BOLINAS COMMUNITY PUBLIC UTILITY DISTRICT
WASTEWATER TREATMENT AND DISPOSAL SYSTEM
IRRIGATION PUMP STATION REPLACEMENT

VICINITY MAP

SHEET INDEX		
SHEET NUMBER	DRAWING NO	TITLE
GENERAL		
1	G-00	TITLE SHEET
2	G-01	LEGEND, SYMBOLS AND ABBREVIATIONS
3	G-02	SITE PLAN
4	G-03	WWTP LAYOUT
CIVIL		
5	C-01	IRRIGATION PUMP STATION
6	C-02	IRRIGATION PUMP STATION SECTIONS
7	C-03	IRRIGATION PUMP STATION DETAILS
ELECTRICAL		
8	E-01	GENERAL NOTES, ABBREVIATIONS AND SYMBOLS
9	E-02	SINGLE LINE DIAGRAM AND ELEVATION
10	E-03	ELECTRICAL SITE PLAN

PROJECT LOCATION MAP

REGISTERED PROFESSIONAL ENGINEER
ROBERT E. DOYLE
No. C 37580
Exp. 12-31-21
CIVIL
STATE OF CALIFORNIA

Signed 08-18-20

LTR	DATE	ENGR	DESCRIPTION

REVISIONS

DRAWN BY:	CCE	DATE	AUGUST 2020	JOB NO.	71217
CHECKED BY:	FBG & RD	SCALE:	AS NOTED	1	G-00

ALLIED ENGINEERS, INC.
12395 Alcosta Blvd, Suite 2760
San Ramon, CA 94583
(510) 282-8947

BOLINAS COMMUNITY PUBLIC UTILITY DISTRICT

WWT&DS IPS REPLACEMENT

TITLE SHEET

GENERAL ABBREVIATIONS

A	
AB	ANCHOR BOLT
APPROX	APPROXIMATE
ALT	ALTERNATE
AFF	ABOVE FINISHED FLOOR
ANCH	ANCHOR
@	AT
ARCH	ARCHITECTURAL
AUTO	AUTOMATIC
AVE	AVERAGE
B	
BLDG	BUILDING
BM	BENCHMARK
BOTTOM	BOTTOM
C	
℄	CENTERLINE
CONC	CONCRETE
CONT	CONTINUOUS
CL	CHAINLINK
CON'TNG	CONNECTING
D	
DIA	DIAMETER
DIM	DIMENSION
DWG	DRAWING
DISCH	DISCHARGE
E	
ELEC	ELECTRICAL
EA	EACH
EF	EACH FACE
EMER	EMERGENCY
ENGR	ENGINEER
EQUIP	EQUIPMENT
EW	EACH WAY
EXP	EXPANSION
EXT	EXTERIOR, EXTERNAL
F	
FOC	FACE OF CONCRETE
FE	FIRE EXTINGUISHER
FIG	FIGURE
FTG	FOOTING
FF	FINISHED FLOOR
FFE	FINISHED FLOOR ELEVATION
FIN	FINISHED
f'c	COMPRESSIVE STRENGTH
G	
GALV	GALVANIZED
GWB	GYPSUM WALL BOARD
H	
HDPE	HIGH DENSITY POLYETHYLENE
HORIZ	HORIZONTAL
HT	HEIGHT
HR	HANDRAIL
I	
ID	INSIDE DIAMETER
INSUL	INSULATION
IF	INSIDE FACE
IN, INS	INCH, INCHES
J	
JB	JUNCTION BOX
JT	JOINT
L	
LF	LINEAR FEET
LBS	POUNDS
M	
MH	MANHOLE
MAT'L	MATERIAL
MTL	METAL
MAX	MAXIMUM
MED	MEDIUM
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MNF	MANUFACTURER
N	
NO	NUMBER
NTS	NOT TO SCALE
O	
OC	ON CENTER
OD	OUTSIDE DIAMETER
OH	OVERHEAD
OPNG	OPENING
OPP	OPPOSITE
O.F.	OUTSIDE FACE
P	
PE	POLYETHYLENE
PI	POINT OF INTERSECTION
ℙ	PLATE
PL	PROPERTY LINE
PC	PIPE COLUMN
R	
RF	REINFORCE, (ING)
REQ'S	REQUIREMENTS
ROW	RIGHT OF WAY
S	
SCD	SEE CIVIL DRAWINGS
SED	SEE ELECTRICAL DRAWINGS
SMD	SEE MECHANICAL DRAWINGS
SSD	SEE STRUCTURAL DRAWINGS
SHT	SHEET
SOC	SOCKET
SPG	SPIGOT
SPEC	SPECIFICATION
SQ	SQUARE
SS	STAINLESS STEEL
STA	STATION
STD	STANDARD
STL	STEEL
SYM	SYMMETRICAL
T	
T&B	TOP AND BOTTOM
TH	TEST HOLE
T.O.	TOP OF
T.O. CONC.	TOP OF CONCRETE
TYP	TYPICAL
V	
VB	VAPOR BARRIER
VERT	VERTICAL
W	
W/	WITH
W/O	WITHOUT
WP	WATERPROOF, (ED), (ING)
WT	WEIGHT
WWF	WELDED WIRE FABRIC

MECHANICAL ABBREVIATIONS

A	
ARV	AIR RELEASE VALVE
B	
BU	BELL UP
BV	BALL VALVE
C	
CO	CLEANOUT
CPLG	COUPLING
CV	CHECK VALVE
D	
D	DRAIN
DIP	DUCTILE IRON PIPE
E	
EFM	EFFLUENT FLOW MONITOR
ELL	ELBOW
F	
F	FAN
FC	FLOW CONTROLLER
FCV	FLOW CONTROL VALVE
FD	FLOOR DRAIN
FLG	FLANGE
FM	FLOW METER
G	
GAL	GALLON
GV	GATE VALVE
GA	GAGE
GSP	GALVANIZED STEEL PIPE
H	
HV	HOSE VALVE
HW	HOT WATER
HB	HOSE BIB
HWL	HIGH WATER LEVEL
HL	HIGH LEVEL
I	
INV	INVERT
IE	INVERT ELEVATION
INST	INSTRUMENT, (ATION)
L	
LP	LOW PRESSURE
LS	LIFT STATION
LSP	LIFT STATION PUMP
LV	LOUVER
M	
MCC	MOTOR CONTROL CENTER
MJ	MECHANICAL JOINT
N	
NPW	NON-POTABLE WATER
P	
PC	PLANT CONTROLLER
PG	PRESSURE GAGE
PRV	PRESSURE RELIEF VALVE
PS	PIPE SUPPORT
PVC	POLYVINYL CHLORIDE
PW	POTABLE WATER
R	
RP	RECIRCULATION PUMP
S	
SA	SUPPLY AIR
SD	STORM DRAIN
T	
TE	TOP ELEVATION
TOF	TOP OF FOOTING
U	
UH	UNIT HEATER
V	
VTR	VENT THRU ROOF
W	
W	WATER

MECHANICAL SYMBOLS

- CAP
- CLEANOUT (CO)
- CROSS
- DRAIN
- ELBOW
- FILTER (F)
- FLEXIBLE HOSE OR TUBING
- FLOW METER (FM)
- GAGE
- LINE SIZE CHANGE (REDUCER)
- LINE TURNING DOWN
- LINE TURNING UP
- WALL SLEEVE
- STRAINER (S)
- TEE
- TRAP
- UNION
- VENT
- WYE
- BALL VALVE
- THROTTLING VALVE
- CHECK VALVE
- SHUT OFF OR CONTROL VALVE
- PRESSURE RELIEF VALVE
- 3 WAY VALVE
- HOSE VALVE
- HOSE CONNECTION
- BACKFLOW PREVENTER
- POTABLE WATER PIPING
- COMPRESSED AIR PIPING (A)
- DRAINAGE VENT
- DRAINAGE BELOW GROUND
- POTABLE WATER PIPING (PW)

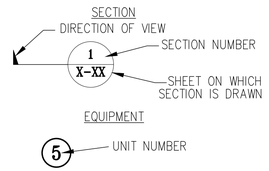
MATERIAL SYMBOLS IN SECTION

- CAST-IN-PLACE CONCRETE
- GRAVEL
- SAND
- EARTH OR GRADE
- STEEL

MATERIAL SYMBOLS IN PLAN

- CHECKERED PLATE
- GRATING
- CONCRETE PAVEMENT & SIDEWALK
- ASPHALT AND ROAD PAVEMENT

GENERAL LEGEND, GENERAL SYMBOLS & DESIGNATIONS



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BOLINAS COMMUNITY PUBLIC UTILITY DISTRICT

WWT&DS IPS REPLACEMENT

LEGEND, SYMBOLS AND ABBREVIATIONS

MESA ROAD

BCPUD SITE PROPERTY LINE

(E) SERVICE BUILDING

(E) TRANSFORMER

(E) TOE OF SLOPE, TYP

POND 1B

POND 2

POND 1A

POND 3

(N) IRRIGATION PUMP STATION (SEE DETAIL THIS PAGE)

