANSI/ISA-5.1 (2009). SOME MODIFICATIONS, ADDITIONS, AND ALTERATIONS HAVE BEEN MADE AS NEEDED TO ACCOMMODATE THE PROJECT REQUIREMENTS.
2. SOME CONTROL AND INTERLOCK REQUIREMENTS WHICH CAN BE MORE CLEARLY ILLUSTRATED ON SCHEMATIC DRAWINGS HAVE BEEN OMITTED FROM P&ID DRAWINGS.
3. THIS IS A GENERAL LEGEND SHEET. SOME SYMBOLS AND ABBREVIATIONS MAY NOT BE UTILIZED ON THIS SPECIFIC PROJECT. PIPING AND EQUIPMENT LEGEND APPLIES TO P&ID SHEETS.

PIPELINE MATERIAL CODE ABBREVIATIONS

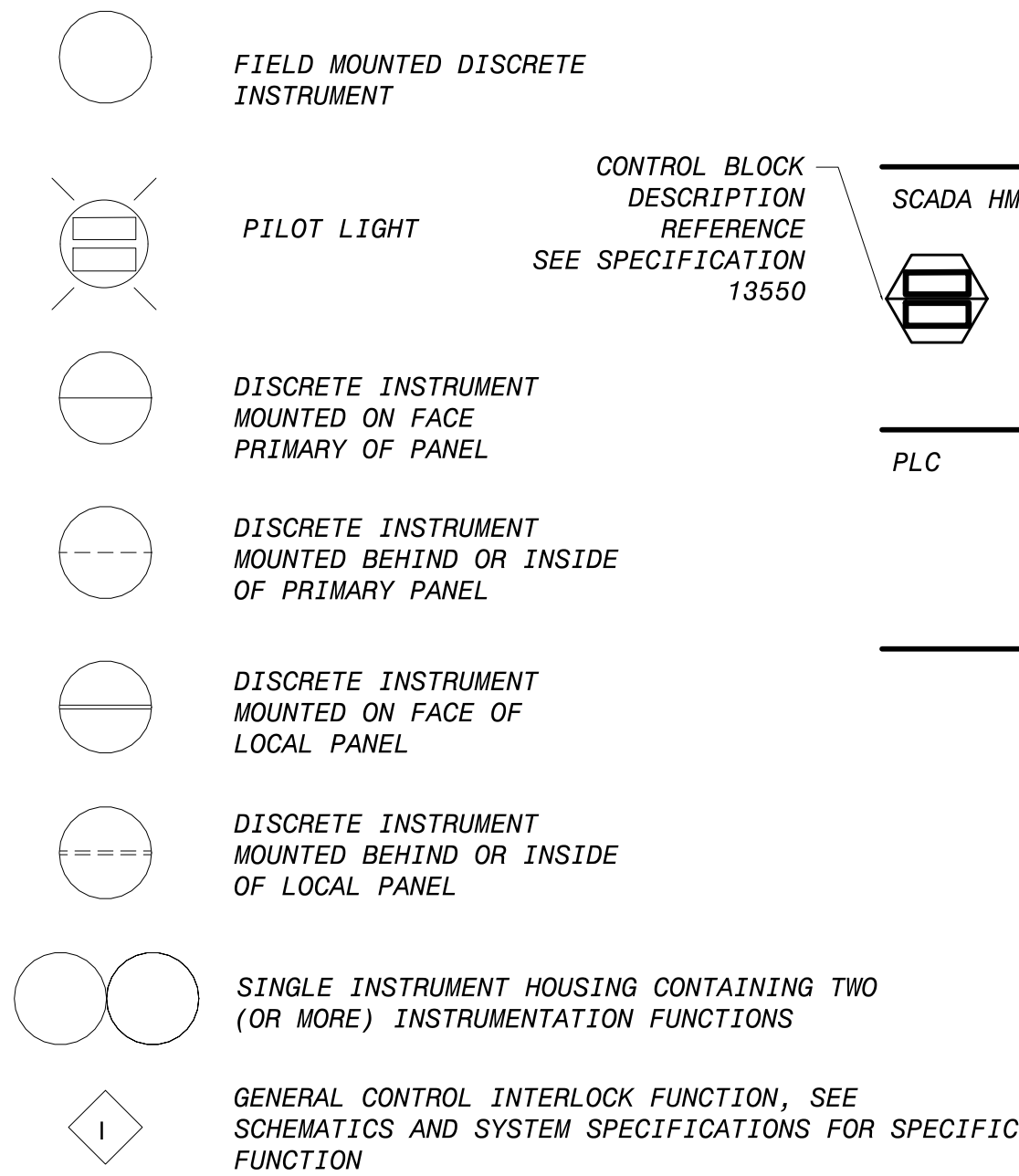
PCCP	SECTION 02612,	PRESTRESSED CONCRETE CYLINDER PIPE
CBWS	SECTION 02614,	CONCRETE BAR-WRAPPED, STEEL CYLINDER PIPE
LHCPP	SECTION 02616,	LOW HEAD CONCRETE PRESSURE PIPE
RCP	SECTION 02618,	CONCRETE PIPE
PVC	SECTION 15061,	POLYVINYL CHLORIDE PIPE
DIP	SECTION 15061,	DUCTILE IRON PIPE
SP	SECTION 15062,	STEEL PIPE
LWS-XX	SECTION 15063,	LIGHT WALL STEEL PIPE
SS-XX1	SECTION 15064,	STAINLESS STEEL PIPE, TUBING, AND ACCESSORIES
AI	SECTION 15065,	MISCELLANEOUS STEEL PIPE, TUBING, AND ACCESSORIES
CS-XX	SECTION 15065,	MISCELLANEOUS STEEL PIPE, TUBING, AND ACCESSORIES
FRPE-XX	SECTION 15066,	FIBERGLASS REINFORCED PLASTIC PIPE (EXHAUST AIR SERVICE)
FRP-XX	SECTION 15067,	MISCELLANEOUS PLASTIC PIPE, TUBING, AND ACCESSORIES
PVC-XX	SECTION 15067,	MISCELLANEOUS PLASTIC PIPE, TUBING, AND ACCESSORIES
CPVC-XX	SECTION 15067,	MISCELLANEOUS PLASTIC PIPE, TUBING, AND ACCESSORIES
PE-XX	SECTION 15067,	MISCELLANEOUS PLASTIC PIPE, TUBING, AND ACCESSORIES
PP-XX	SECTION 15067,	MISCELLANEOUS PLASTIC PIPE, TUBING, AND ACCESSORIES
PVDF-XX	SECTION 15067,	MISCELLANEOUS PLASTIC PIPE, TUBING, AND ACCESSORIES
RPT-XX	SECTION 15067,	MISCELLANEOUS PLASTIC PIPE, TUBING, AND ACCESSORIES
SS	SECTION 15067,	MISCELLANEOUS PLASTIC PIPE, TUBING, AND ACCESSORIES
CI-XX	SECTION 15068,	AWWA STAINLESS STEEL PIPE
CU-XX	SECTION 15069,	CAST IRON SOIL PIPE AND ACCESSORIES
CSG-XX	SECTION 15070,	COPPER TUBING AND ACCESSORIES
BR-XX	SECTION 15060,	MISCELLANEOUS PIPING AND PIPE ASSEMBLY
HS-XX	SECTION 15060,	MISCELLANEOUS PIPING AND PIPE ASSEMBLY
TG-XX	SECTION 15060,	MISCELLANEOUS PIPING AND PIPE ASSEMBLY
CRP-XX	SECTION 15060,	MISCELLANEOUS PIPING AND PIPE ASSEMBLY

