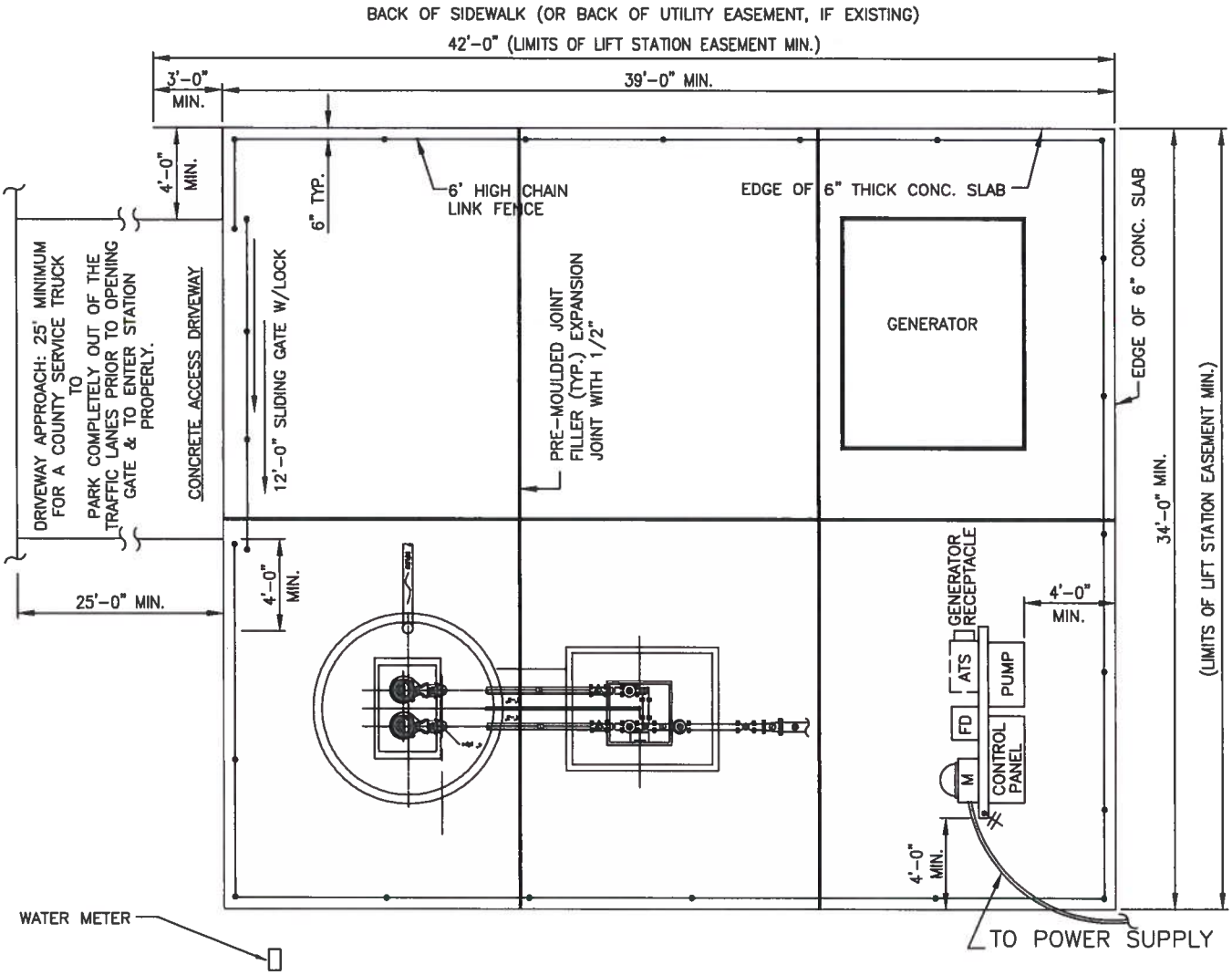
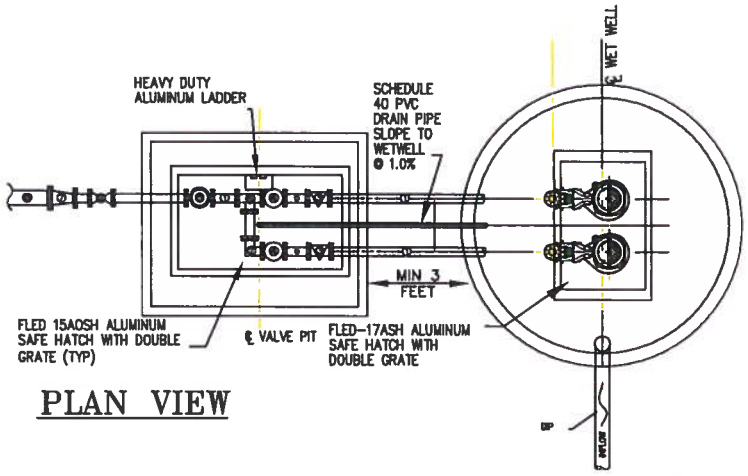


TYPICAL LIFT STATION – PLAN

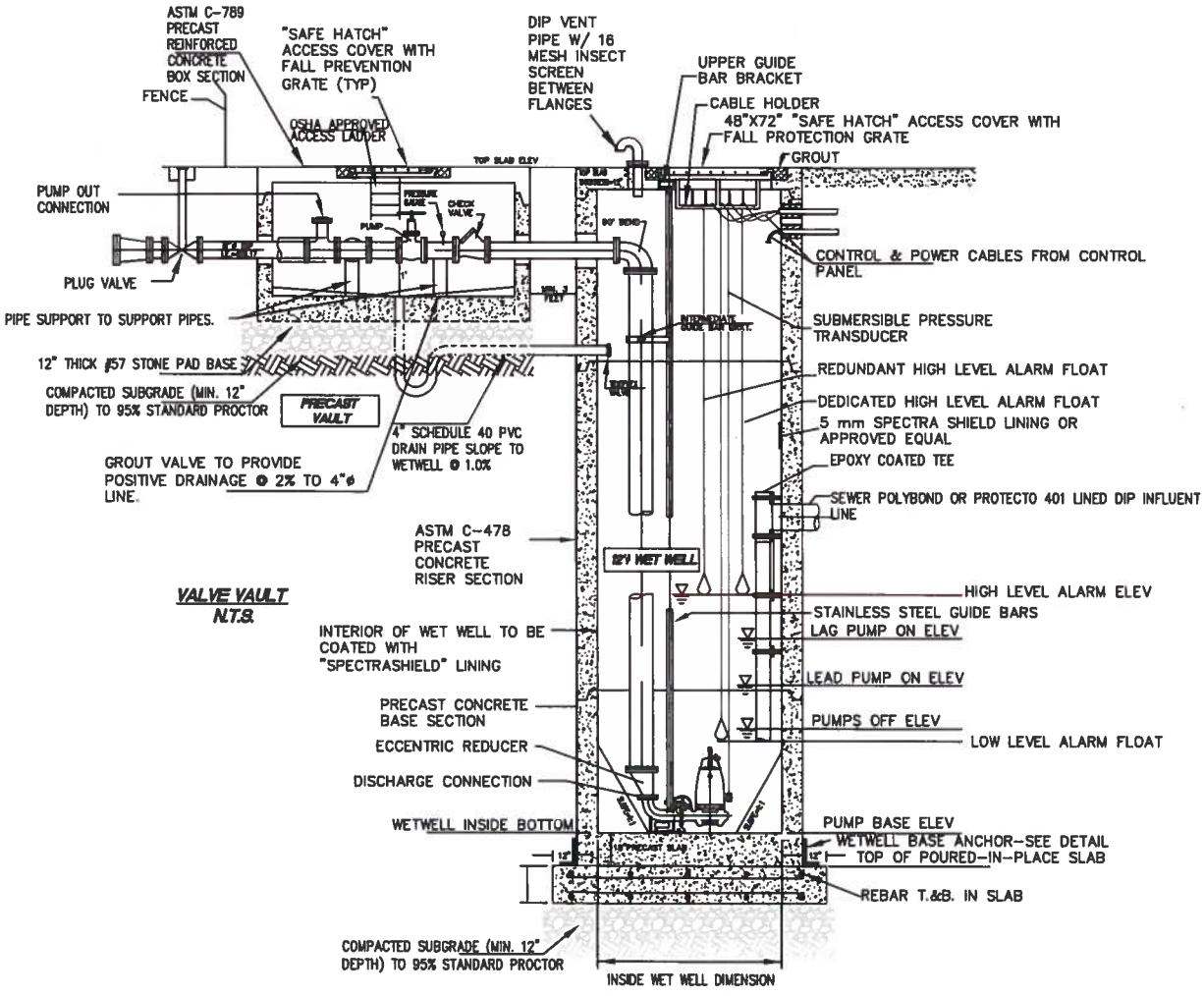
NOTES:

1. CHAIN LINK FENCE W/ALL PARTS, INCLUDING POSTS & HARDWARE TO BE THERMALLY FUSED VINYL COATING OVER GALV. STEEL. POSTS TO BE CORED AND GROUTED INTO CONCRETE. FABRIC TO BE KNUCKLED TOP & BOTTOM.
2. INDICATED LIMITS OF LIFT STATION EASEMENT ARE MINIMUM, SUBJECT TO ACTUAL WETWELL & PIPE SIZES.
3. ACCESS DOORS TO WET WELL TO BE CHECKERED PLATE ALUMINUM, WITH RECESSED HANDLES AND 316 STAINLESS STEEL HARDWARE AS SPECIFIED ON APPROVED MATERIALS LIST.
4. PROVIDE A.T.S. WITH GENERATOR RECEPTACLE ON DRIVEWAY SIDE.
5. PROVIDE A STAND ALONE STAND-BY GENERATOR WITH CRITICAL GRADE SILENCER 25 dbs @ 50 FEET. UNIT SHALL CONTAIN A FUEL TANK SIZED TO PROVIDE 48 HOURS OF CONTINUOUS OPERATION. CONNECT GENERATOR TO THE AUTOMATIC TRANSFER SWITCH.
6. STEEL FOR CONCRETE SLAB" #4 @ 12" O.C.B.W. & 4 SETS OF (2)#4 @ 4'-0" AROUND WET WELL.
7. GROUND ELECTRICAL SYSTEM TO REBAR IN CONCRETE PAD.

REVISED: MARCH 2017	HALL COUNTY PUBLIC WORKS & UTILITIES ENGINEERING DIVISION	STANDARD SLS-1



PLAN VIEW



SUBMERSIBLE LIFT STATION
WET WELL
SECTION THRU LIFT STATION

REVISED:	HALL COUNTY PUBLIC WORKS & UTILITIES	STANDARD
OCTOBER 2018	ENGINEERING DIVISION	SLS-2

LIFT STATION DATA	
TOP OF SLAB (ABOVE 100 YR. FLOOD)	EL "A"
*FINISH GRADE	EL "B"
℄ DISCHARGE PIPE	EL "C"
LOWEST INFLUENT LINE – INVERT/HIGH WATER ALARM	EL "E"
BACK UP LAG PUMP – ON	"E" – 3"
BACK UP LEAD PUMP – ON	"E" – 6"
LAG PUMP – ON (MAIN CONTROLLER)	"E" – 6"
LEAD PUMP – ON(MAIN CONTROLLER)	EL "F" "E" – 12"
BACK UP FLOAT LOW – OFF	EL "F" "E" – 12"
BOTH PUMPS – OFF	EL "G" "E" – 48"
PUMP SUCTION	EL "H" 4" ABOVE "I"
WET WELL BASE SLAB	EL "I" 6' BELOW EL "E"
PUMP SUCTION CLEARANCE	4" MIN. (EL "H" – EL "I")
PUMP DISCHARGE	DIA "J"
DIP EPOXY LINED OR HDPE PIPE	DIA "K"
COMMON FORCE MAIN	DIA "L"

*MAXIMUM 4" BELOW TOP OF SLAB (EL. "A")

LIFT STATION	MOTOR H.P.	VOLTAGE	DISTANCE TO FP&L SERVICE	WIRE SIZE	D.S.	MCB & ECB	MB1 & MB2	MOTOR STARTERS

MAXIMUM ALLOWABLE PUMP CAPACITY FOR SUBMERSIBLE LIFT STATIONS IS 1500 GPM

SUBMERSIBLE LIFT STATION
LIFT STATION
REQUIRED DATA

REVISED:	HALL COUNTY PUBLIC WORKS & UTILITIES	STANDARD
OCTOBER 2013	ENGINEERING DIVISION	SLS-3

PROJECT NAME: _____

PROJECT NO: _____ LIFT STATION NO. / NAME: _____

LIFT STATION LOCATION: _____

IN ATTENDANCE: _____

_____

_____

GENERAL INFORMATION

PUMP TYPE: _____

MANUFACTURER: _____

MODEL NO: _____ IMPELLER NO: _____ HP: _____

DESIGN POINT: _____ GPM: _____ FT. TDH: _____

MAIN BREAKER: _____ AMPS

MOTOR BREAKER #1: _____ AMPS STARTER #1 SIZE: _____

MOTOR BREAKER #2: _____ AMPS STARTER #2 SIZE: _____

MOTOR BREAKER #3: _____ AMPS STARTER #3 SIZE: _____

SERVICE WIRE No. AND SIZE: _____ , SERVICE WIRE CONDUIT SIZE: _____

LENGTH OF SERVICE RUN: _____

DESCRIPTION OF SERVICE RUN: _____

TRANSFORMER LOCATION: _____

WET WELL DIAMETER: _____ DISCHARGE PIPE SIZE: _____

WET WELL DIAMETER:	VOLUME PER FOOT:
4 - FOOT	94 GALLONS PER FOOT
6 - FOOT	211 GALLONS PER FOOT
8 - FOOT	376 GALLONS PER FOOT
10 - FOOT	587 GALLONS PER FOOT

SUBMERSIBLE LIFT STATION
PUMP TEST / START-UP FORM
(To be completed by Contractor/Pump Manufacturer)

GENERAL INFORMATION

PUMP No.: _____ DATE: _____ TIME: _____

FORCE MAIN PRESSURE (STATIC) NO PUMP RUNNING: _____ (PSI)

FORCE MAIN PRESSURE (STATIC) NO PUMP RUNNING: _____ (PSI)

FORCE MAIN PRESSURE #: _____ & _____ PUMP RUNNING: _____ (PSI)

FORCE MAIN PRESSURE #: _____ , _____ & _____ PUMP RUNNING: _____ (PSI)

1) INFLOW DETERMINATION:

ΔH= (BEGIN LEVEL, _____ FT.) - (END LEVEL, _____ FT.) = _____ FT.

TEST TIME = _____ MINUTES

INFLOW = ΔH=, _____ FT/ _____ MIN. VOLUME _____ = _____ GPM

2) PUMP FLOW:

ΔH= (END LEVEL, _____ FT.) - (BEGIN LEVEL, _____ FT.) = _____ FT.

TEST TIME = _____ MINUTES

PUMP FLOW = ΔH=, _____ FT/ _____ MIN. x VOL., _____ + INFLOW _____ = _____ GPM

VOLTAGES: A - B = _____ VOLTS AMPS: A = _____ AMPS

A - C = _____ VOLTS AMPS: B = _____ AMPS

B - C - _____ VOLTS AMPS: C = _____ AMPS

VOLTAGES: _____

_____

_____

_____

_____

_____

_____

_____

SUBMERSIBLE LIFT STATION

PUMP TEST / START-UP FORM

(To be completed by Contractor / Pump Manufacturer)

PERFORM MOTOR WINDING INSULATION RESISTANCE TESTING AS FOLLOWS:

A) PERFORM TEST PRIOR TO START-UP OF LIFT STATION WITH THE CONSTRUCTION COORDINATOR AND LIFT STATION PERSONNEL PRESENT.

B) USE A MOTORIZED OR BATTERY OPERATED METER, SET AT A TEST VOLTAGE AS CLOSE AS POSSIBLE TO THE NORMAL OPERATING VOLTAGE OF THE MOTOR.

C) LOG THE READINGS AT THE ONE MINUTE AND TEN MINUTE INTERVAL ON THE TABLE BELOW.

D) COMPLETE THE WINDING INSULATION POLARIZATION INDEX (P.I.)