(N) SURFACE INTAKE LINES

(E) IRRIGATION PUMP STATION

(E) ACCESS ROAD, TYP

100' WETLAND SETBACK

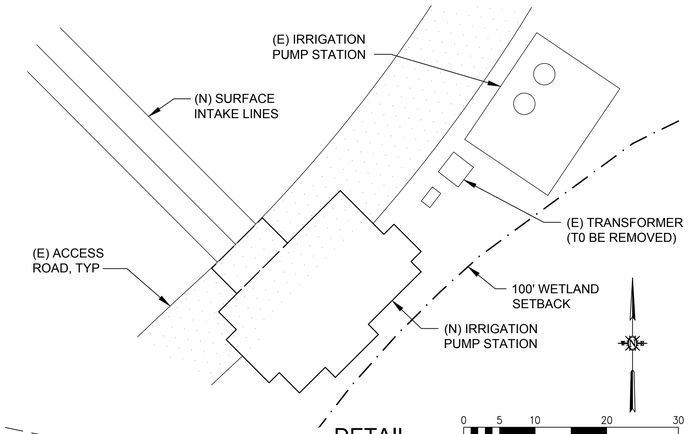
APN 193-030-38

BCPUD SITE PROPERTY LINE

BCPUD SITE PROPERTY LINE

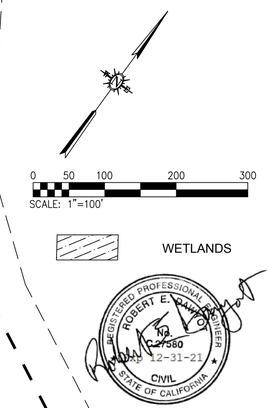
OLEMA TO BOLINAS COUNTY ROAD

BCPUD SITE PROPERTY LINE



DETAIL

SCALE: 1"=10'



REGISTERED PROFESSIONAL ENGINEER
ROBERT E. DAWSON
No. C-27580
Exp. 12-31-21
CIVIL
STATE OF CALIFORNIA

Signed 08-18-20

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BOLINAS COMMUNITY PUBLIC UTILITY DISTRICT

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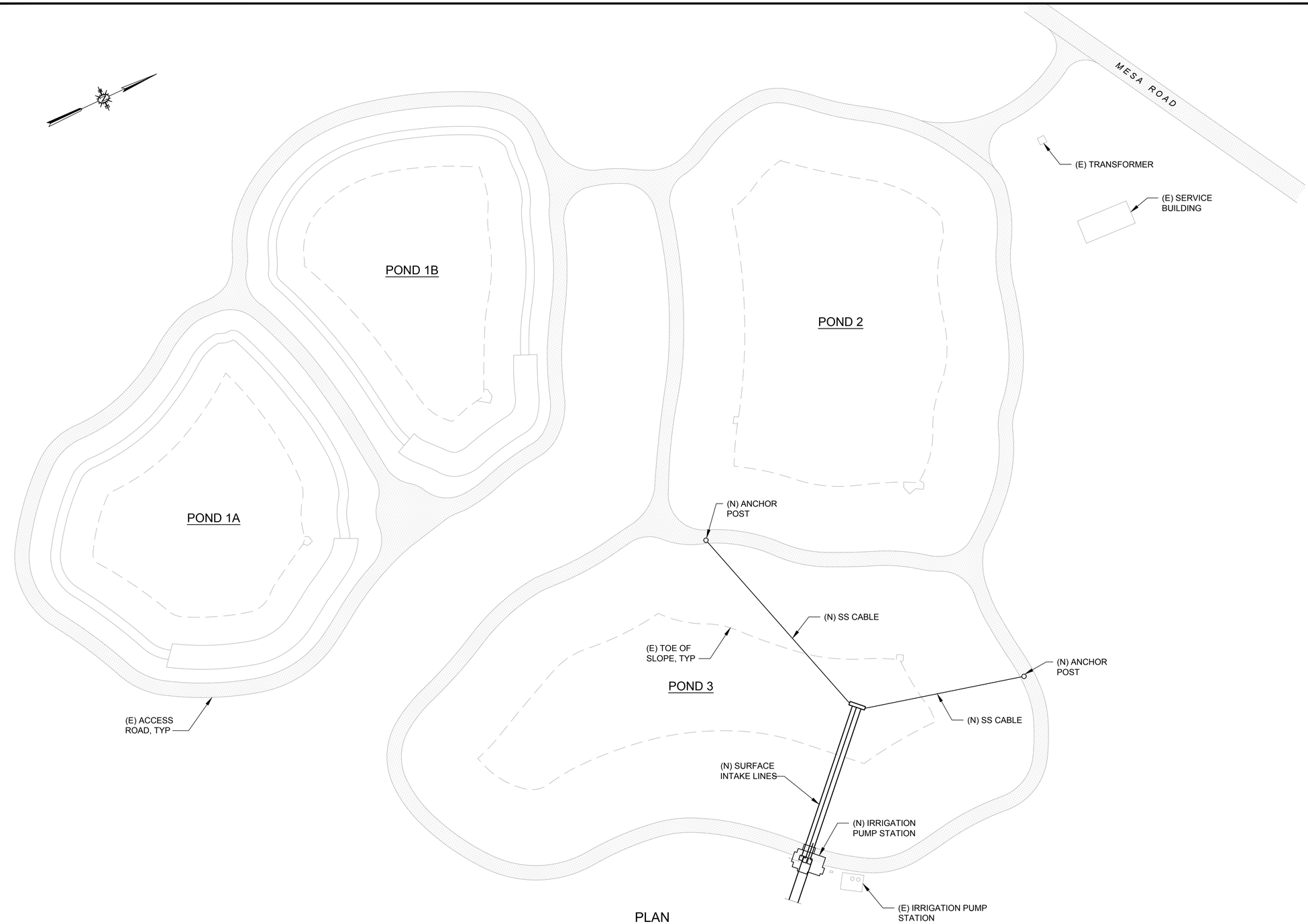
SITE PLAN

NOTES:

1. DRAWING SCALE IS BASED ON AN OLD DRAWING IMAGE AND SHOULD BE CONSIDERED APPROXIMATE. SITE SHOULD BE SURVEYED FOR ACCURACY BEFORE BIDDING.
2. PRECISE LOCATION ON ANCHOR POSTS TO BE DETERMINED BY BCPUD DURING CONSTRUCTION



PLAN

0 20 40 80 120
SCALE: 1"=40'-0"

LTR	DATE	ENGR	DESCRIPTION

REVISIONS

DRAWN BY: CCE	DATE: AUGUST 2020	JOB NO. 71217
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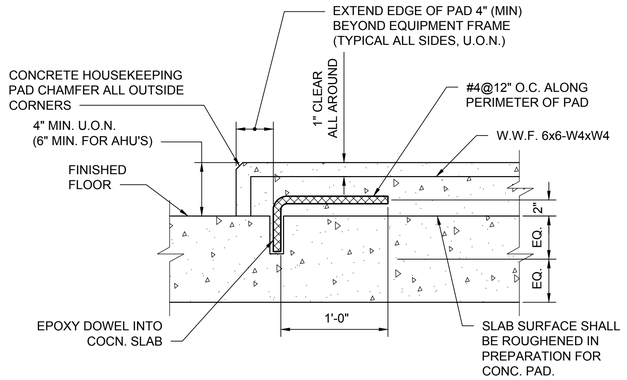
BOLINAS COMMUNITY PUBLIC UTILITY DISTRICT

WWT&DS IPS REPLACEMENT

WWTP LAYOUT

REGISTERED PROFESSIONAL ENGINEER ROBERT E. CAMPBELL No. C 27580 CIVIL STATE OF CALIFORNIA
12-31-21

Signed 08-18-20

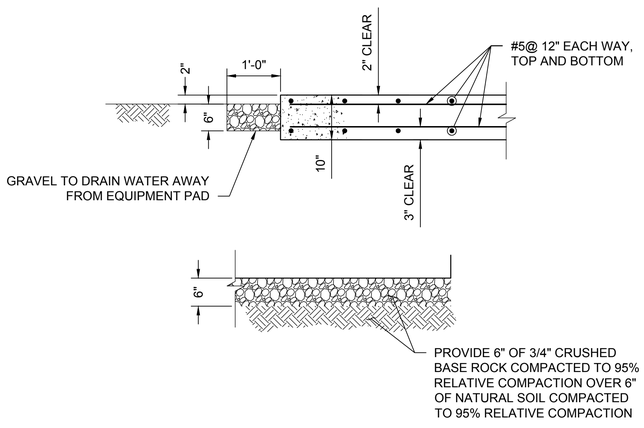


CONSTRUCTION NOTES:
1. PAD DIMENSIONS AND ANCHOR BOLT SIZES TO SUIT EQUIPMENT.