1. XX= numbers 01-20

INSTRUMENT AND I/O ABBREVIATION DEFINITIONS

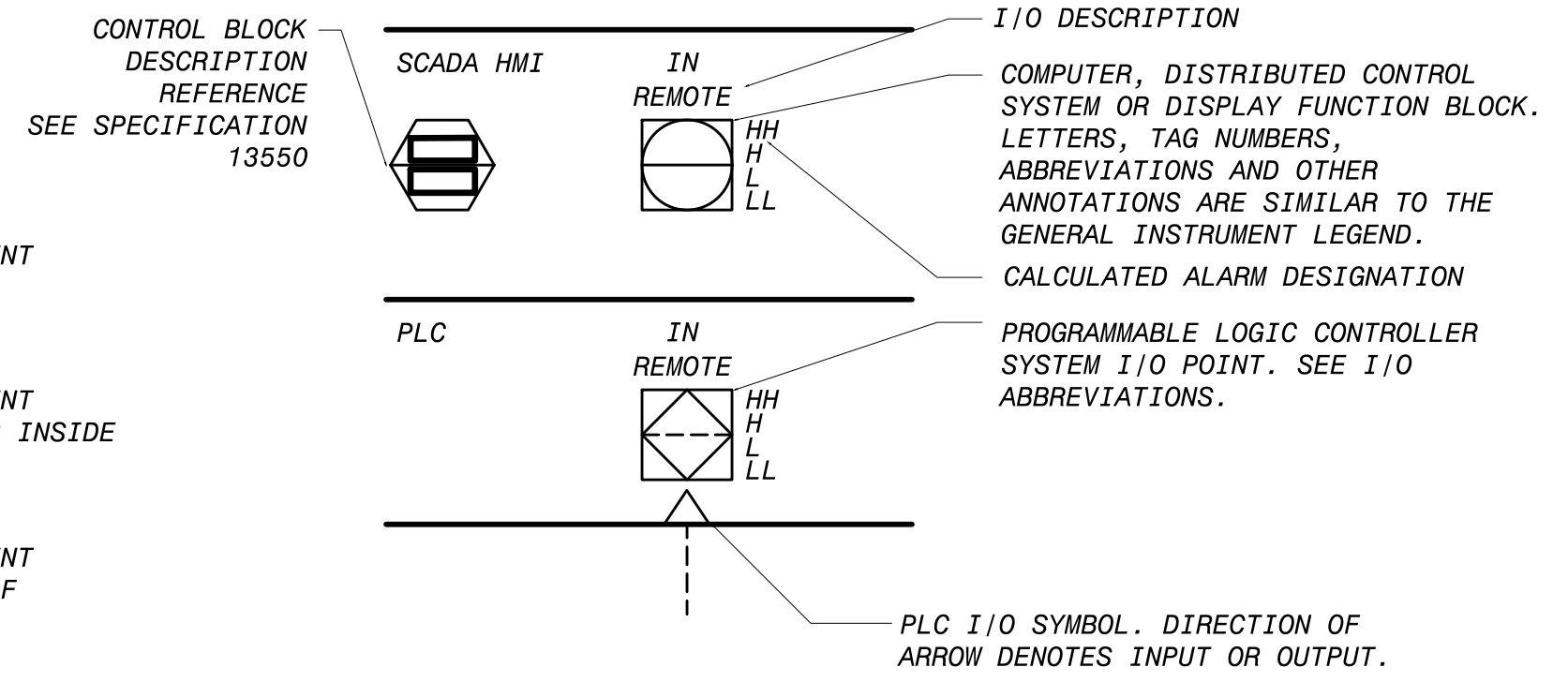
AAH	ANALYZER ALARM HIGH	PDI	DIFFERENTIAL PRESSURE INDICATING TRANSMITTER
AAHH	ANALYZER ALARM HIGH-HIGH	PDAH	DIFFERENTIAL PRESSURE ALARM HIGH
AAL	ANALYZER ALARM LOW	PDAH	DIFFERENTIAL PRESSURE ALARM HIGH-HIGH
AALL	ANALYZER ALARM LOW-LOW	PDSH	DIFFERENTIAL PRESSURE SWITCH HIGH
AAX	ALARM HORN	PDSHH	DIFFERENTIAL PRESSURE SWITCH HIGH-HIGH
AAL	STROBE ALARM LIGHT	PDSL	DIFFERENTIAL PRESSURE SWITCH LOW
AE	ANALYZER SENSOR	PDSL	DIFFERENTIAL PRESSURE SWITCH LOW-LOW
AI	ANALYZER INDICATING	PS	PRESSURE SENSOR
AIT	ANALYZER INDICATING TRANSMITTER	PE	PRESSURE GAUGE
ASH	ANALYZER SWITCH HIGH	PG	PRESSURE INDICATOR (LED OR SCREEN)
ASHH	ANALYZER SWITCH HIGH-HIGH	PI	PRESSURE INDICATING TRANSMITTER
CB	CONTROL BLOCK REFERENCE (SCADA LEVEL)	PIT	PRESSURE SWITCH LOW
FAL	FLOW ALARM LOW	PSL	PRESSURE SWITCH HIGH
FAH	FLOW ALARM HIGH	PSH	SPEED INDICATION (LED OR SCREEN)
FC	FLOW CONTROLLER	SI	SPEED CONTROL
FI	FLOW DIGITAL INDICATOR (LED OR SCREEN)	SC	SPEED INDICATING TRANSMITTER
FIC	FLOW INDICATING CONTROLLER	SIT	SPEED SWITCH LOW
FE	PRIMARY FLOW ELEMENT/SENSOR	SSL	SPEED INDICATING TRANSMITTER
FG	FLOW SIGHT GAUGE	SIT	TEMPERATURE ALARM HIGH
FIT	FLOW INDICATING TRANSMITTER	TAH	TEMPERATURE ALARM HIGH-HIGH
FQG	FLOW TOTALIZING GAUGE	TAHH	TEMPERATURE ALARM LOW
FQIT	FLOW TOTALIZING INDICATING TRANSMITTER	TAL	DIFFERENTIAL TEMPERATURE INDICATOR (LED OR SCREEN)
FSH	FLOW SWITCH HIGH	TDI	DIFFERENTIAL TEMPERATURE TRANSMITTER
FSL	FLOW SWITCH LOW	TDIT	TEMPERATURE SENSOR/RESISTANCE
FY	FLOW SIGNAL CONVERTER, REPEATER, OR ISOLATOR	TE	TEMPERATURE DETECTOR
HIC	HAND INDICATING CONTROLLER	TSH	TEMPERATURE SWITCH HIGH
HMS	MOMENTARY PUSHBUTTON OR SELECTOR SWITCH	TSHH	TEMPERATURE SWITCH HIGH-HIGH
HS	HAND SWITCH	TSL	TEMPERATURE GAUGE
IE	CURRENT ELEMENT/SENSOR	TG	TEMPERATURE INDICATOR (LED OR SCREEN)
IAH	CURRENT ALARM HIGH (MOTOR OVERLOAD)	TI	TEMPERATURE INDICATING TRANSMITTER
ISH	CURRENT SWITCH HIGH USED TO DETECT HIGH TORQUE	TIT	MULTIVARIABLE/Common Alarm/Common
JA	POWER FAILURE ALARM	UA	FAULT
JI	POWER INDICATOR	UCR	RUN COMMAND
JL	POWER INDICATING LIGHT	UCS	STOP COMMAND
JIT	POWER INDICATING TRANSMITTER	VAH	VIBRATION ALARM HIGH
KQI	TIME TOTALIZING INDICATOR	VAH	PRIMARY WEIGHT SENSOR/LOAD CELL
LAL	LEVEL ALARM LOW	WE	WEIGHT GAUGE
LALL	LEVEL ALARM LOW-LOW	WG	WEIGHT INDICATING TRANSMITTER
LAH	LEVEL ALARM HIGH	WIT	GENERAL ALARM EVENT
LAHH	LEVEL ALARM HIGH-HIGH	YA	EVENT INDICATION (LED OR SCREEN)
LE	PRIMARY LEVEL ELEMENT/SENSOR	YI	RUNNING INDICATION
LG	LEVEL SIGHT GAUGE	YIR	STOPPED INDICATION
LI	LEVEL INDICATOR (LED OR SCREEN)	YIS	EVENT INDICATING LIGHT
LSL	LEVEL SWITCH LOW	YL	RUNNING INDICATING LIGHT
LSLL	LEVEL SWITCH LOW LOW	YLR	STOPPED INDICATING LIGHT
LSH	LEVEL SWITCH HIGH	YLS	POSITION INDICATOR
LSHH	LEVEL SWITCH HIGH-HIGH	ZI	CLOSED INDICATION
LY	LEVEL SIGNAL CONVERTER, ISOLATOR, OR REPEATER	ZIC	OPEN INDICATION
OAH	TORQUE ALARM HIGH	ZIO	CLOSED INDICATING LIGHT
OAHH	TORQUE ALARM HIGH-HIGH	ZLC	OPEN INDICATING LIGHT
OSH	TORQUE SWITCH HIGH	ZLO	CLOSED POSITION SWITCH
OSHH	TORQUE SWITCH HIGH-HIGH	ZSC	OPEN POSITION SWITCH
PAL	PRESSURE ALARM LOW	ZSO	POSITION INDICATING TRANSMITTER
PALL	PRESSURE ALARM LOW-LOW	ZIT	POSITION TRANSMITTER
PAH	PRESSURE ALARM HIGH	ZT	
PAHH	PRESSURE ALARM HIGH-HIGH		
PDG	DIFFERENTIAL PRESSURE GAUGE		
PDI	DIFFERENTIAL PRESSURE INDICATOR (LED OR SCREEN)		