P.I. TEST STARTED AT 500 VOLTS				
MOTOR NO.	TEST VOLTAGE	1 MIN. READING	10 MIN. READING	POLORIZATION INDEX
1				
2				
3				
4				

COMMENTS: _____

_____

_____

_____

_____

_____

_____

_____

SUBMERSIBLE LIFT STATION

P.I. TEST FORM

(To be completed by Contractor / Pump Manufacturer)

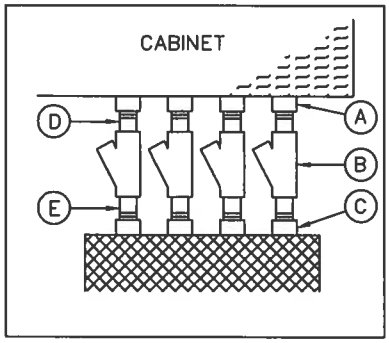
Ⓐ UNION:
UNY100NR–A 1"

Ⓑ SEALING FITTING:
BYSF–100AL 1"
FILL SEAL FITTING
WITH SILICONE

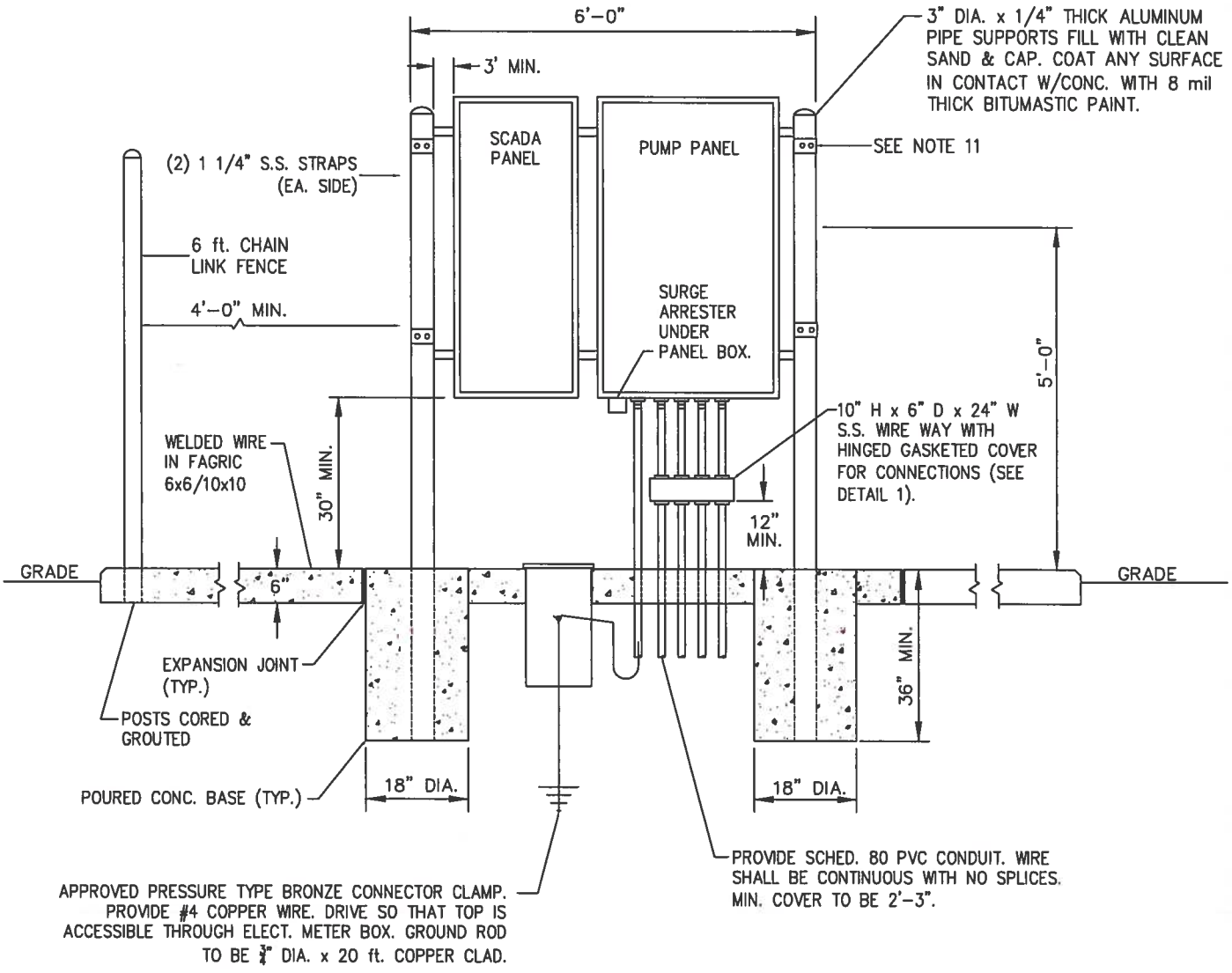
Ⓒ UNION:
UNY100NR–A 1"

Ⓓ 1" X 2" ALUM. NIPPLE

Ⓔ 1" X 2" ALUM. NIPPLE

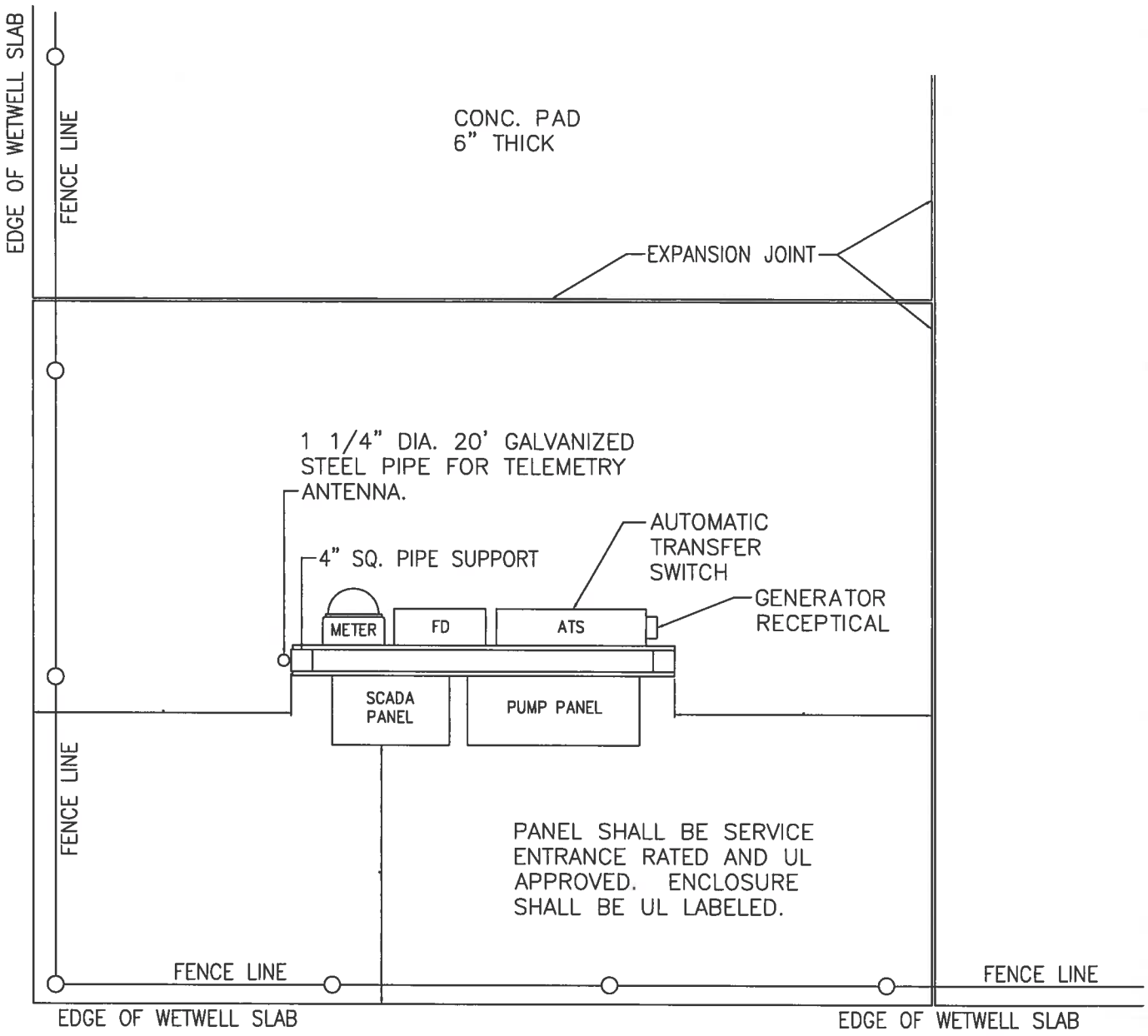


DETAIL 1



SUBMERSIBLE LIFT STATION
ELECTRICAL PANELS
ELEVATION

REVISED: JULY 2017	HALL COUNTY PUBLIC WORKS & UTILITIES ENGINEERING DIVISION	STANDARD SLS–7



SUBMERSIBLE LIFT STATION
ELECTRICAL PANELS
PLAN VIEW

REVISED: JULY 2017	HALL COUNTY PUBLIC WORKS & UTILITIES ENGINEERING DIVISION	STANDARD SLS-8

NOTES:

1. SCADA EQUIPMENT SHALL BE INSTALLED BY THE CONTRACTOR.
2. ALL CONDUIT SIZES INCLUDING TO POWER COMPANY SHALL BE SIZED FOR TWICE THE INSTALLED HORSE-POWER CAPACITY.
3. ALL WIRES SHALL BE COPPER RATED XHHW
4. BOND WIRE SIZED PER NEC TABLE 250-95 SHALL BE INSTALLED FROM THE GROUND BUS IN THE CONTROL PANEL TO EACH MOTOR CASING.
5. CONNECT PUMP AND FLOAT CABLES IN NEMA 3 R WIRE WAY WITH TERMINAL STRIP CONNECTORS. NO SPLICED WIRES ALLOWED. ALL PIPE/CONDUIT CONNECTIONS FROM WETWELL MUST RUN VIA THE WIREWAY.
6. WET WELL ACCESS DOOR SHALL BE ORIENTED SO AS TO PROVIDE A BARRIER BETWEEN THE ELECTRICAL SWITCH GEAR ASSEMBLY AND THE OPEN WET WELL.
7. CONTRACTOR SHALL COORDINATE ALL SERVICE INSTALLATIONS OF 3 PHASE POWER WITH POWER COMPANY. FEES TO BE CONTRACTOR'S RESPONSIBILITY. AFTER ACCEPTANCE OF STATION, CONTRACTOR SHALL MAKE ARRANGEMENTS AND COORDINATE TRANSFER OF POWER COMPANY SERVICE TO COUNTY'S ACCOUNT.
8. PROVIDE 5 FEET OF EXCESS WIRE EXPOSED AT SERVICE WEATHER HEAD OR BOX FOR CONNECTION BY POWER COMPANY.
9. IF APPLICABLE THE L2 CONDUCTOR SHALL BE THE HIGHER VOLTAGE TO GROUND AND BE DURABLY AND PERMANENTLY MARKED BY AN OUTER FINISH THAT IS ORANGE IN COLOR, CLOCKWISE ROTATION.
10. ALL PANELS AND ELECTRICAL BOXES AND ASSOCIATED FITTINGS SHALL BE NEMA 3 R RATED, FOR HAZARDOUS LOCATION.
11. PANELS SHALL BE MOUNTED TO TWO 3" DIAMETER ALUMINUM POST SUPPORTS. PANEL SHALL BE BUILT BY A UL APPROVED SHOP AND ADHERE TO UL STANDARDS. PANEL SHALL HAVE A UL 508 LABEL ON THE INTERIOR OF THE ENCLOSURE DOOR. LENGTH OF THE POST SUPPORTS SHALL BE SIZED SO AS TO PROVIDE FOR 36" OF BURIAL (IN 2500 PSI CONCRETE) AND EXTEND TO 3 INCHES ABOVE THE TOP OF THE SUPPORTS. THE PANEL SHALL BE MOUNTED TO THE POST SUPPORTS WITH 1-5/8" X 1-5/8" 12 GAUGE STAINLESS STEEL UNISTRUT AT A HEIGHT CONSISTENT WITH POWER COMPANY'S REQUIREMENT FOR MOUNTING THEIR METER. ALL HARDWARE SHALL BE STAINLESS 316 STEEL.
12. MOUNT AN EMERGENCY GENERATOR RECEPTACLE ON THE DRIVEWAY SIDE OF THE AUTOMATIC TRANSFER SWITCH, APPROXIMATELY FIVE (5) FEET ABOVE FINISH GRADE. TERMINATIONS SHALL BE PIN 1 – L1, PIN 2 – L2, PIN 3 – L3, PIN 4 – GROUND.
13. PERFORM START-UP AS INSTRUCTED IN THE SPECIFICATIONS.
14. ALL APPLICABLE ELECTRICAL CODES (LATEST EDITION) MUST BE ADHERED TO INCLUDING HALL COUNTY, NEC AND POWER COMPANY COMPANY REQUIREMENTS.
15. SEE STANDARD DETAILS PARTS LIST.

SUBMERSIBLE LIFT STATION
ELECTRICAL PANELS NOTES

REVISED:	HALL COUNTY PUBLIC WORKS & UTILITIES	STANDARD
JULY 2017	HALL COUNTY GEORGIA ENGINEERING DIVISION	SLS-9

THE PUMP STATION PUMP PANEL SHALL BE PROVIDED WITH THE FOLLOWING FEATURES:

1. MAIN BREAKER, EMERGENCY BREAKER AND MOTOR BREAKERS SHALL BE 600 VOLT FRAME MINIMUM AND BE ABLE TO INTERRUPT THE AVAILABLE SHORT CIRCUIT CURRENT.
2. ALL WET WELL CONTROL CIRCUITRY SHALL BE 24 VOLT MAXIMUM.
3. SURGE ARRESTOR SHALL BE FIELD MOUNTED OUTSIDE THE PANEL AND SHIPPED SEPARATE TO PREVENT DAMAGE.
4. ELAPSED TIME METER FOR EACH PUMP SHALL BE PROVIDED.
5. PUMP MOTOR SELECTOR (HOA) SWITCHES REQUIRED. (TOGGLE SWITCHES SHALL NOT BE ACCEPTABLE.) PROVIDE ADDITIONAL STACK SWITCH ON "AUTO".
6. ALL MOTORS STARTERS AND BREAKERS SHALL BE MANUFACTURED BY CUTLER HAMMER COMPANY, ADVANTAGE TYPE 200, OR APPROVED EQUAL. MINIMUM MOTOR STARTERS SHALL BE NEMA–1, 600 V RATED. INNER PANEL COMPONENT LAYOUT AND BACK MOUNTING PANEL DRAWINGS SHALL BE PART OF THE SUBMITTAL FIFTEEN PERCENT OF PANEL SPACE SHALL BE RESERVED FOR FUTURE USE, ALLOCATED SPACE FOR STARTERS AND BREAKERS SHALL BE SUCH THAT THE NEXT HIGHER NEMA SIZE STARTER AND CORRESPONDING BREAKERS, INCLUDING MAIN AND EMERGENCY, SHALL PROPERLY FIT IN THE FUTURE (IF REQUIRED).
7. PANEL SHALL BE SURFACE WIRED WITH NUMBERED TERMINALS. TERMINAL STRIP SHALL BE LOCATED AT LEAST FOUR (4) INCHES FROM THE BOTTOM OF THE ENCLOSURE FOR ACCESSIBILITY.
8. RELAY CONTACTS SHALL BE RATED AT 10 AMP AND 120 VAC.
9. MOUNT AN 11" x 17" LAMINATED PLASTIC SCHEMATIC & PUMP DATA SHEET SHALL BE PERMANENTLY AFFIXED TO THE INTERIOR OF THE ENCLOSURE DOOR.
10. THE SCADA PANEL SHALL CONTAIN THE BACK–UP CONTROLLER MOUNTED ON A DIN RAIL.
11. THE SCADA PANEL SHALL ENCLOSE THE SATELLITE MONITORING SYSTEM CONSISTING OF A PUMP CONTROLLER, A SCADA SYSTEM SHALL BE INCLUDED INSIDE OF THE PSCP ENCLOSURE. IT SHALL CONSIST OF A SCADA SYSTEM FOR MONITORING PUMP STATION ALARM AND SHUTDOWN FUNCTIONS AND COMMUNICATING THEM TO THE EXISTING HALL COUNTY SCADA SYSTEM. THE SCADA SYSTEM SHALL MONITOR THE ALARM INPUTS AND POWER FAILURE AND BE CAPABLE OF TRANSMITTING ALARM MESSAGES TO HALL COUNTY'S EXISTING SCADA SYSTEMS. EACH OF THE MONITORING CONTACTS SHALL BE INDIVIDUALLY USER PROGRAMMABLE TO ALARM ON OPEN OR CLOSED STATES. THE RTU SHALL BE FACTORY ASSEMBLED. ACCEPTABLE MANUFACTURERS SHALL BE HIGH TIDE TECHNOLOGIES, LLC OR APPROVED EQUAL.
12. PROVIDE A LAMINATED 11" x 17" PLASTIC COPY OF THE ELECTRICAL SCHEMATIC DRAWING ATTACHED TO THE INTERIOR SURFACE OF THE ENCLOSURE OUTER DOOR. PROVIDE 6 COPIES FOR OFFICE USE.