DESIGN NOTES:
1. CONSULT WITH THE STRUCTURAL ENGINEER TO DETERMINE IF A THICKENED FLOOR SLAB UNDER BASE IS REQUIRED.
2. SLAB SURFACE PREPARATION FO PAD DETERMINED BY WHETHER NEW OR EXISTING.

CONCRETE HOUSEKEEPING PAD DETAIL

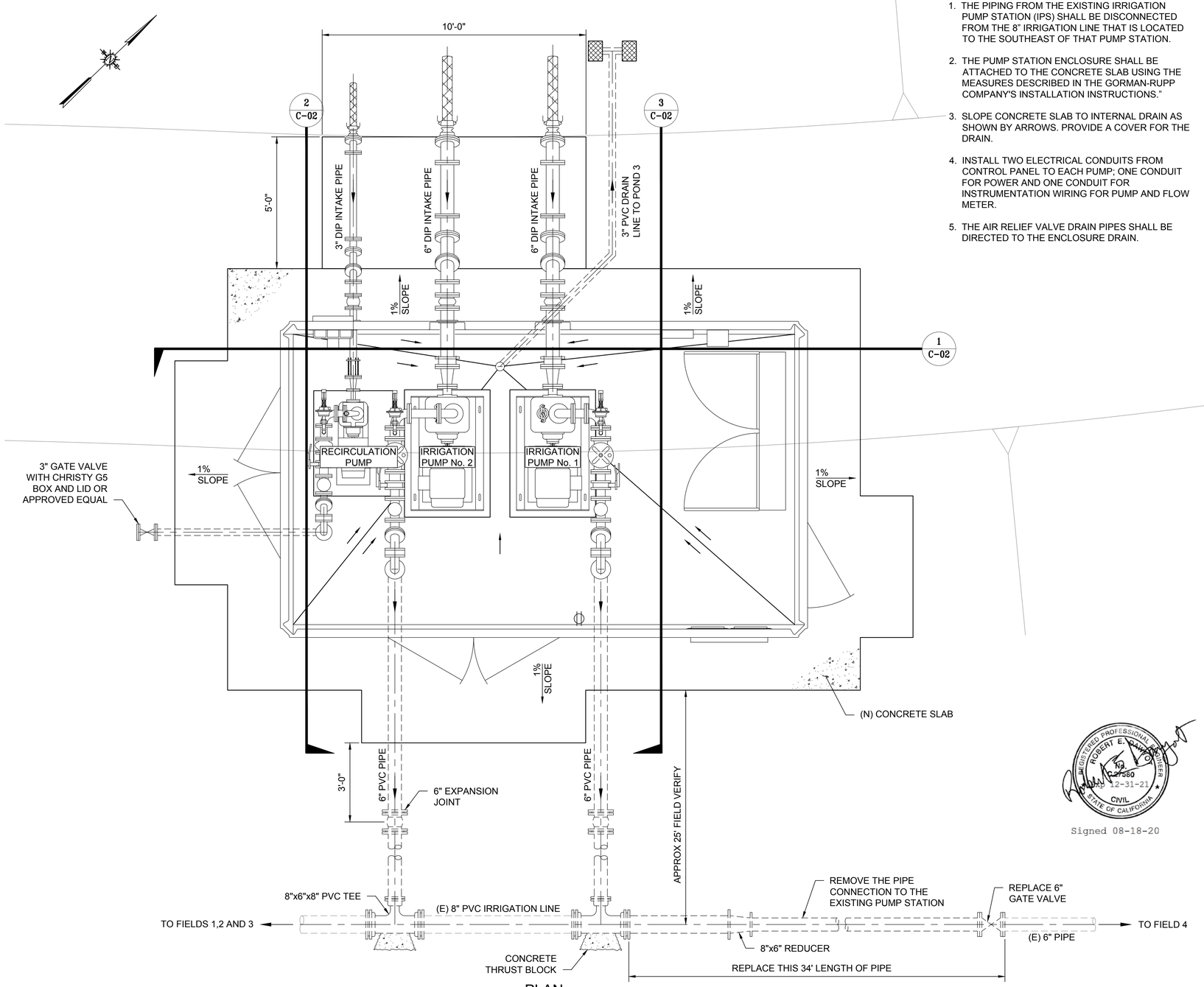
SCALE: NTS



CONCRETE REBAR DETAIL

0 1 2 3 4

SCALE: 3/4"=1'-0"



PLAN

NOTES:
1. THE PIPING FROM THE EXISTING IRRIGATION PUMP STATION (IPS) SHALL BE DISCONNECTED FROM THE 8" IRRIGATION LINE THAT IS LOCATED TO THE SOUTHEAST OF THAT PUMP STATION.
2. THE PUMP STATION ENCLOSURE SHALL BE ATTACHED TO THE CONCRETE SLAB USING THE MEASURES DESCRIBED IN THE GORMAN-RUPP COMPANY'S INSTALLATION INSTRUCTIONS."
3. SLOPE CONCRETE SLAB TO INTERNAL DRAIN AS SHOWN BY ARROWS. PROVIDE A COVER FOR THE DRAIN.
4. INSTALL TWO ELECTRICAL CONDUITS FROM CONTROL PANEL TO EACH PUMP; ONE CONDUIT FOR POWER AND ONE CONDUIT FOR INSTRUMENTATION WIRING FOR PUMP AND FLOW METER.
5. THE AIR RELIEF VALVE DRAIN PIPES SHALL BE DIRECTED TO THE ENCLOSURE DRAIN.

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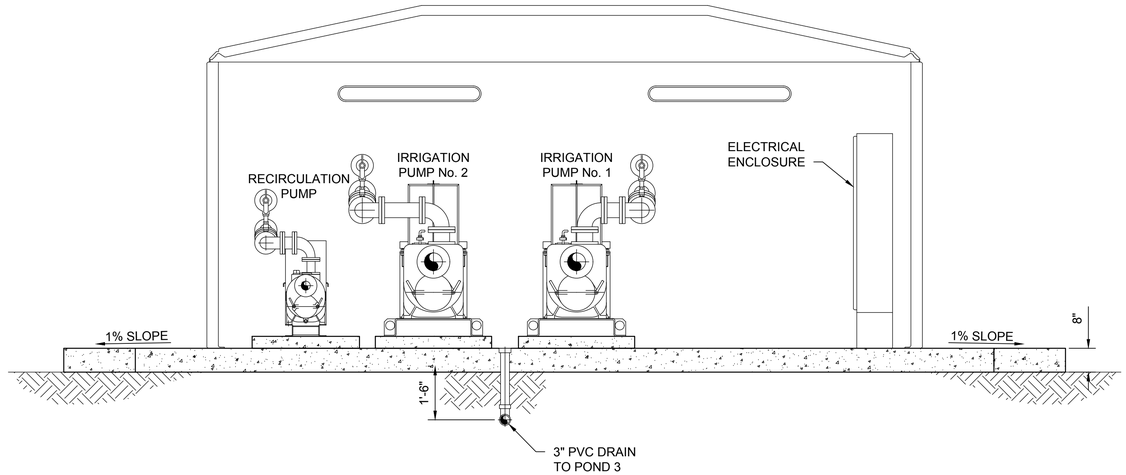
BOLINAS COMMUNITY PUBLIC UTILITY DISTRICT

WWT&DS IPS REPLACEMENT

IRRIGATION PUMP STATION



SECTION 1 / C-01

SCALE: 1/2"=1'-0"

SECTION 2 / C-01

SECTION 3 / C-01

REGISTERED PROFESSIONAL ENGINEER ROBERT E. DUNCAN JR. No. C-21580 Exp. 12-31-21 CIVIL STATE OF CALIFORNIA

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			REVISIONS

DRAWN BY:	CCE	DATE	AUGUST 2020	JOB NO.	71217
CHECKED BY:	FBG & RD	SCALE:	AS NOTED	6	C-02

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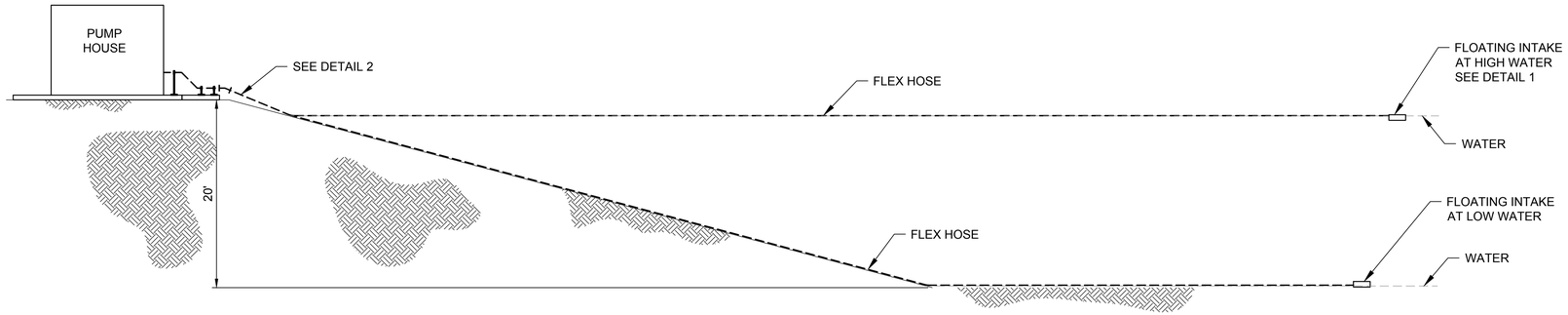
BOLINAS COMMUNITY PUBLIC UTILITY DISTRICT

WWT&DS IPS REPLACEMENT

IRRIGATION PUMP STATION SECTIONS



NOTES:

1. TWO 6" FLOAT DOCK STRAINERS (FDS6) INTAKE STRUCTURES AND ONE 4" FLOAT DOCK STRAINER (FDS4) INTAKE STRUCTURE, MANUFACTURED BY FOL-DA-TANK IN MILAN, IL (www.Fol-Da-Tank.com) AND EACH HAVING THE SAME BODY SIZE, WILL BE ENCLOSED TOGETHER SIDE-BY-SIDE (FDS6/FDS4/FDS6) WITHIN A CUSTOM FABRICATED ALUMINUM FRAME.