GENERAL INSTRUMENT SYMBOLS



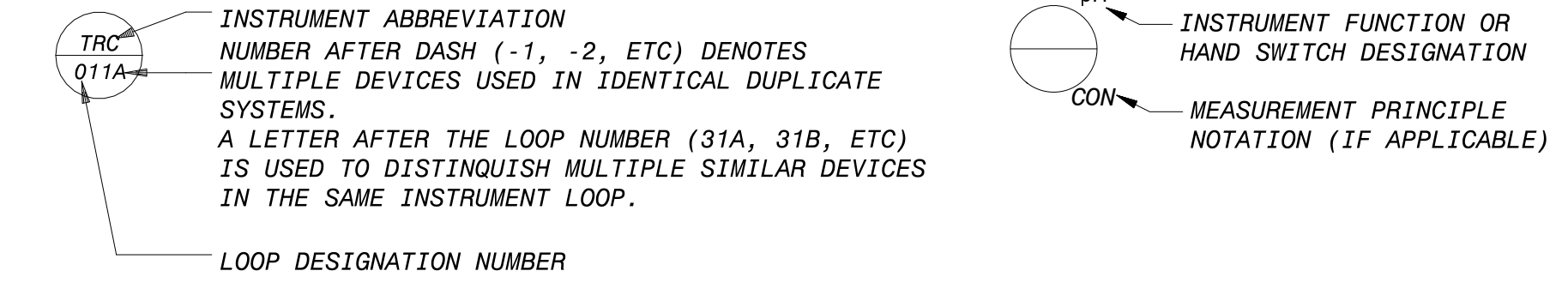
DIGITAL SYSTEMS INTERFACE SYMBOLS

NOTE: REFER TO DETAILED SYSTEM SPECIFICATIONS FOR FUNCTIONAL DESCRIPTION. ALSO SEE I/O SCHEDULES FOR COMPLETE INPUT AND OUTPUT LISTINGS.



- △ DISCRETE INPUT
- ▽ DISCRETE OUTPUT
- ▲ ANALOG INPUT
- ▼ ANALOG OUTPUT
- ▲ PULSE INPUT

INSTRUMENTATION SYMBOLOGY AND DESIGNATIONS



FUNCTION DESIGNATIONS AND ABBREVIATIONS

MEASUREMENT PRINCIPLE NOTATIONS	INSTRUMENT FUNCTIONS	HAND SWITCH DESIGNATIONS
CON CONDUCTANCE	K GAIN OR ATTENUATE (INPUT:OUTPUT)	ESTOP EMERGENCY STOP
DP DIFFERENTIAL PRESSURE SENSING	-K GAIN AND REVERSE	FR FORWARD-REVERSE
FLN FLOW NOZZLE	Σ ADD OR SUM (ADD AND SUBTRACT)	HOA HAND-OFF-AUTO
FLT FLOW TUBE	Δ SUBTRACT (DIFFERENCE)	HOR HAND-OFF-REMOTE
GWR GUIDED WAVE RADAR	√ EXTRACT SQUARE ROOT	LOA LOCAL-OFF-AUTO
RAD RADAR	÷ DIVIDE	LOR LOCAL-OFF-REMOTE
US ULTRASONIC	F(X) CHARACTERIZE SIGNAL	LR LOCAL REMOTE
VENT VENTURI TUBE	> HIGH-SELECT	OCA OPEN-CLOSE-AUTO
	< LOW-SELECT	OOA ON-OFF-AUTO
	× MULTIPLY	OC OPEN-CLOSE
	/ INTEGRATE (TIME INTEGRAL)	OO ON-OFF
		OOR ON-OFF-REMOTE
		OSC OPEN-STOP-CLOSE
		RS RESET
		STP STOP
		STRT START