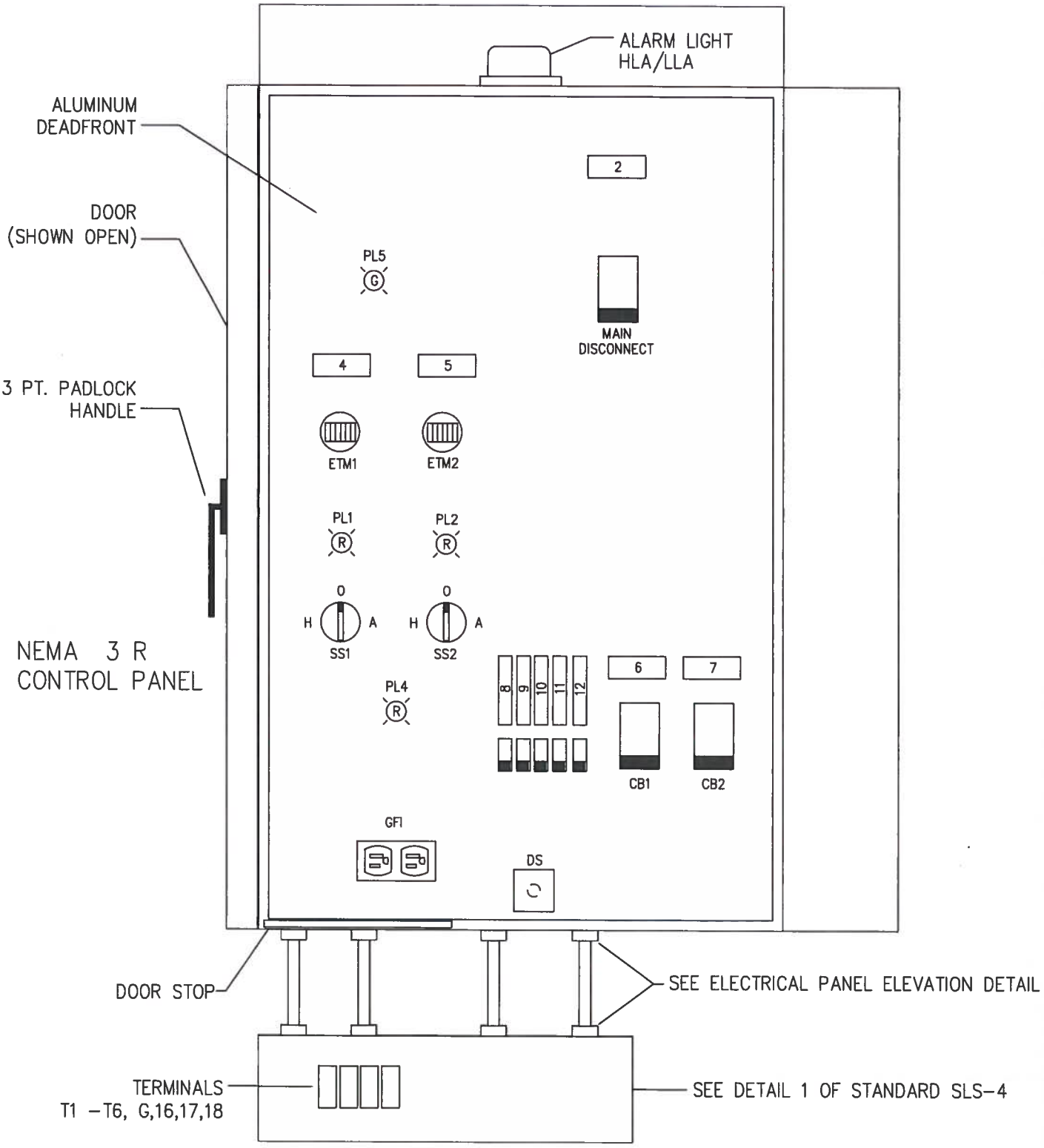
SUBMERSIBLE LIFT STATION
PUMP PANEL REQUIREMENTS

REVISED:	HALL COUNTY PUBLIC WORKS & UTILITIES	STANDARD
JULY 2017	ENGINEERING DIVISION	SLS–10

NAME PLATE SCHEDULE

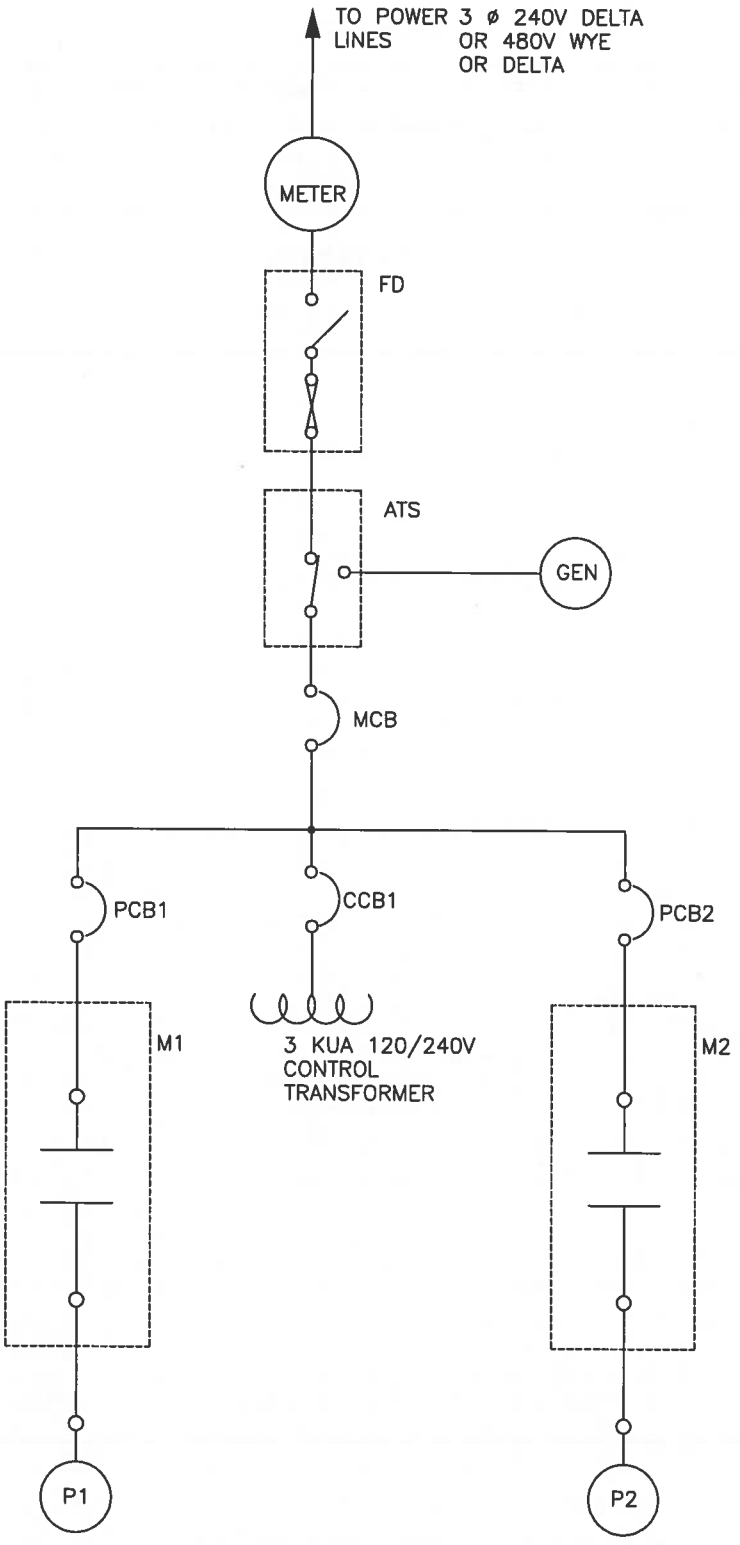
NO.	SIZE	DESCRIPTION
1.	1 x 3"	DUPLEX PUMP PANEL
2.	1 x 3"	MAIN CIRCUIT BREAKER (MCB)
3.	--	--
4,6.	1 x 3"	PUMP NO. 1
5,7.	1 x 3"	PUMP NO. 2
8.	1/2 x 2"	CONTROLS
9.	1/2 x 2"	GFI
10.	1/2 x 2"	SCADA
11.	1/2 x 2"	CONTROL POWER
12.	1-1/2 x 3"	CAUTION: TO AVOID RISK OF FIRE, REPLACE ONLY WITH SAME FUSE TYPE & FUSE RATING.
13.	1 x 3"	USE 75°C RATED COPPER WIRE
14.	1 x 3"	BACK-UP CONTROLLER
PL 1,2		ON
PL 3		ALARM LIGHT (HIGH)
PL 4		LOW LEVEL
PL 5		POWER ON
SS 1,2		HAND-OFF-AUTO