2. CONNECT TWO OF THREE 6" FLOAT DOCK STRAINERS (FDS6) INTAKE STRUCTURES USING 6" SS THREADED NIPPLES, AND 6" SS CAM AND GROOVE COUPLING MANUFACTURED BY JASON INDUSTRIAL, INC., 340 KAPLAN DRIVE, FAIRFIELD, NJ (973-2274904; www.jasonindustrial.com) FEMALE COUPLER X FEMALE THREAD - PART NO. D6000S OR APPROVED EQUAL. SECURE HOSE TO HOSE SHANK WITH 3 EACH SS ADJUSTABLE STRAPS (9/16" MIN. WIDTH). CONNECT THE ONE 4" FLOAT DOCK STRAINER (FDS4) INTAKE STRUCTURE THROUGH A 4" TO 3" REDUCING ADAPTER TO THE 3" RUBBER WATER SUCTION HOSE RECIRCULATION
INTAKE PIPELINE.

3. THE ALUMINUM FRAME ENCLOSURE FABRICATED FOR THE THREE FLOAT DOCK STRAINER INTAKE STRUCTURES WILL BE TETHERED TO ANCHOR POSTS WITH STAINLESS STEEL CABLES.

4. CONNECT THE TWO DUCTILE IRON PIPE FLANGES TO THE TWO 6" WATER SUCTION HOSES USING 6" BLIND FLANGE WITH SS NUTS AND BOLTS AND 6" THREADED OPENING , 6" SS THREADED NIPPLE, AND 6" SS CAM AND GROOVE COUPLING MANUFACTURING BY JASON INDUSTRIAL, INC. (FEMALE COUPLER X FEMALE THREAD - PART NO. D600S, AND MALE ADAPTER X HOSE SHANK - PART NO. E600S) OR APPROVED EQUAL. SECURE HOSE TO HOSE SHANK WITH 3 EACH SS ADJUSTABLE STRAPS (9/16" MIN. WIDTH). REPEAT FOR 3" FLANGE DUCTILE IRON PIPELINE USING 3" FITTINGS.

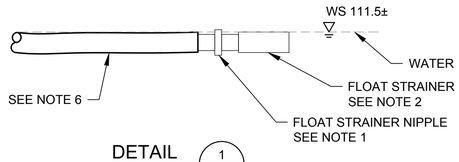
5. THERE WILL BE THREE SUCTION HOSE CONNECTIONS, AND THEY WILL BE LOCATED ON THE EDGE OF POND 3 TO THE NORTH OF THE IRRIGATION PUMP STATION.

6. TWO 140-FOOT 6" RUBBER WATER SUCTION HOSES AND ONE 140-FOOT 3' RUBBER WATER SUCTION HOSE MANUFACTURED BY JASON INDUSTRIAL, INC. PART NO. 4450-0600 AND PART NO. 4450-0300, OR APPROVED EQUAL.

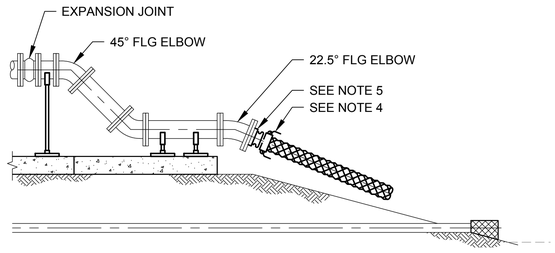
7. ATTACH 3/8" SS CABLES TO THE ALUMINUM ENCLOSURE HOLDING THE THREE FLOAT DOCK STRAINER INTAKE STRUCTURES. THE OTHER ENDS OF THE SS CABLES WILL ATTACH TO THE TWO ANCHOR POSTS ON THE TOP OF THE POND 3 BERM.

8. CONTRACTOR SHALL FOLLOW ALL WRITTEN SPECIFICATIONS FOR UNLOADING AND INSTALLING THE PRE-PURCHASED GORMAN-RUPP PUMPS PACKAGE IRRIGATION PUMP STATION AND ENCLOSURE AS CONTAINED IN THEIR DOCUMENT TITLED "INSTALLATION, OPERATION AND MAINTENANCE MANUAL FOR T SERIES PUMPS AND SUPER U SERIES PUMPS" AND OTHER SUPPORTING DOCUMENTS.

CROSS SECTION OF POND 3 — 2 / C-02
NONE



DETAIL — 1 / C-02
NOT TO SCALE



DETAIL — 2 / C-02
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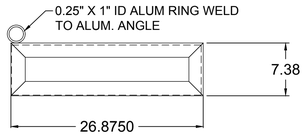
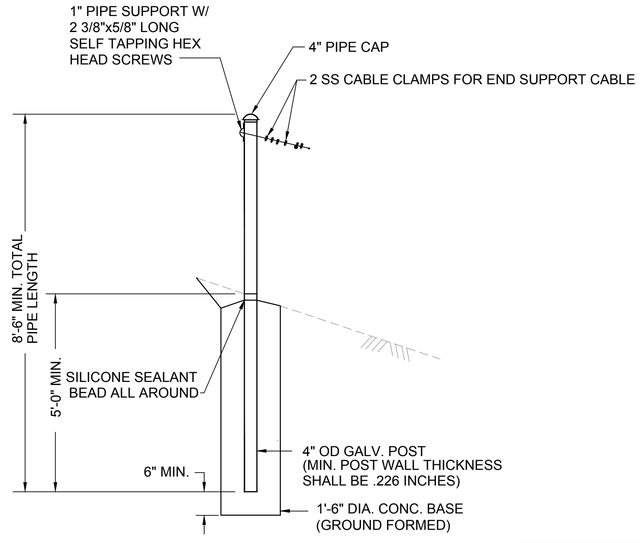


SIDE VIEW

FRONT VIEW



ANCHOR DETAIL — 3 / C-02
NOT TO SCALE

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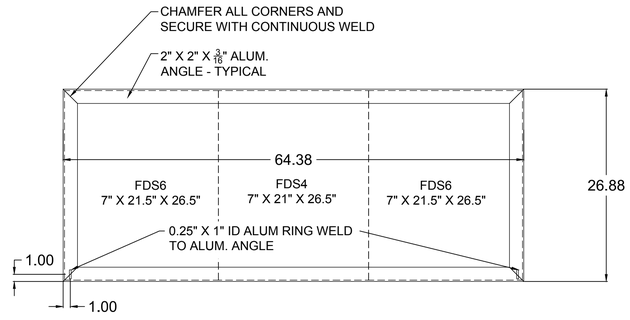

TOP VIEW

FLOATING INTAKE STRUCTURE — 4 / C-02
NOT TO SCALE

LTR	DATE	ENGR	DESCRIPTION

REVISIONS

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BOLINAS COMMUNITY PUBLIC UTILITY DISTRICT

WWT&DS IPS REPLACEMENT

IRRIGATION PUMP STATION DETAILS

1 GENERAL ELECTRICAL

WORK INCLUDED: PROVIDE ALL REQUIRED LABOR, PROJECT EQUIPMENT AND MATERIALS, TOOLS, CONSTRUCTION EQUIPMENT, SAFETY EQUIPMENT, TRANSPORTATION, AND TEST EQUIPMENT, AND SATISFACTORILY COMPLETE ALL ELECTRICAL WORK SHOWN ON THE DRAWINGS, INCLUDED IN THESE SPECIFICATIONS, OR REQUIRED FOR A COMPLETE AND FULLY OPERATING FACILITY. IN ADDITION, PROVIDE WIRING FOR THE EQUIPMENT THAT WILL BE PROVIDED UNDER OTHER DISCIPLINES. PROVIDE MOUNTING EQUIPMENT, FIELD SERVICES, AND TRAINING AS SPECIFIED HEREIN. PROVIDE DEMOLITION, REMOVAL AND INSTALLATION WORK.