TRANSDUCER & CONVERTER DESIGNATION

CH4 METHANE	E VOLTAGE
CL2 CHLORINE RESIDUAL	FSK FREQUENCY SHIFT KEYING
CO2 CARBON DIOXIDE	H HYDRAULIC
DO DISSOLVED OXYGEN	I CURRENT
H2S HYDROGEN SULFIDE	P PNEUMATIC PULSE
LEL LOWER EXPLOSIVE LIMIT	PD PULSE DURATION
MCC MOTOR CONTROL CENTER	PF PULSE FREQUENCY
MLSS MIXED LIQUOR SUSPENDED SOLIDS	R RESISTANCE (ELECTRICAL)
O2 OXYGEN (PURITY)	
O3 OZONE	
ρ _H pH	
TURB TURBIDITY	

EXAMPLE: I/P = CURRENT TO PNEUMATIC TRANSDUCER

POWER SUPPLY ABBREVIATIONS

AS AIR SUPPLY
ES ELECTRIC SUPPLY
GS GAS SUPPLY
HS HYDRAULIC SUPPLY
NS NITROGEN SUPPLY
SS STEAM SUPPLY
WS WATER SUPPLY
120V 120VAC

120V — POWER SUPPLY SOURCE LABEL. USED ONLY WHERE NECESSARY TO HELP CLARIFY AN INSTRUMENT OR SYSTEM FUNCTION.



Black & Veatch Corporation
Greenville, South Carolina

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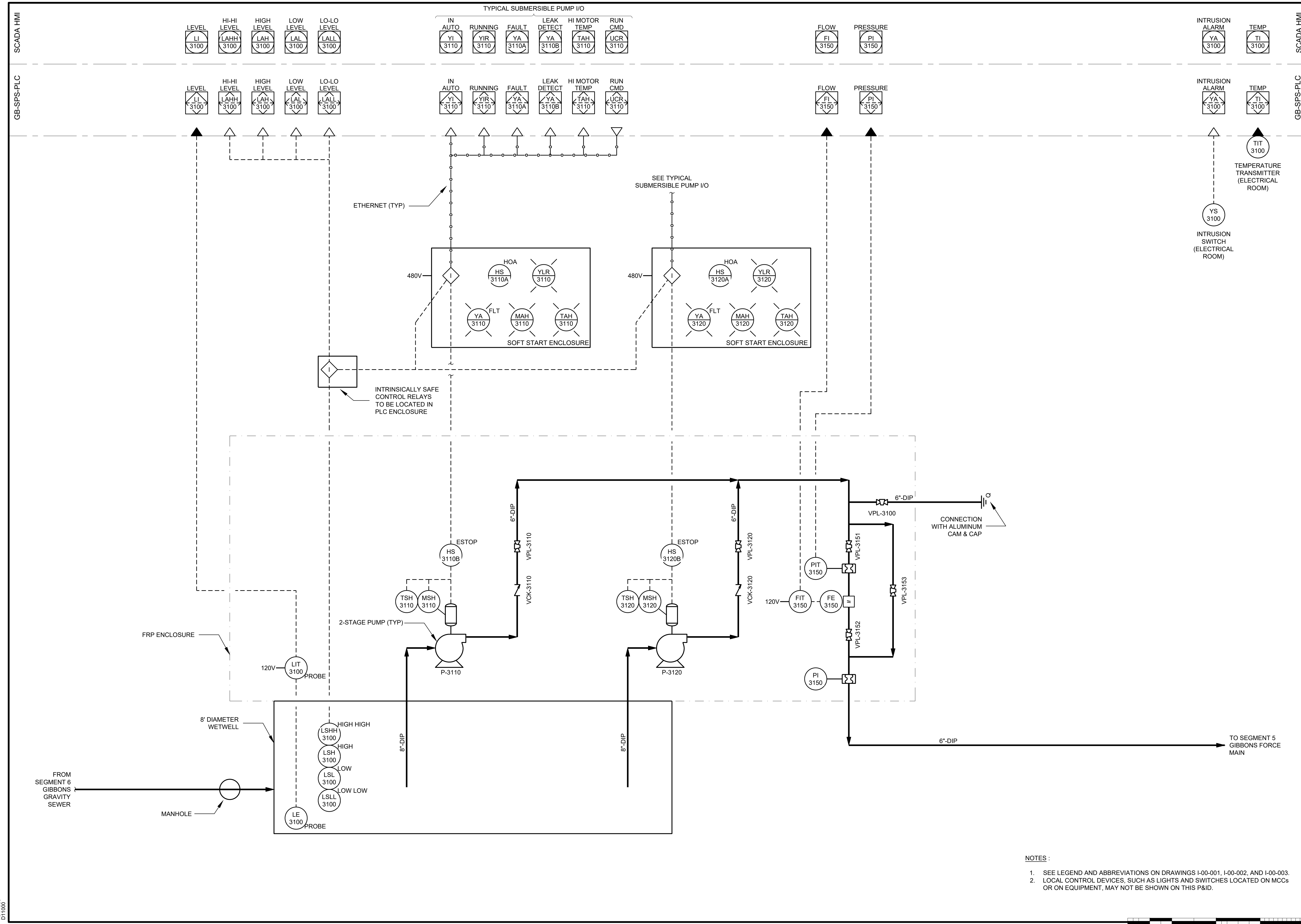
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LEGEND &
ABBREVIATIONS - SHEET 2
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I-00-002