SUBMERSIBLE LIFT STATION
THE PUMP STATION PUMP PANEL



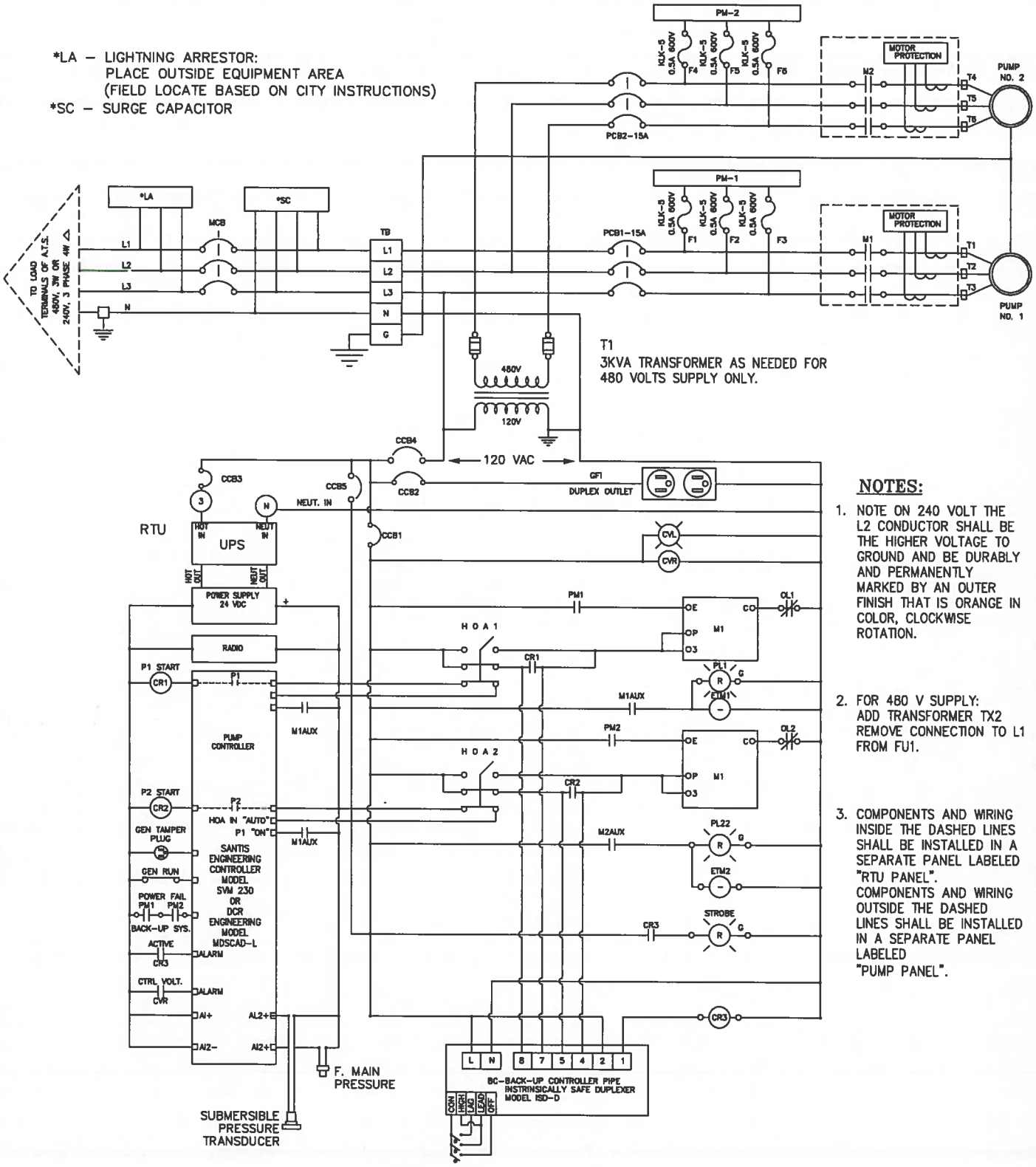
SUBMERSIBLE LIFT STATION
DEADFRONT VIEW
DUPLEX PUMP CONTROL PANEL

REVISED:	HALL COUNTY PUBLIC WORKS & UTILITIES	STANDARD
MAY 2009	ENGINEERING DIVISION	SLS–12



SUBMERSIBLE LIFT STATION
LIFT STATION ELECTRICAL SYSTEM
SINGLE LINE DIAGRAM

REVISED: JULY 2017	HALL COUNTY PUBLIC WORKS & UTILITIES ENGINEERING DIVISION	STANDARD SLS-13

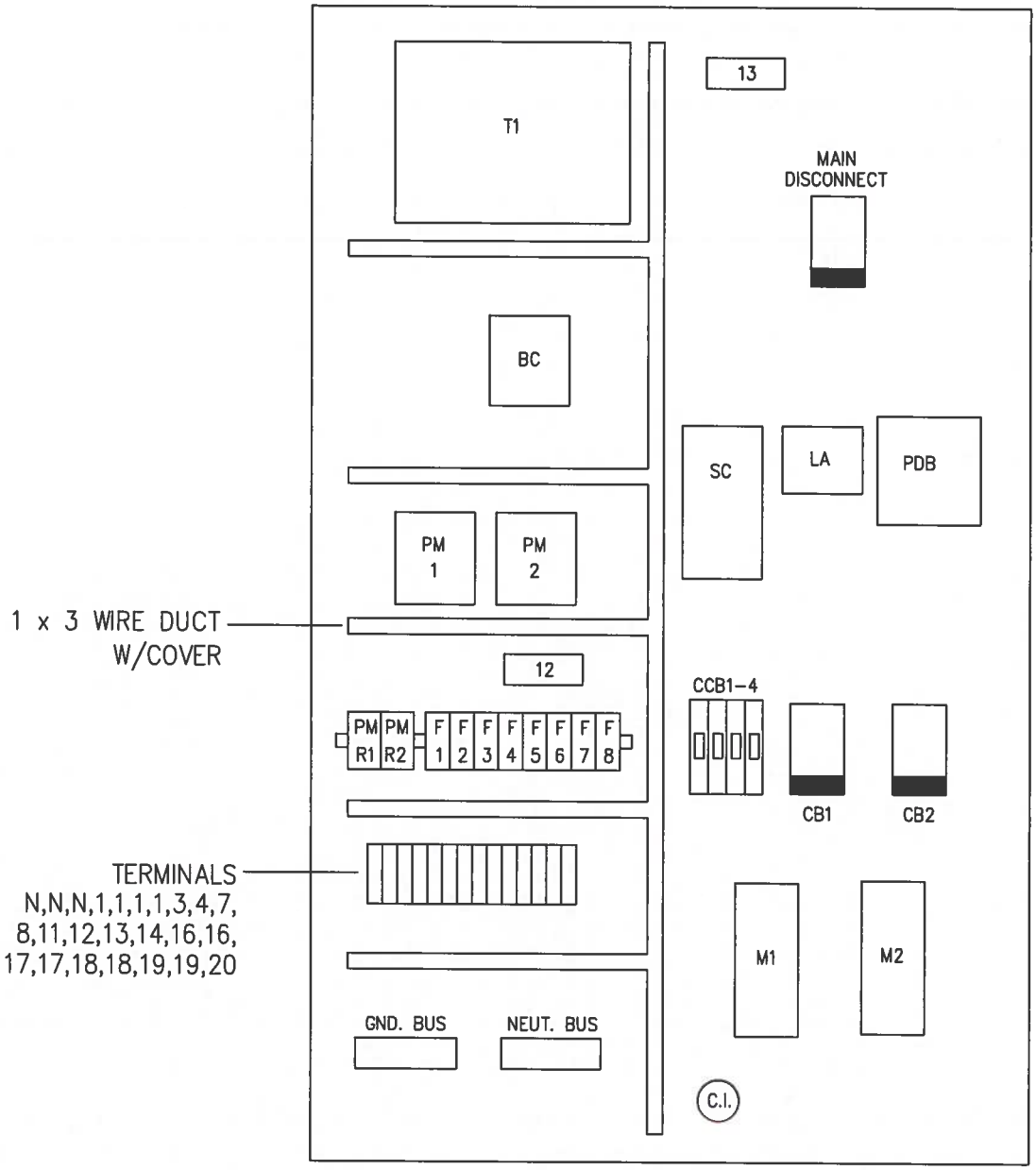


NOTES:

1. NOTE ON 240 VOLT THE L2 CONDUCTOR SHALL BE THE HIGHER VOLTAGE TO GROUND AND BE DURABLY AND PERMANENTLY MARKED BY AN OUTER FINISH THAT IS ORANGE IN COLOR, CLOCKWISE ROTATION.
2. FOR 480 V SUPPLY: ADD TRANSFORMER TX2 REMOVE CONNECTION TO L1 FROM FU1.
3. COMPONENTS AND WIRING INSIDE THE DASHED LINES SHALL BE INSTALLED IN A SEPARATE PANEL LABELED "RTU PANEL". COMPONENTS AND WIRING OUTSIDE THE DASHED LINES SHALL BE INSTALLED IN A SEPARATE PANEL LABELED "PUMP PANEL".

SUBMERSIBLE LIFT STATION
PUMP & RTU ELECTRICAL PANELS

REVISED:	HALL COUNTY PUBLIC WORKS & UTILITIES	STANDARD
MAY 2009	ENGINEERING DIVISION	SLS-14

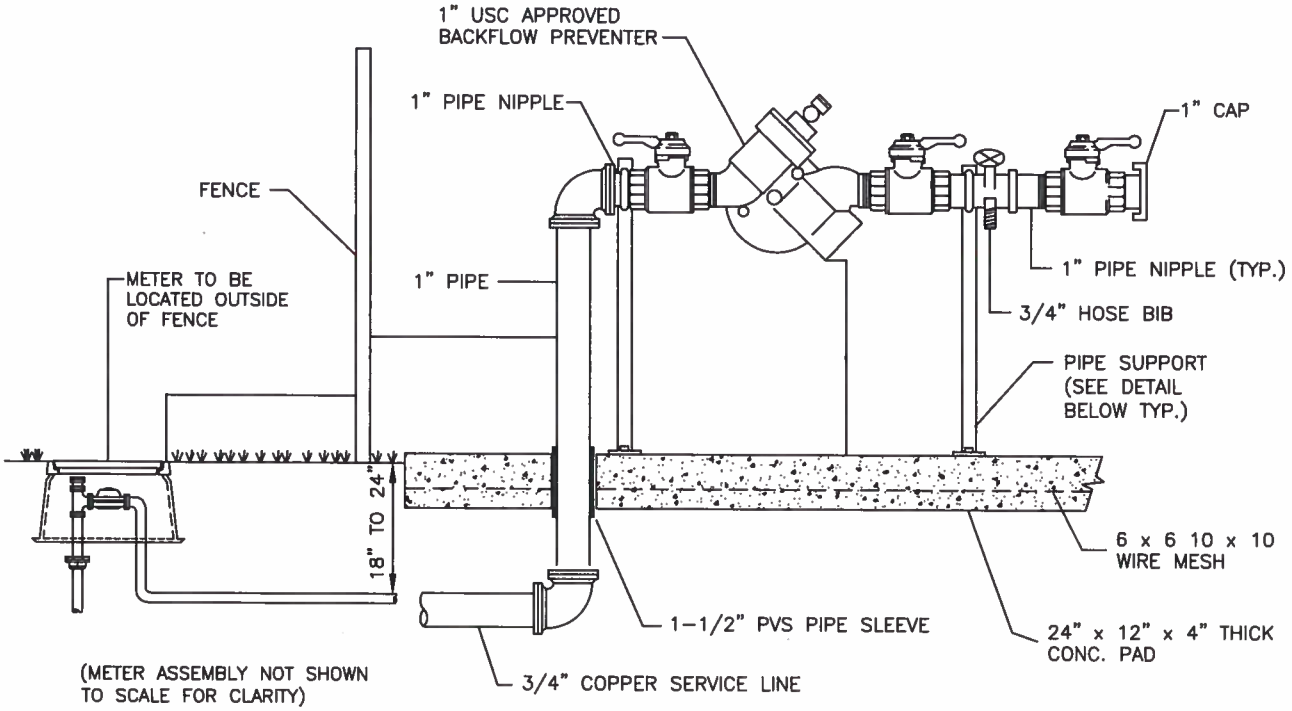


SUBMERSIBLE LIFT STATION
SUB-PANEL
LAYOUT

REVISED:	HALL COUNTY PUBLIC WORKS & UTILITIES	STANDARD
MAY 2009	ENGINEERING DIVISION	SLS-15

LEGEND	NOMENCLATURE	MANUFACTURER	DESC. / PART No.	Qty.
CCB1,4	CIRCUIT BREAKER, 120V, 1P, 10A	CUTLER-HAMMER	QC1010	4
	AUXILARY CONTACT	CUTLER-HAMMER	W22	2
	ALARM MODULE	CUTLER-HAMMER	W/ BELL ALAMR MODULE	2