QUALITY ASSURANCE: ELECTRICAL EQUIPMENT, MATERIALS, AND INSTALLATION METHODS SHALL CONFORM TO ALL APPLICABLE LOCAL CODES AS WELL AS NATIONAL ELECTRICAL CODE (NEC), 2014 EDITION, THE UNDERWRITER'S LABORATORIES INC. (UL). AND NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA). ALL CONTROL PANELS SHALL BE UL LABELED AS INDUSTRIAL CONTROL PANELS (UL 508).

SUBMIT SHOP DRAWINGS: (DIAGRAMS) FOR REVIEW IN COMPLETE BOUND SETS INDEXED BY SPECIFICATION NUMBER, WITH EXTERIOR TABS MARKED BY SUBJECT. SUBMIT MANUFACTURER'S CATALOG CUTS FOR EACH ITEM FOR WHICH SHOP DRAWINGS ARE NOT REQUIRED. MANUFACTURER'S CATALOG CUTS, SPECIFICATIONS OR DATA SHEETS SHALL BE CLEARLY MARKED TO DELINEATE THE OPTIONS OR STYLES TO BE FURNISHED.

AS-BUILT DRAWINGS: MAINTAIN A COMPLETE AND ACCURATE RECORD SET OF DRAWINGS FOR THE ELECTRICAL CONSTRUCTION WORK. RECORD ALL WORK THAT IS INSTALLED DIFFERENTLY THAN SHOWN ON THE DRAWINGS. UPON COMPLETION OF THE WORK, TRANSFER ALL MARKED CHANGES TO A CLEAN SET OF FULL-SIZE DRAWINGS WITH RED INK. MARK THE DRAWINGS "AS-BUILT DRAWINGS" AND SUBMIT THEM TO THE ENGINEER.

TESTING: THE CONTRACTOR SHALL PROVIDE LABOR, INSTRUMENTS, AND OTHER MATERIAL TO COMPLETE THE TESTS. PERFORM THE OPERATIONAL READINESS TEST AND FUNCTIONAL ACCEPTANCE TEST.

FUNCTIONAL ACCEPTANCE TEST (FAT): THE CONTRACTOR SHALL PERFORM THE FAT AND SHALL OPERATE ALL EQUIPMENT AND SYSTEMS OVER THE FULL OPERATING RANGE, SHALL DEMONSTRATE PROPER OPERATION OF ALARMS AND INDICATORS, AND, IN GENERAL, SHALL DEMONSTRATE THAT THE EQUIPMENT AND SYSTEMS MEET THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS.

SYSTEM TESTING: THE CONTRACTOR/SYSTEM SUPPLIER SHALL PROGRAM, INSTALL AND TEST ALL CONTROLLER, PLC AND RTU COMPONENTS AND INSTRUMENTS. PROVIDE A QUALIFIED MANUFACTURER'S SERVICE PERSON TO PERFORM TESTING. FIELD-TESTING SHALL INCLUDE: POINT-TO-POINT WIRE CHECKING OF ALL PLC/RTU I/O CIRCUITS, VERIFICATION OF PROPER FUNCTIONING OF ALL ANALOG I/O LOOPS.

TRAIN OWNER PERSONNEL; PROVIDE FOUR HOURS ON SITE TRAINING. THE CONTRACTOR SHALL PROVIDE ALL MANUALS AND STUDY MATERIALS REQUIRED FOR THE TRAINING OF OWNER PERSONNEL

SPARE PARTS: FOR EACH PIECE OF EQUIPMENT, SUBMIT A LIST OF RECOMMENDED SPARE PARTS. INCLUDE PART NUMBERS AND THE NAME, ADDRESS, AND TELEPHONE NUMBER OF THE SUPPLIER.

2 ENCLOSURES AND LOCATIONS

DEFINITIONS OF TYPES OF LOCATIONS: WET LOCATIONS: ALL LOCATIONS EXPOSED TO THE WEATHER, WHETHER UNDER A ROOF OR NOT. UNLESS SPECIFIED OTHERWISE PROVIDE NEMA 3R. DAMP LOCATIONS: ALL INDOOR SPACES WHOLLY OR PARTIALLY UNDERGROUND, OR HAVING A WALL OR CEILING FORMING PART OF A CHANNEL OR SUMP UNLESS SPECIFIED OTHERWISE PROVIDE NEMA 4X SS. INDOOR LOCATIONS, OUT OF THE WEATHER, NEMA 1A OR 12.

3 CONDUIT AND CONDUCTORS

CONDUIT AND FITTINGS: GALVANIZED RIGID STEEL (GRS) CONDUIT AND FITTINGS SHALL BE HOT DIP GALVANIZED AFTER FABRICATION AND SHALL CONFORM TO ANSI C80.1 AND UL 6. PVC COATED GRS (PCRS) CONDUIT AND FITTINGS SHALL CONFORM TO PARAGRAPH A AND NEMA RN1 AND SHALL HAVE A 40 MIL THICK PVC COATING. FLEXIBLE CONDUIT SHALL BE LIQUID TIGHT WITH PVC JACKET OVER GALVANIZED FLEXIBLE STEEL CONDUIT. RIGID NONMETALLIC CONDUIT SHALL BE PVC SCHEDULE 40 SHALL BE RATED 90'C, AND SHALL CONFORM TO UL 651. FOR GRS AND PVC COATED GRS CONDUIT SYSTEMS, PROVIDE THREADED FITTINGS. BUSHINGS SHALL BE INSULATED TYPE. BUSHINGS FOR GRS AND PVC COATED GRS CONDUIT SYSTEMS SHALL BE INSULATED GROUNDING TYPE. ALL EXPOSED SURFACE MOUNTED CONDUIT SHALL BE GRS. SMALL BOXES: PROVIDE CAST METAL OUTLET AND JUNCTION BOXES (FS TYPE) CONFORMING TO UL 514.

CONDUCTORS: ALL POWER AND CONTROL CONDUCTORS SHALL BE STRANDED COPPER, TYPE THHN/THWN WITH 600 V INSULATION. ALL CONDUCTORS SHALL BE SIZED FOR OPERATION AT 75'C MAXIMUM OPERATING TEMPERATURE. 120-VOLT CONTROL, INDICATOR, SIGNAL AND METERING CONDUCTORS SHALL BE #14 AWG, AND SHALL BE STRANDED. TSP CABLES SHALL BE NO. 18 TWISTED SHIELDED PAIRS (TSP) WITH 600-VOLT INSULATION, POLYVINYL JACKET AN OVERALL SHIELD OVER THE MULTIPLE PAIRS OR TRIADS. TWO-CONDUCTOR CABLE SHALL HAVE BLACK-CLEAR INSULATION; THREE-CONDUCTOR CABLE SHALL HAVE BLACK-RED-CLEAR INSULATION. SIGNAL CABLES SHALL BE MANUFACTURED BY BELDEN.

COLOR CODING AND LABELING: COLOR CODING OF LOW VOLTAGE BUILDING WIRE: PROVIDE COLOR-CODING THROUGHOUT THE ENTIRE NETWORK OF FEEDERS AND CIRCUITS (600 VOLTS AND BELOW) AS FOLLOWS:

PHASE	120/240 VOLTS	277/480 VOLTS
PHASE A	BLACK	BROWN
PHASE B	RED	ORANGE
PHASE C	BLUE	YELLOW
NEUTRAL	WHITE	GRAY
GROUND	GREEN	GREEN

AC CONTROL WIRE SHALL BE RED OR PINK. DC CONTROL WIRE SHALL BE BLUE. DC POWER SUPPLY WIRES SHALL BE RED. DC ANALOG SIGNAL WIRES SHALL BE BLACK IF POSITIVE AND WHITE (OR CLEAR) IF NEGATIVE. DC SYSTEM SIGNAL COMMONS SHALL BE WHITE. EQUIPMENT GROUNDS SHALL BE GREEN.

4 GROUNDING

ELECTRICAL GROUNDING: GROUND RODS SHALL BE COPPER CLAD STEEL, NOT LESS THAN 5/8-INCH DIAMETER BY 8-FOOT LENGTH. BURIED CONDUCTORS SHALL BE MEDIUM-HARD DRAWN BARE COPPER; OTHER CONDUCTORS SHALL BE SOFT DRAWN COPPER. EXPOSED GROUND CONNECTIONS SHALL BE HIGH COPPER ALLOW BOLTED PRESSURE TYPES. GROUND POWER SYSTEM, ELECTRICAL EQUIPMENT AND RACEWAY GROUNDING AND BONDING, AND SPECIALIZED SYSTEMS INCLUDING TESTING.

5 MISCELLANEOUS

WIRING DEVICES: LIGHT SWITCHES AND RECEPTACLES SHALL BE SPECIFICATION GRADE. DEVICE COVER PLATES SHALL BE SUITABLE FOR THE ENVIRONMENT IN, WHICH THEY ARE INSTALLED, AND THE TYPE OF SERVICE THEY ARE USED FOR. STAINLESS STEEL COVER PLATES SHALL BE USED INSIDE THE BUILDING, AND WEATHERPROOF COVERS SHALL BE USED OUTSIDE THE BUILDING.