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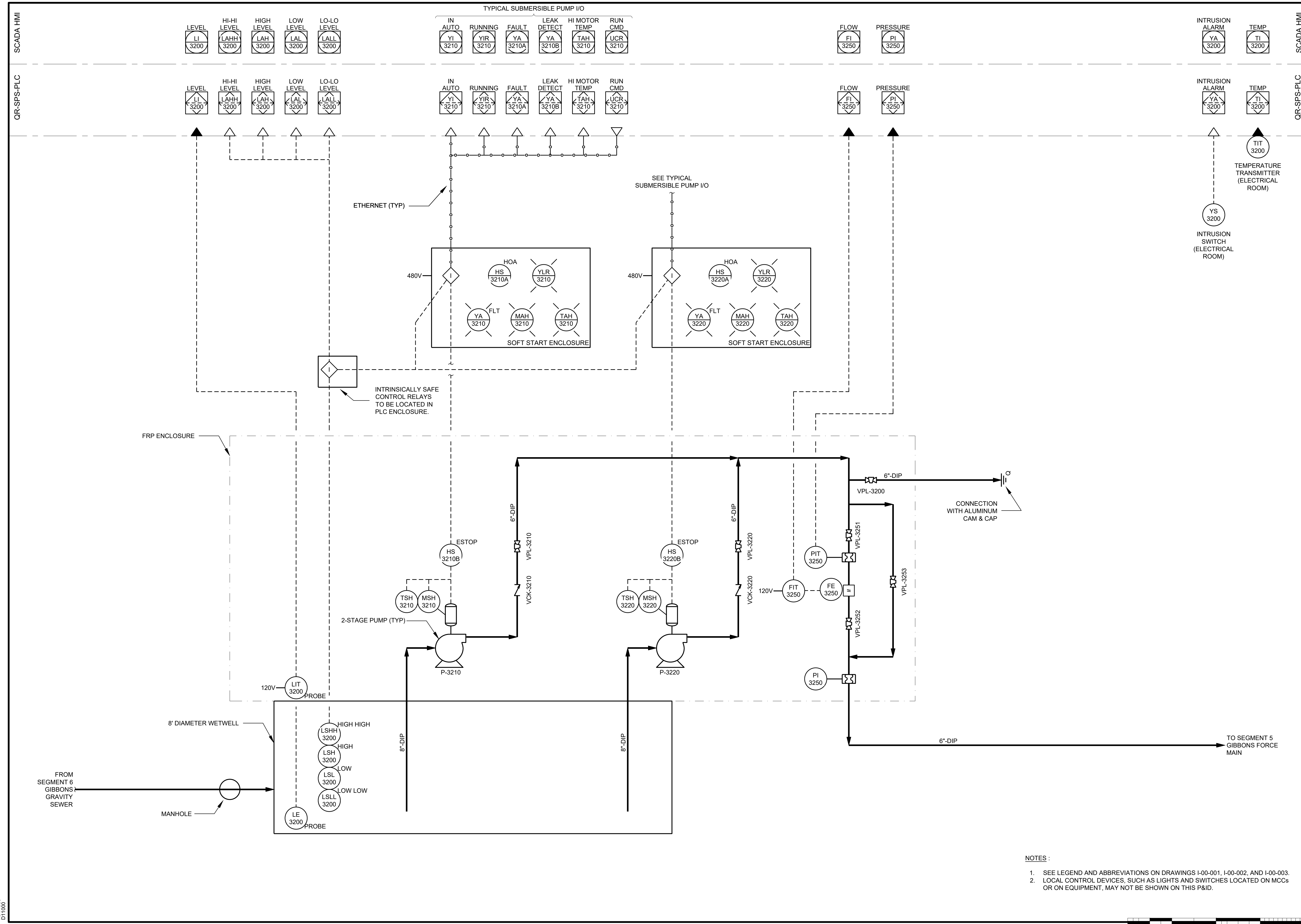
P&ID - GIBBONS SEWAGE PUMP STATION

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P&ID - QUARRY SEWAGE PUMP STATION

I-02-001

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OF
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(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

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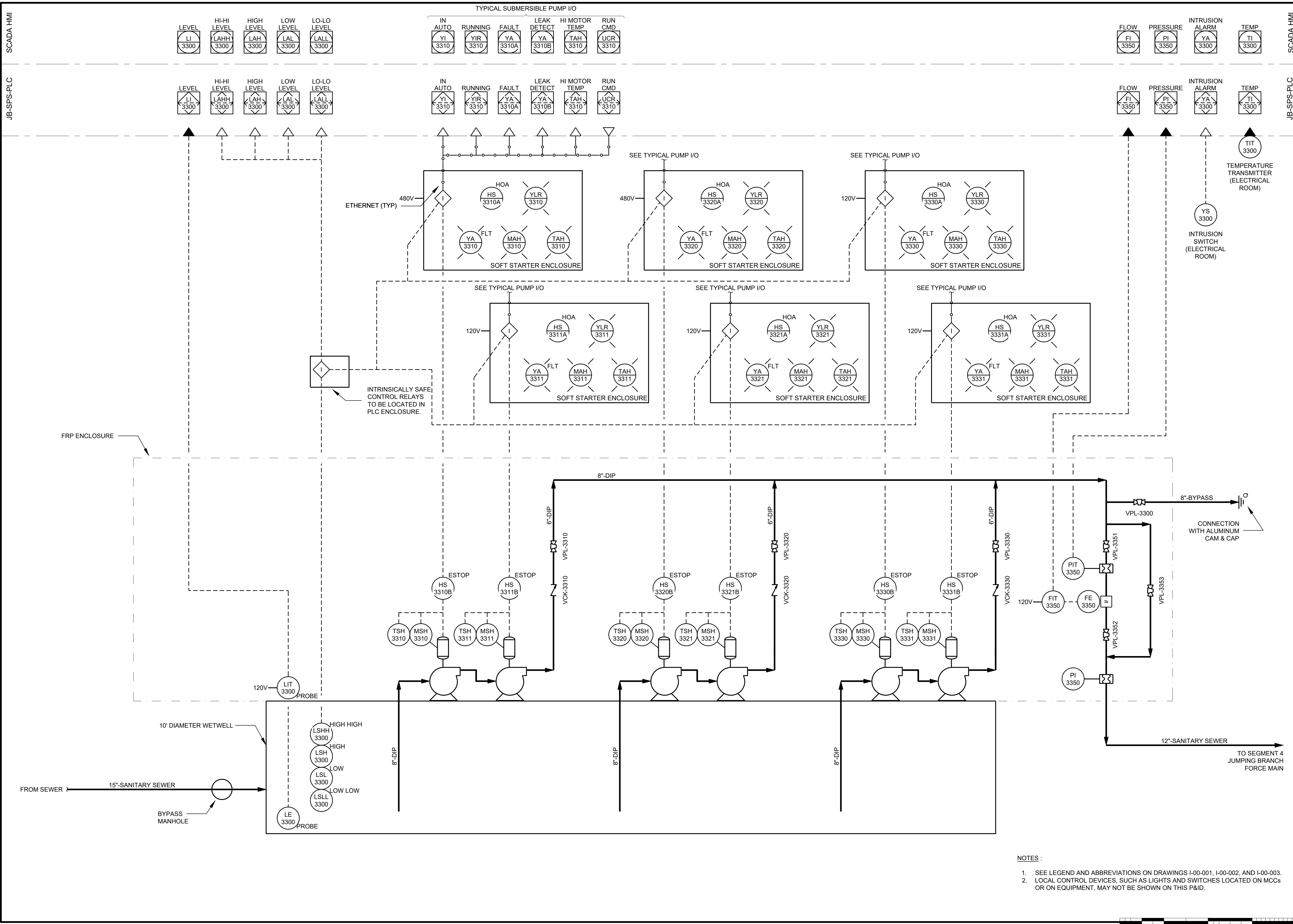
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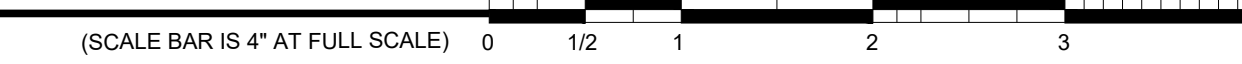
P&ID - JUMPING BRANCH SEWAGE PUMP STATION