M1,2	STARTERS	CUTLER-HAMMER		2
CB1,2	CIRCUIT BREAKER, 600V	CUTLER-HAMMER	HFD	2
T1	CONTROL TRANSFORMER 480V/120V	SQUARE-D	CLASS 9070 T3000 D1	1
SOC	SOCKET & PPIN	OMRON	PF083A-E	2
PMR1,2	RELAY, 120V SOPT	OMRON	MK2P-S-AC120	2
PM1,2	PHASE MONITOR, 480V	MOTOR PROT. ELEC.	MPE 001-440-118	2
SOC	SOCKET	CUSTOM CONNECT	OT08	2
LA	LIGHTNING ARRESTER	SQUARE-D	SOSA3650	1
PCB	POWER IDST. BLOCK, 3P	GOULO	67513	1
SC	SURGE CAPACITOR	DELTA	CA603R	1
MCB	MAIN CIRCUIT BREAKER, 600V	CUTLER-HAMMER	HFD30__L	1
	ANGLE ADAPTER	APPLETON	AJA-100	1
ENCL	ENCLOSURE, NEMA 3R, 316 S.S. COMPLETE WITH: a: 316 S.S. DRIPSHIELD; b. ALUMIN. DEADFRONT; c. DOOR STOP KIT; d. LOCKABLE HANDLE	HOFFMAN	48"H x 30"W x 12"D	1
	SEAL-OFFS	APPLETON	EYSF-100	4
JBOX	JUNCTION BOX, NEMA, UX, 316 S.S.	HOFFMAN	10"H x 24"W x 6"D HINGED GASKETED COVER	1
BC	BACK-UP CONTROLLER	MOTOR PROTECTOR ELECTRONICS	INTRINSICALLY SAFE DUPLEXER MODEL ISD-D	1
RTU	REMOTE TERMINAL UNIT COMPRISING: a. ENCLOSURE, NEMA 3R, 316 S.S. 24"W x 24"H x 8"D; b. PLC CONTROLLER	HIGH TIDE TECHNOLOGIES	HTT 900 - AC -VER	1 1
LT LT	LEVEL TRANSDUCER LEVEL TRANSDUCER	KPSI CONTREGRA	SUBMERSIBLE LEVER TRANSDUCER 0 - 10 FT. ULTRASONIC LEVEL TRANSDUCER 0 - 10 FT.	1 1
ATS	AUTOMATIC TRANSFER SWITCH___AMPS, ___VOLTS	NO OUTAGE	GE ZENITH___AMP, 60 Hz, (NEMA 4x, 3POLE 120/240V OR 277/380V, 3HP, 4W, COT EXERCISIER, STANDARD A3A4 AUXILARY CONTACTS. ENCLOSURE NEMA 4x, 316 S.S.	1
GR	GENERATOR RECEPTACLE	APPLETON	240V - AR20044RS 480V - AR20044RSP4	1