NAMEPLATES: FOR EACH PIECE OF ELECTRICAL EQUIPMENT, PROVIDE A MANUFACTURER'S NAMEPLATE SHOWING HIS NAME, LOCATION, THE PERTINENT RATINGS AND THE MODEL DESIGNATION. IDENTIFY EACH PIECE OF EQUIPMENT AND RELATED CONTROLS WITH A RIGID LAMINATED ENGRAVED PHENOLIC OR PLASTIC NAMEPLATE.

FASTENERS: FASTENERS FOR SECURING EQUIPMENT TO WALLS, FLOORS AND THE LIKE SHALL BE GALVANIZED STEEL. WHEN FASTENING TO EXISTING WALLS, FLOORS, AND THE LIKE.

6 DISTRIBUTION EQUIPMENT AND MOTOR CONTROLS

PANELBOARDS: THE CONTRACTOR SHALL PROVIDE PANELBOARDS AS INDICATED ON THE PANEL SCHEDULE ON THE DRAWINGS AND AS DESCRIBED IN THE SPECIFICATIONS. PANELBOARDS SHALL BE OF A TYPE AND RATING AS SHOWN ON THE DRAWINGS. THEY SHALL BE DEAD FRONT WITH HARDWARE FOR ACCEPTING MOLDED CASE BOLT-ON CIRCUIT BREAKERS OF THE MAXIMUM SIZE ALLOWABLE IN EACH SPACE. PANELBOARDS SHALL BE MANUFACTURED BY TESCO, GENERAL ELECTRIC, CUTLER-HAMMER, SQUARED OR APPROVED EQUAL.

CIRCUIT BREAKERS MOUNTED IN ENCLOSURES, PANELBOARDS, DISTRIBUTION PANELS AND CONTROL PANELS SHALL BE MOLDED CASE TYPE AND OF THE RATING FOR EACH APPLICATION. CIRCUIT BREAKERS SHALL BE MOLDED CASE, THERMAL-MAGNETIC, WITH INVERSE TIME CHARACTERISTIC RESPONSE - TEMPERATURE COMPENSATED. MOTOR CIRCUIT PROTECTORS SHALL BE SIMILAR TO CIRCUIT BREAKERS EXCEPT WITH ADJUSTABLE MAGNETIC TRIP AND NO THERMAL TRIP.

MOTOR CONTROLLER: THE VARIABLE FREQUENCY DRIVES SHALL BE PROVIDED AS STAND ALONE SYSTEM PACKAGED IN AN INTEGRAL UNIT. THE VARIABLE FREQUENCY (VARIABLE SPEED) MOTOR CONTROLLERS SHALL BE OF THE LATEST TECHNOLOGY USED EXCLUSIVELY FOR PROVIDING COMPLETE SPEED CONTROL OF A THREE PHASE INDUCTION MOTOR DRIVING A PUMP. ALL VFDS SHALL BE DESIGNED TO MEET THE APPLICABLE NEMA, UL, IEEE, CSA, IEC, AND EN STANDARDS. ALL VFDS SHALL BE MICROPROCESSOR BASED AND INCLUDE OPERATOR INTERFACE UNIT AND APPROPRIATE CABLES. THE VFDS SHALL BE MANUFACTURED BY SQUARE D, ALLEN BRADLEY OR EATON. ALL VFDS MUST FIT INTO THE SPACE SHOWN ON THE DRAWINGS. ALL VFDS SHALL BE ADEQUATELY COOLED. ALL VFDS SHALL BE RATED FOR CONSTANT TORQUE APPLICATIONS REGARDLESS OF ACTUAL LOAD CHARACTERISTICS. ALL VFDS SHALL BE PULSE-WIDTH MODULATED (PWM) DESIGN. INDIVIDUAL OR SIMULTANEOUS OPERATION OF ALL THE VFD'S SHALL NOT ADD MORE THAN 5% TOTAL HARMONIC VOLTAGE DISTORTION TO THE UTILITY POINT OF CONNECTION PER IEEE 519, 1992. THE LINE SIDE OF THE SERVICE DISCONNECT SHALL BE THE POINT OF COMMON COUPLING. ALL VFDS SHALL BE SUPPLIED WITH LINE SIDE REACTORS. THE REACTORS SHALL PRESENT A MINIMUM OF 5.0% IMPEDANCE TO THE SYSTEM. THE REACTORS SHALL BE MOUNTED IN THE VFD ENCLOSURE. THE DRIVE SHALL PROVIDE AN ISOLATED RUN, FAULT AND 4-20MA DC OUTPUT SIGNALS PROPORTIONAL TO SPEED, CURRENT OR VOLTAGE (SELECT MAXIMUM OF TWO SIGNALS) FOR REMOTE MONITORING OF THE VFD. THE VFD SHALL INCLUDE PID LOOP CONTROL ALGORITHYMS. THE VARIABLE FREQUENCY CONTROL SHALL INCLUDE TRANSIENT VOLTAGE SUPPRESSION TO ALLOW RELIABLE OPERATION ON A TYPICAL INDUSTRIAL OR COMMERCIAL POWER DISTRIBUTION SYSTEM.

THE VFD SHALL BE PROTECTED FROM POWER LINE VOLTAGE TRANSIENTS SUCH AS: SWITCHING THE PRIMARY OF A LINE TRANSFORMER, SWITCHING POWER FACTOR CORRECTION CAPACITORS ON AND OFF THE LINE, MOMENTARILY 1/2 CYCLE, OR LESS AND TRANSFER SWITCH OPERATION, 1/2 CYCLE OR LESS WITHOUT MANUAL RESET. VFDS SHALL BE MANUFACTURED BY ALLEN-BRADLEY, SQUARED, EATON/CUTLER-HAMMER OR APPROVED EQUAL.

PRESSURE TRANSMITTER: THE PRESSURE TRANSMITTERS SHALL BE TWO WIRE 4-20 MA LINEAR OUTPUT DEVICE PROPORTIONAL TO THE APPLIED PRESSURE. THE TRANSMITTERS SHALL INCLUDE INDEPENDENT ZERO AND SPAN ADJUSTMENTS, AND ADJUSTABLE DAMPENING. PROCESS WETTED MATERIALS SHALL BE STAINLESS STEEL AND THE PROCESS CONNECTION SHALL BE 2 INCH NPT (FEMALE). THE PRESSURE TRANSMITTERS SHALL BE AS MANUFACTURED BY ROSEMOUNT SERIES 1151, SIEMENS SITRANS P OR EQUAL.

SURGE PROTECTION DEVICE: THE LIGHTNING ARRESTOR/SURGE PROTECTION DEVICE SHALL BE DESIGNED TO PROTECT ALL AC ELECTRICAL CIRCUITS AND CONNECTED EQUIPMENT FROM DESTRUCTIVE, DAMAGING OR DISRUPTIVE EFFECTS OF LIGHTNING INDUCED TRANSIENTS, NORMAL UTILITY LOAD SWITCHING ACTIVITIES AND INTERNAL GENERATED TRANSIENTS. THE SUPPRESSION DEVICE SHALL BE PARALLEL CONFIGURED, SOLID STATE, VOLTAGE CLAMPING COMPONENTS DEMONSTRATING THRESHOLD SUPPRESSION CHARACTERISTICS. CLAMPING COMPONENTS SHALL BE METAL OXIDE VARISTORS. ALL SUPPRESSION DEVICES SHALL BE ENCAPSULATED AND MOUNTED IN A NEMA RATED ENCLOSURE. THE UNIT SHALL BE RATED FOR 80 KA PER PHASE AND 40 KA PER MODE MINIMUM. THE DEVICE SHALL HAVE ALL NORMAL MODE (L-L AND L-N) AND COMMON MODE (L-G AND N-G) CIRCUIT PATHS PROTECTED WITH SUPPRESSION COMPONENTS. THE DEVICE SHALL BE RATED FOR 240/120 V SYSTEMS, SHALL INCLUDE A REMOTE ALARM FORM C CONTACT. THE DEVICE FOR THE FACILITY SERVICE ENTRANCE SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. THE MANUFACTURER SHALL PROVIDE A TEN YEAR WARRANTY. THE TVSS UNIT SHALL BE MANUFACTURED BY SQUARED, EATON, LEVITON, LIEBERT OR EQUAL.

NEW 200 AMP METER ENCLOSURE PER UTILITY REQUIREMENTS.