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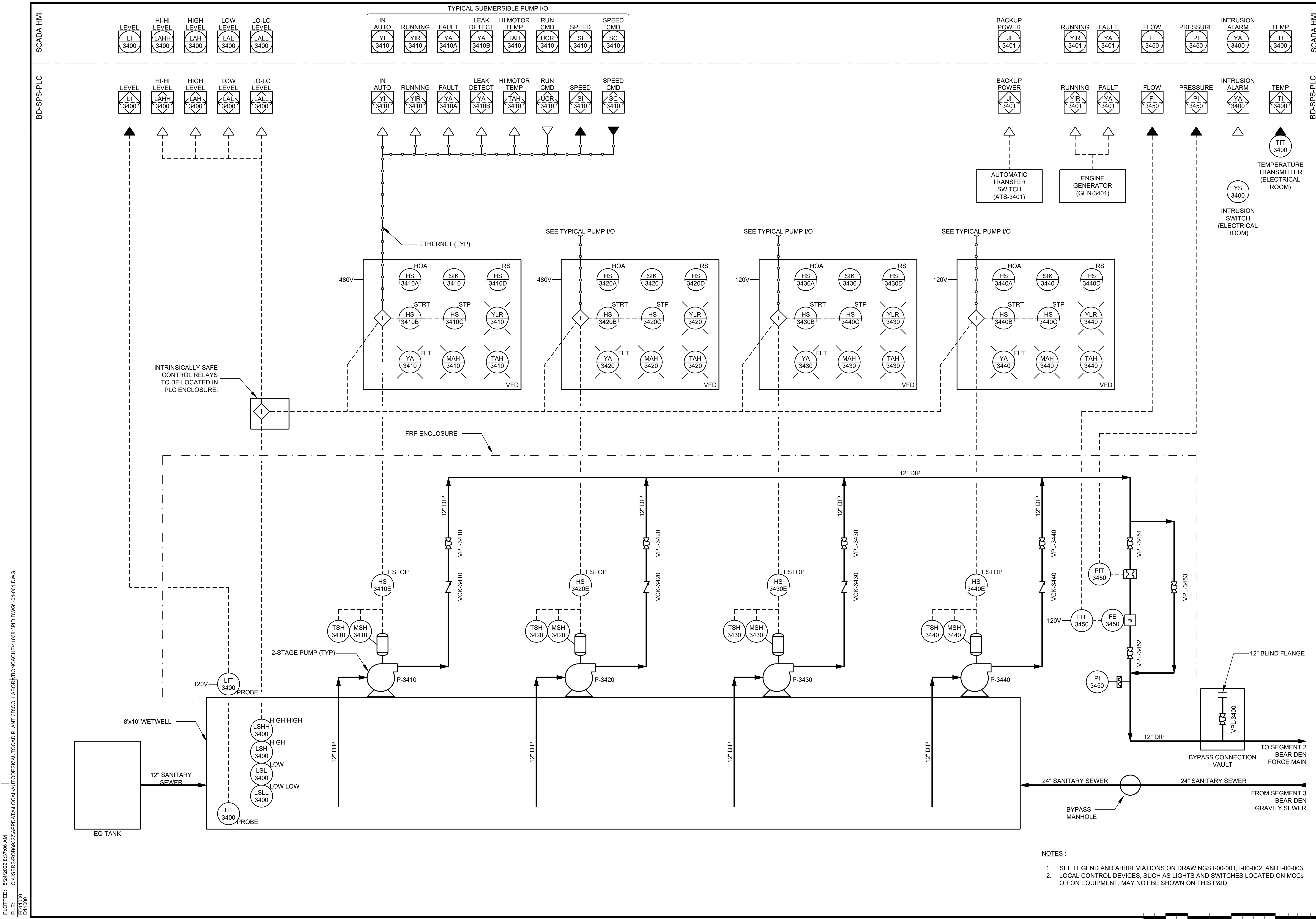
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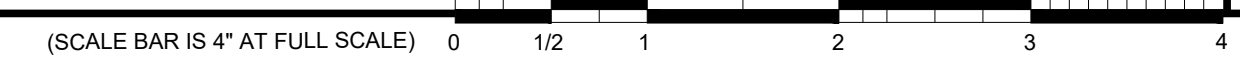
P&ID - BEAR DEN SEWAGE PUMP STATION