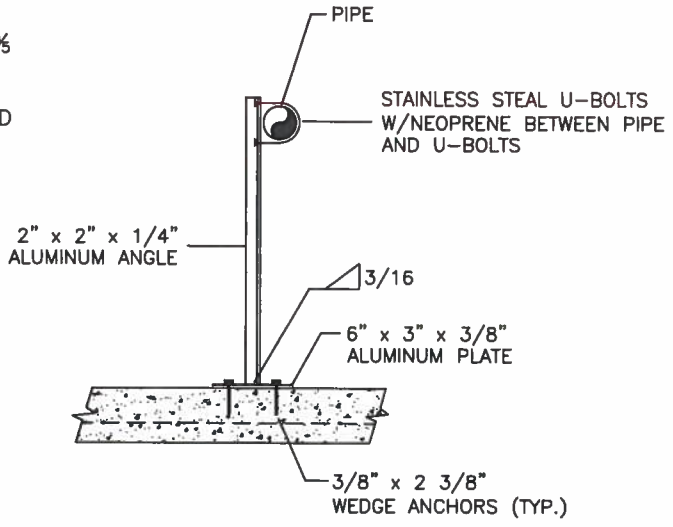
SUBMERSIBLE LIFT STATION
MANUFACTURER'S LIST



PIPE SUPPORT DETAIL

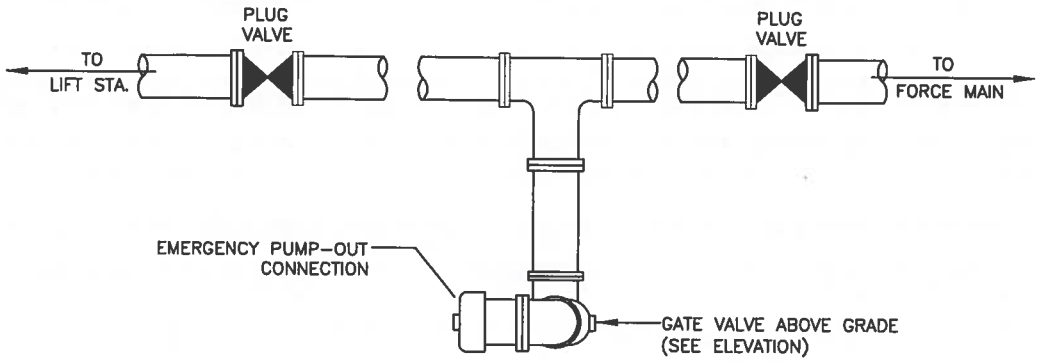
NOTES:

1. ALL PIPING SHALL BE BRASS OR TYPE "K" COPPER TUBING
2. ALL COPPER JOINTS SHALL BE MADE WITH 95/5 SOLDER
3. USE 1" RPZ BACKFLOW PREVENTER AS LISTED IN THE APPROVED PRODUCT LIST.

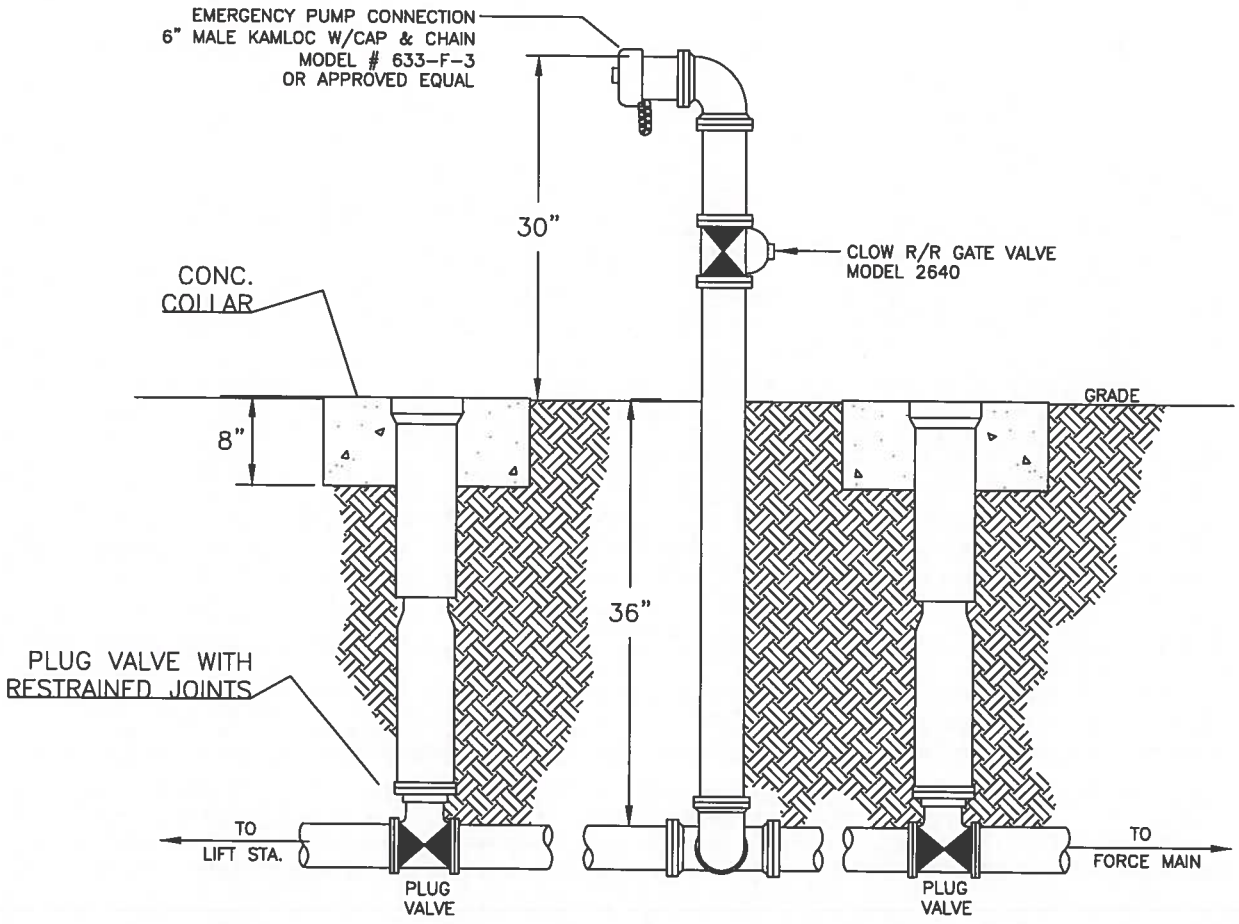


SUBMERSIBLE LIFT STATION
BACKFLOW DETAIL FOR
LIFT STATION WATER SERVICE

REVISED: JULY 2017	HALL COUNTY PUBLIC WORKS & UTILITIES ENGINEERING DIVISION	STANDARD SLS-17



PLAN VIEW



ELEVATION VIEW

SUBMERSIBLE LIFT STATION
BY-PASS PUMP CONNECTION

REVISED: JULY 2017	HALL COUNTY PUBLIC WORKS & UTILITIES ENGINEERING DIVISION	STANDARD SLS-18