SYMBOLS LIST

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
(A)	LIGHTING FIXTURE SYMBOL	(J)	JUNCTION BOX
▬	PANEL BOARD	⇒	RECEPTACLE
▭	CONTROL PANEL	⇒■	RECEPTACLE ABOVE COUNTER
▨	TRANSFORMER	⊗	FIELD CONNECTION TERMINAL BLOCK
∿∿	CONTROL POWER TRANSFORMER	⊣⊢	CONTACT NORMALLY OPEN
∿∿	CURRENT TRANSFORMER	⊣⊢	CONTACT NORMALLY CLOSED
T	THERMOSTAT	⊣⊢	OVERLOAD DEVICE CONTACT
H	HEATER, ELECTRIC	OL	OVERLOAD DEVICE HEAT ELEMENT
(S)	MOTOR, HORSEPOWER SIZE NOTED MOTOR STARTER CONTACTOR COIL		LIMIT SWITCH, NORMALLY CLOSED
	CONDUIT RUN UNDER FLOOR OR UNDERGROUND		LIMIT SWITCH, NORMALLY OPEN
G	GROUND BUS		LIMIT SWITCH, NEUTRAL POSITION
N	NEUTRAL BUS	TC	TIME DELAY OPEN CONTACT, NORMALLY CLOSED TIME OPEN
	PULL BOX	TC	TIME DELAY CLOSE CONTACT, NORMALLY OPEN TIME CLOSE
	WIRES CONNECTED		DISCONNECT SWITCH
	WIRES NOT CONNECTED		PUSH BUTTON, NORMALLY OPEN OR MOMENTARILY CLOSED
	CONDUIT CROSSING NOT CONNECTED		PUSH BUTTON, NORMALLY CLOSED OR MOMENTARILY OPEN
LSH	LEVEL SENSOR HIGH		TEMP. SENSOR, NORMALLY CLOSED
LSL	LEVEL SENSOR LOW	5A	INDICATION FUSE HOLDER AMPERE SIZE SHOWN
FM	FLOW METER	CP	HOMERUN WITH 3#12 U.O.N.
LE	LEVEL ELEMENT		LIGHT FIXTURE (MOUNTED ON POLE)
LIT	LEVEL INDICATOR XMTR	$ a	SWITCH
LT	LEVEL TRANSMITTER		FAN
PIT	PRESSURE INDICATOR XMTR	SV	SOLENOID VALVE
	GROUND	M	METER
P1	CONDUIT & WIRE IDENTIFICATION TAG		
(15)	TYPICAL MOTOR CONTROL CENTER IDENTIFICATION TAG		
	TELEPHONE OUTLET, WALL		

ABBREVIATIONS

ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION
A	AMPERES	TDD, TDE	TIME DELAY RELAY
AC	ALTERNATING CURRENT	TELCO	TELEPHONE COMPANY
AI	PLC ANALOG INPUT	TM	THERMAL MAGNETIC CIRCUIT BREAKER
AO	PLC ANALOG OUTPUT	TWSP	TWISTED SHIELDED PAIR
BC	BARE COPPER	TYP	TYPICAL
CB	CIRCUIT BREAKER	UG	UNDERGROUND
CP	CONTROL PANEL	U.O.N.	UNLESS OTHERWISE NOTED
CR	CONTROL RELAY	V	VOLTS
CS	CONTROL STATION	VAR	VARIOUS
DEMO'D	DEMOLISHED	VFD	VARIABLE FREQUENCY DRIVE
DC	DIRECT CURRENT	WP	WEATHERPROOF
DI	PLC DIGITAL INPUT	XFMR	TRANSFORMER
DO	PLC DIGITAL OUTPUT		
(E)	EXISTING		
(F)	FUTURE		
FM	FLOW METER		
GFCI	GROUND FAULT CIRCUIT INTERRUPTER		
G, GND	GROUND		
I, I/I	INTERLOCK		
I/E	CURRENT TO CURRENT DEVICE		
XX	CURRENT TO VOLTAGE DEVICE		
IND	INDICATOR		
I/O	INPUT/OUTPUT		
ISR	INTRINSICALLY SAFE RELAY		
KVA	KILOVOLT AMPERES		
LA	LIGHTNING ARRESTOR		
LOS	LOCK OFF STOP PUSH BUTTON		
LP	LIGHTING PANEL		
mA	MILLIAMPERES		
MCC	MOTOR CONTROL CENTER		
MCP	MOTOR CIRCUIT PROTECTOR		
MOV	MOTOR OPERATED VALVE		
MTS	MANUAL TRANSFER SWITCH		
MT	EMPTY CONDUIT WITH NYLON PULL CORD		
N	NEUTRAL		
(N)	NEW		
NP	NAMEPLATE		
OL	OVERLOAD DEVICE		
PB	PULLBOX		
PB1	PUSHBUTTON 1		
PC	PROGRAMMABLE CONTROLLER		
PFR	POWER FAILURE RELAY		
PLC	PROGRAMMABLE LOGIC CONTROLLER		
PNL	PANEL		
POC	POINT OF CONNECTION		
PS	PRESSURE SWITCH		
PT	POTENTIAL TRANSFORMER		
PTT	PUSH TO TEST		
SPD	SURGE PROTECTION DEVICE		
SWBD	SWITCHBOARD		

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WWT&DS IPS REPLACEMENT

GENERAL NOTES, ABBREVIATIONS AND SYMBOLS

N:\CS_PROJECTS\IECS\1717\31-Bolinas\1731-Bolinas-E1.dwg Time:Aug18,2020-11:02am

NOTE: SYSTEM CAN BE ENERGIZED WITH SERVICE DISCONNECT OPEN (PV ON SITE).

(E) METER

(E) MAIN SERVICE DISCONNECT

100A, 480/277V, 3PH, 4W

100A

G N

(E) WIREWAY

(E) HOUSE

(N) IPS

FIELD VERIFY (E) FUSES SIZE AND MATCH (ASUMED TO BE 100A)

(E) AERATORS

60A

(E) HOUSE PANEL

(E) STARTERS

40A (E) PV SYSTEM DISCONNECT

(E) METER

(E) AC DISTRIBUTION PANEL (125A)

EXTEND (E) 1-1/2" C W/ 3 #1 CU + #6 CU G TO NEW CONTROL PANEL

(E) AERATOR NO.1

(E) AERATOR NO.2

(N) PULLBOX & WATER PROOF SPLICES

(N) CONDUIT & CONDUCTORS

PB

(E) TO BE MODIFIED

UPGRADED SMUD TRANSFORMER

(E) INV NO.1

(E) INV NO.2

(E) INV NO.3

3X7KW (21 KW TOTAL)

(E) INV 15A

(E) 39 216W PV MOD

25.2 KW TOTAL

80/3 CB

80/3 CB

15/3 CB

15/2 CB

SZ1 FVNR

VFD 55 AMPS

VFD 55 AMPS

VFD 5 AMPS

(N) CONTROL PANEL

(REFER TO GORMEN RUPP DRAWINGS)

3/4" C W/ 2 #12 + #10G

1-1/4" C W/ 3 #2 CU THWN + #6 CU G

1-1/4" C W/ 3 #8 THWN + #8 CU G

(N) 480-120/204V 5KVA

(N) LOAD CENTER

RECPT

LIGHTS

FAN

(N) IRRIGATION PUMP No. 1

(N) IRRIGATION PUMP No. 2

(N) RECIRC PUMP

(E) METER TO BE DEMO'D

(E) DISCONNECT STARTER

(E) IRRIGATION PUMP No. 1

(E) DISCONNECT STARTER

(E) IRRIGATION PUMP No. 2

(E) IRRIGATION PUMP No. 1 (TO BE REMOVED)

(E) IRRIGATION PUMP No. 2 (TO BE REMOVED BY OTHERS)

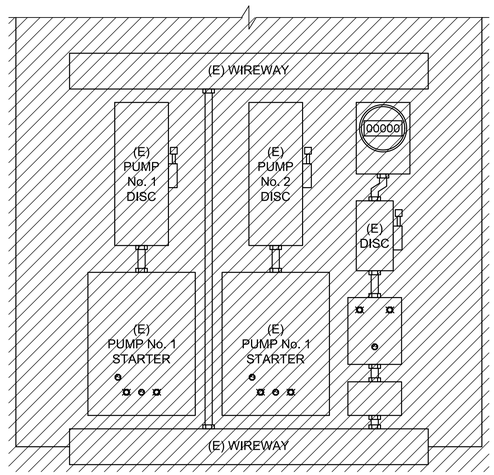
LOAD CALCULATIONS

(N) IRRIGATION PUMP STATION CONTROL PANEL	UTILITY
(N) IRRIGATION PUMP No. 1	50.0 AMPS
(N) IRRIGATION PUMP No. 2 (STANDBY, INTERLOCKED)	00.0 AMPS
(N) RECIRC PUMP	4.5 AMPS
25% OF LARGEST MOTOR	12.5 AMPS
IRRIGATION P.S. TOTAL LOAD	67.0 AMPS

(E) SERVICE	
(N) IRRIGATION P.S. LOAD	62.0 AMPS
(E) AERATORS	15.2 AMPS
(E) HOUSE PANEL (BUILDING)	7.5 AMPS
(E) 25KW PV (25% TYPICAL DAY TIME)	-13.2 AMPS
TOTAL SERVICE LOAD (OPERATING HOURS)	71.5 AMPS