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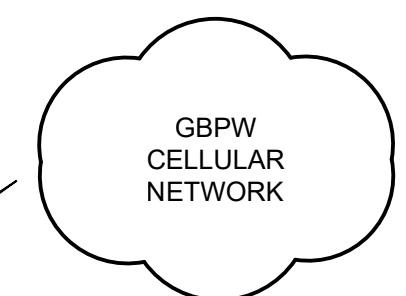
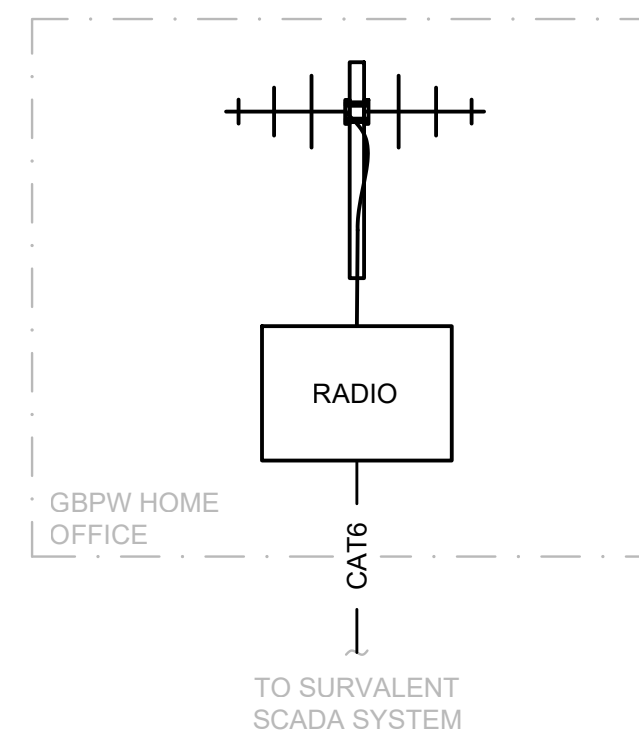
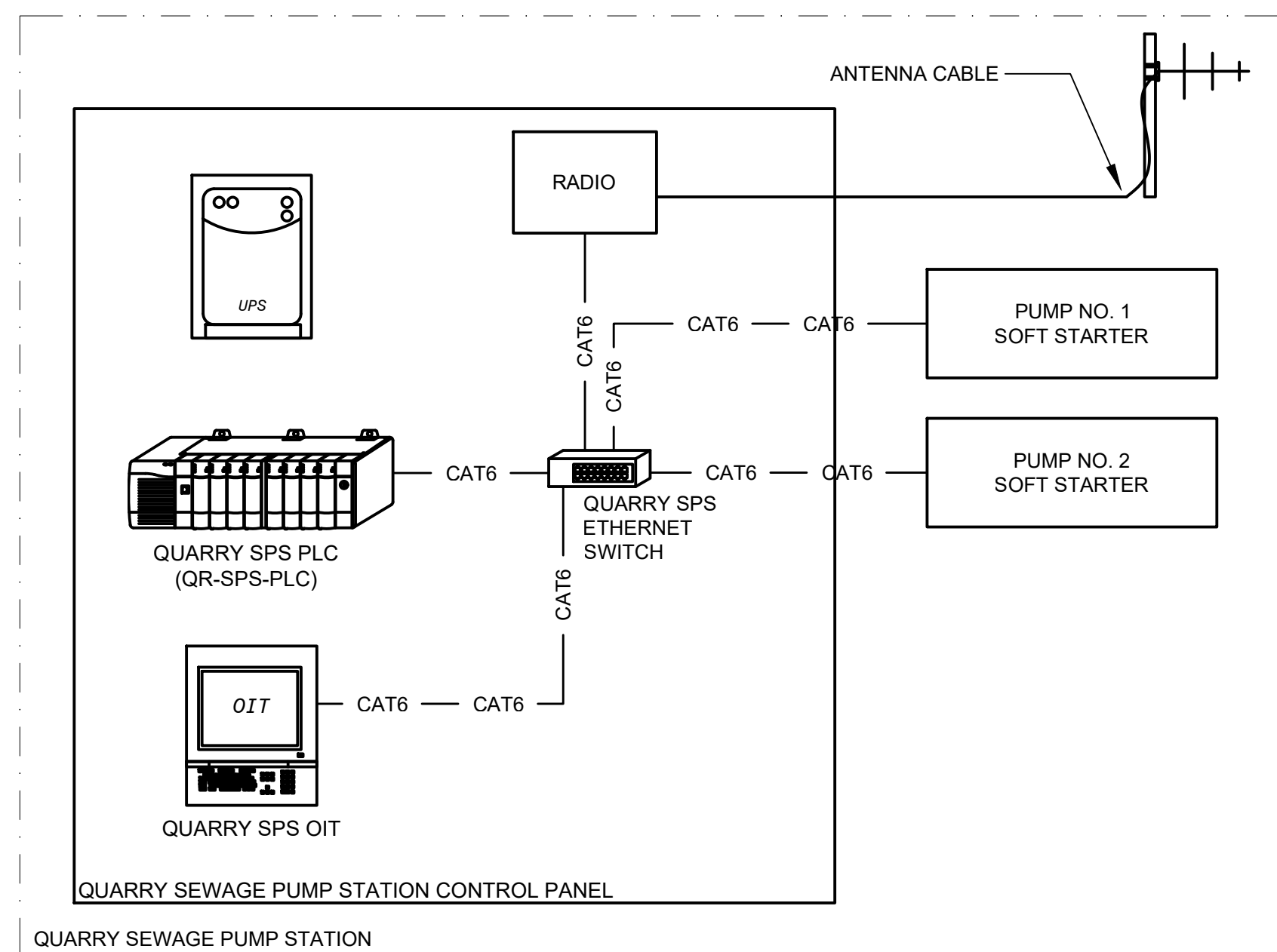
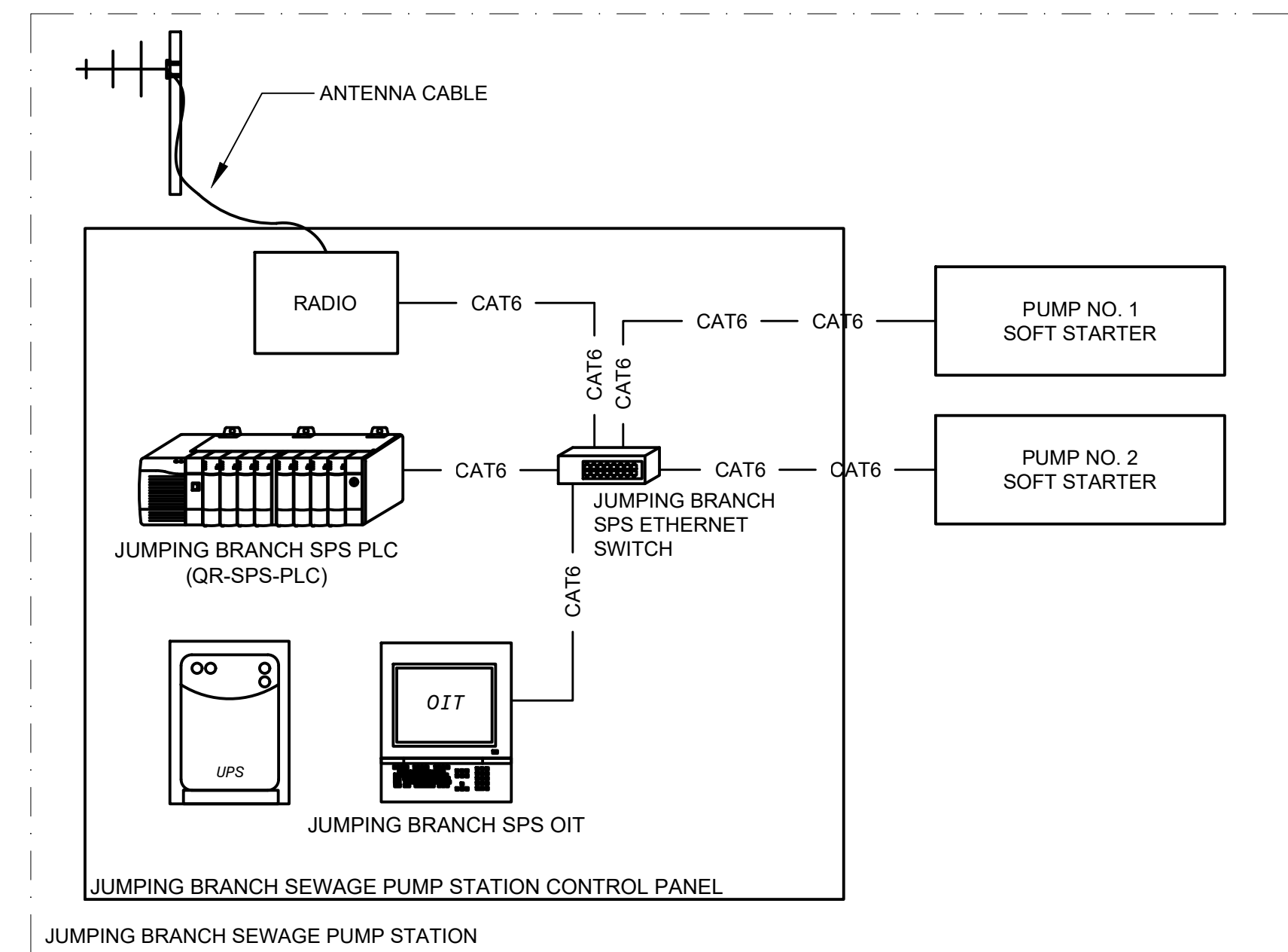