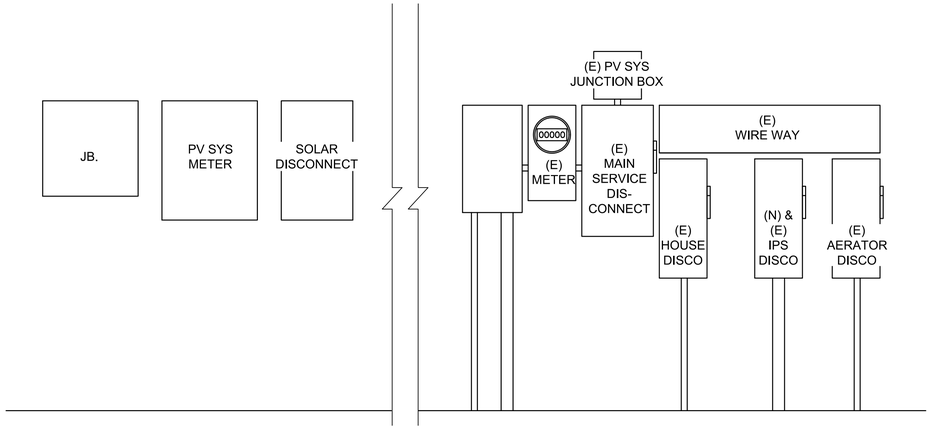
EXISTING SINGLE LINE DIAGRAM

(MODIFICATIONS SHOWN)



EXISTING IRRIGATION PUMP CONTROLS ELEVATION

(DEMO BY OTHERS)



EXISTING SERVICE BUILDING ELEVATION

SCALE: NOT TO SCALE

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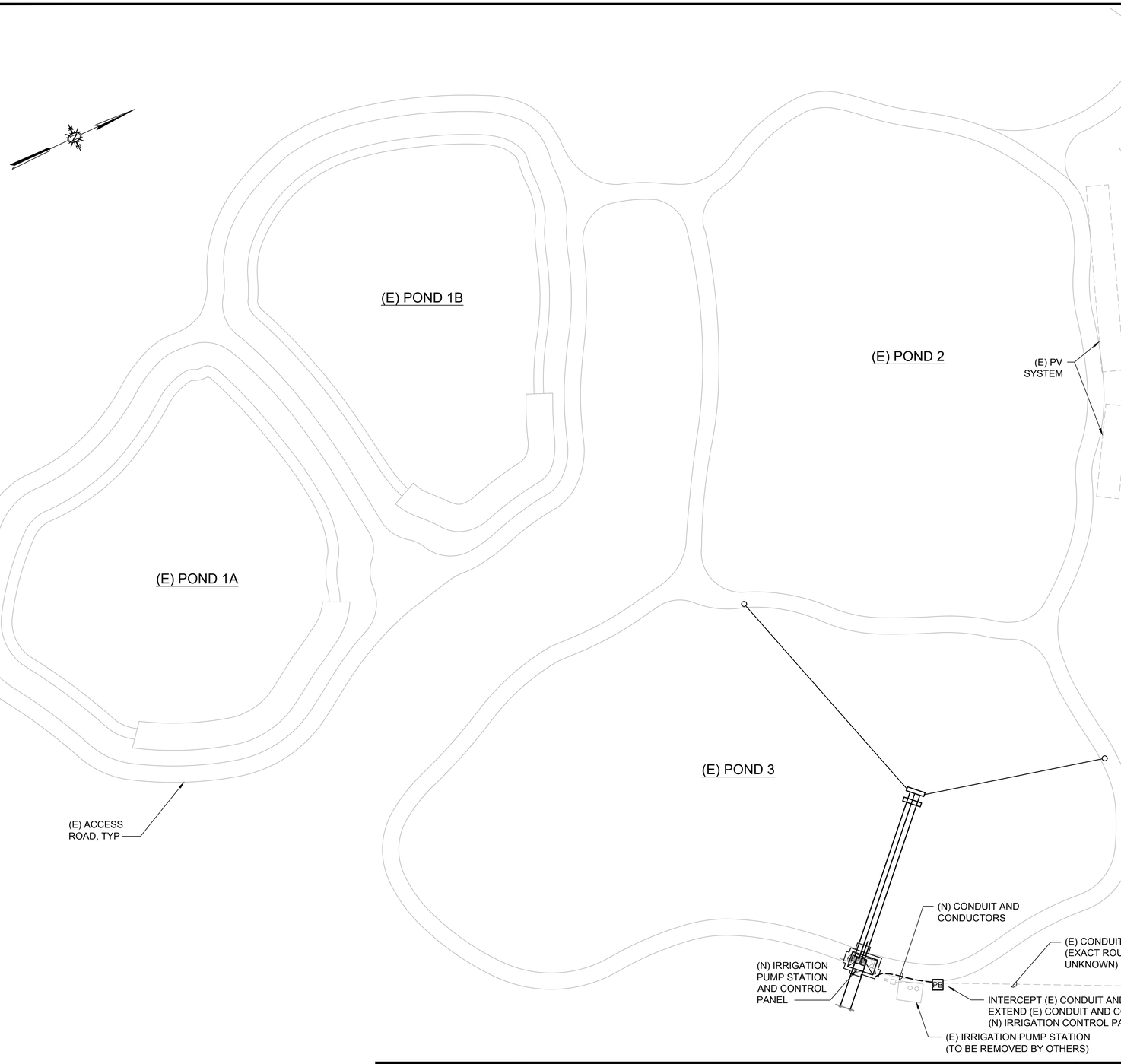
SINGLE LINE DIAGRAM AND ELEVATION

N:\CS_PROJECTS\ECS\17\1731-Bolinas\1731-Bolinas-E2.dwg Time:Aug18,2020-11:02am

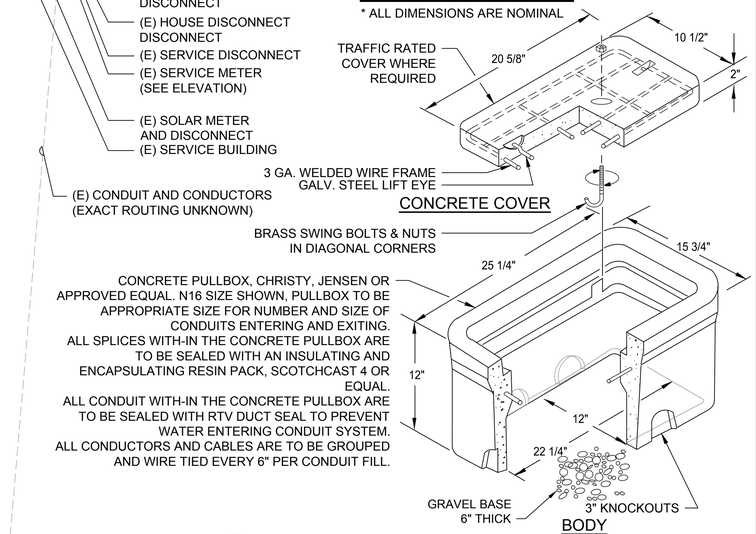


NOTES:

1. DRAWING SCALE IS BASED ON AN OLD DRAWING IMAGE AND SHOULD BE CONSIDERED APPROXIMATE. SITE SHOULD BE SURVEYED FOR ACCURACY BEFORE BIDDING.

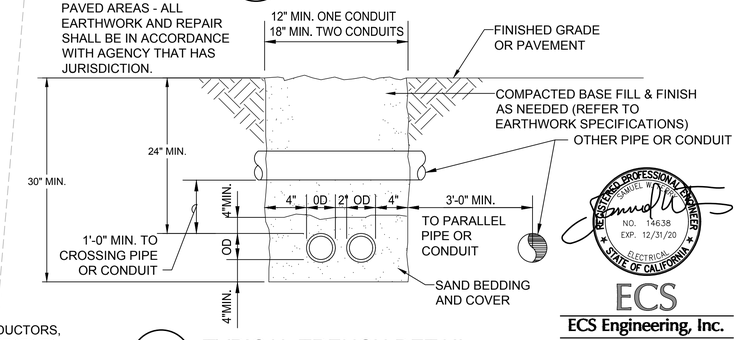
PULL BOX SCHEDULE			
SIZE	D*	H*	W*
N9	18"	10"	17"
N16	18"	12"	22"
N30	18"	13"	24"
N36	24"	17"	30"
N40	24"	24"	36"
N48	24"	30"'	48"
N52	24"	30"	60"

* ALL DIMENSIONS ARE NOMINAL



1 CONCRETE PULLBOX DETAIL
NOT TO SCALE

NOTE:
TRENCHING LOCATED IN PAVED AREAS - ALL EARTHWORK AND REPAIR SHALL BE IN ACCORDANCE WITH AGENCY THAT HAS JURISDICTION.



2 TYPICAL TRENCH DETAIL
NOT TO SCALE

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