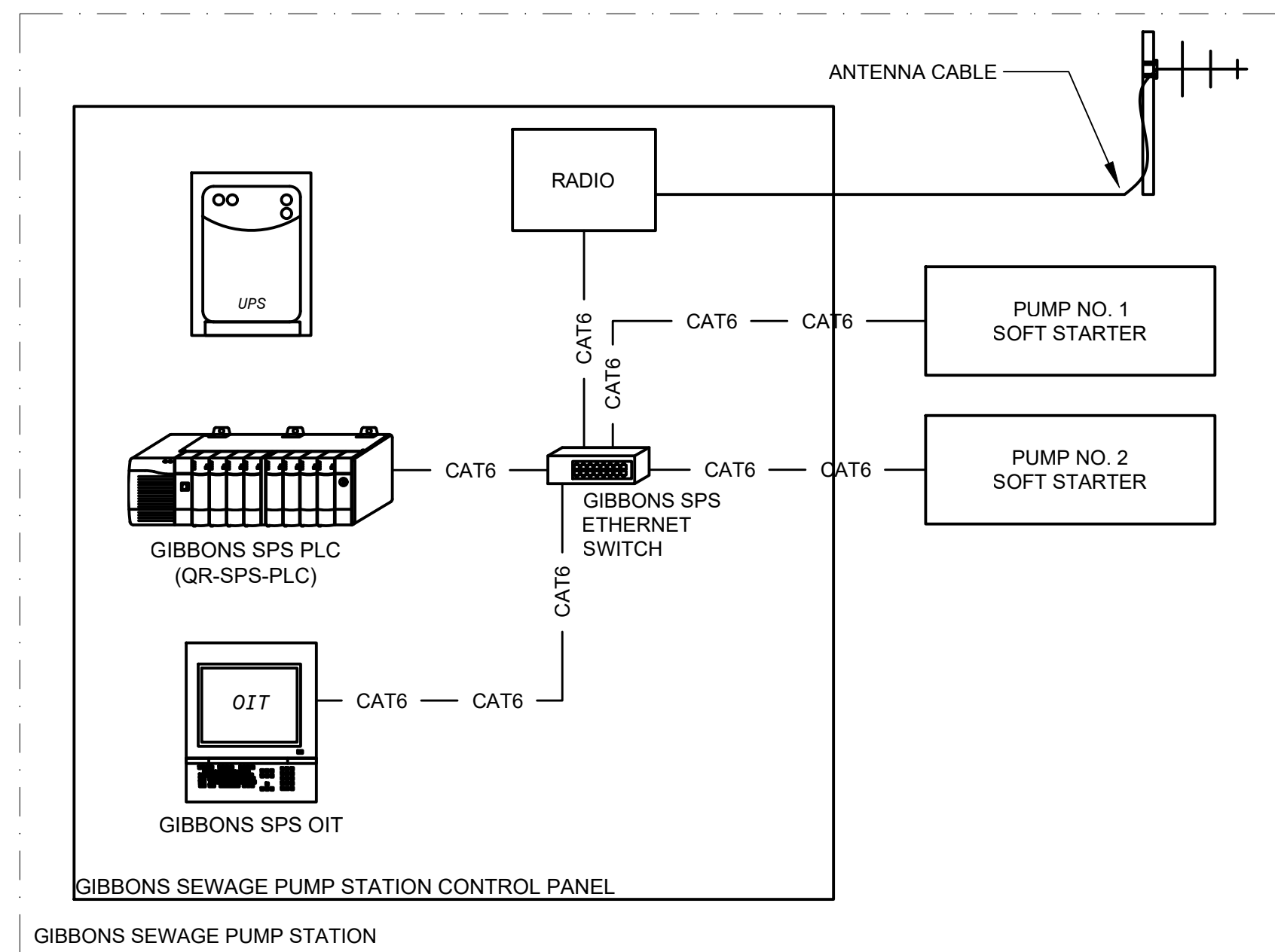
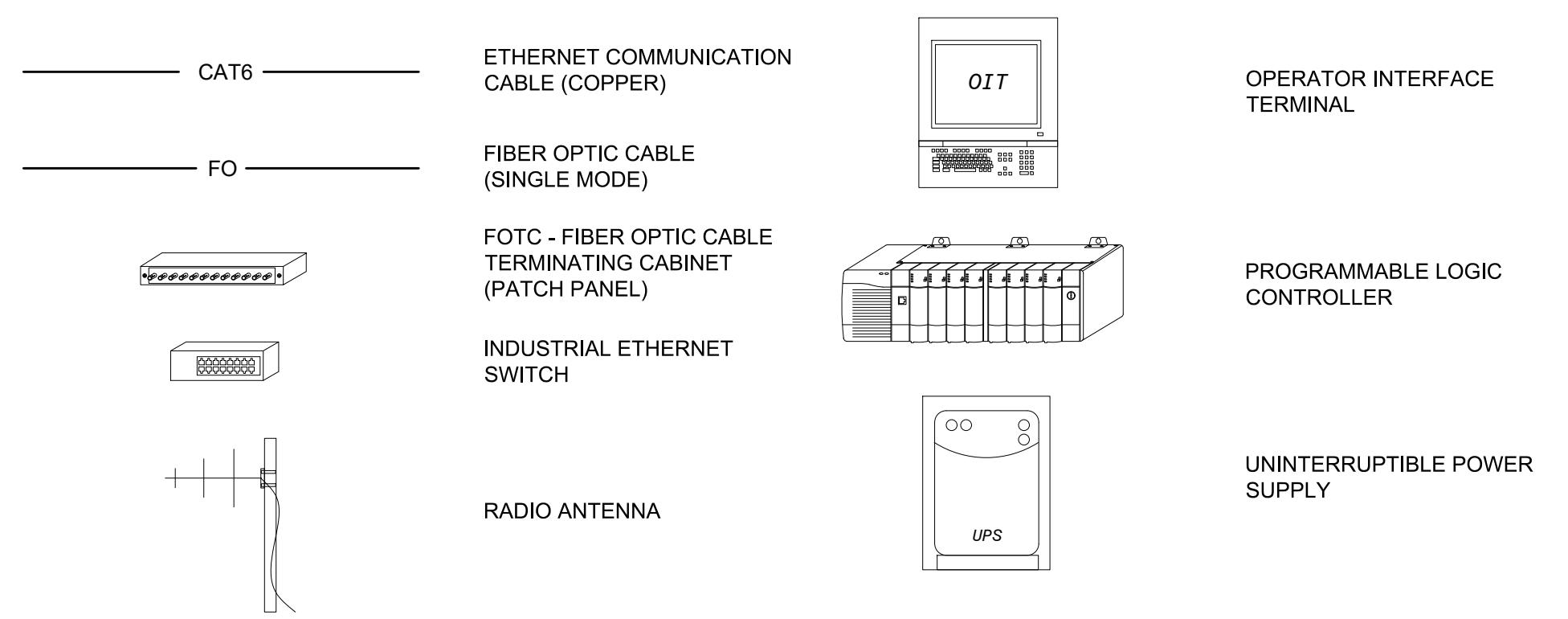
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CONTROL SYSTEM BLOCK DIAGRAM

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