INSTRUMENTATION NOTES:

GENERAL NOTES:

1. PROVIDE SURGE SUPPRESSION NETWORKS ACROSS RELAYS, SOLENOIDS, CONTACTORS, STARTERS, ETC. AS RECOMMENDED BY PLC MANUFACTURER.
2. NO WIRES SHALL BE TERMINATED TO TERMINAL STRIPS, OR OTHER EQUIPMENT WITHOUT FIRST VERIFYING SIGNAL TYPE. DAMAGES RESULTING IN LACK OF VERIFICATION SHALL BE BORNE BY THE CONTRACTOR. CONTRACTOR SHALL COORDINATE SIGNAL TYPE AND VOLTAGE WITH I/O CARDS SHOWN.
3. CONTROL PANELS SHALL HAVE DOOR HANDLES WITH LOCKS. LOCKS SHALL BE KEYED ALIKE AS COORDINATED WITH OWNER.
4. POINTS ON CARDS SHALL BE WIRED TO TERMINAL STRIPS.
5. SCALES/RANGES NOT SHOWN ON P & ID'S SHALL BE OBTAINED FROM THE ENGINEER DURING THE SHOP DRAWING REVIEW PROCESS.
6. SIGNALS SHOWN ON P & ID'S COMPRISE I/O WIRING REQUIRED FOR THE INSTALLATION OF THE NEW CONTROL SYSTEM. REFER TO ELECTRICAL SITE PLAN/BACKGROUND DRAWINGS FOR ADDITIONAL INFORMATION.
7. WITHIN CONTROL PANELS, NAMEPLATES SHALL BE PROVIDED TO INDICATE DIFFERENT VOLTAGE LEVELS WITHIN PANELS. ALSO, A NAME TAG (YELLOW BACKGROUND, RED LETTERING) SHALL BE LOCATED ON THE FRONT OF EVERY PANEL INDICATING THAT WHEN MAIN PANEL IS DISCONNECTED 120V IS STILL PRESENT FROM FIELD DEVICES (YELLOW WIRING/ISOLATED INPUT CARDS.)
8. EXTERIOR PANELS AND PANELS IN GAC CONTACTOR TO BE STAINLESS STEEL.
9. PHENOLIC TAGS ON FACE OF CONTROL PANELS TO HAVE WHITE BACKGROUND AND BLACK LETTERING (EXCEPT WARNING TAGS, YELLOW BACKGROUND RED LETTERING).
10. SIGNALS SHOWN ON P & ID'S COMPRISE WIRING AND FIELD DEVICES REQUIRED FOR THE CONTROL SYSTEM. REFER TO ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION.
11. TERMINAL BLOCKS TO BE 12" MINIMUM ABOVE FLOOR. HIGH DENSITY TERMINAL BLOCKS MAY BE USED.
12. PROVIDE SAFETY COVERS ON ALL 480V MOLDED CASE MAIN CIRCUIT BREAKERS TO INSULATE THE INCOMING CONDUCTORS AND LOAD SIDE CONDUCTORS FROM CONTACT. (TYP. FOR ALL CONTROL PANELS)
13. THE FIELD DEVICES SHOWN ON THE P&ID'S, ELECTRICAL BACKGROUNDS AND DETAIL SHEETS MAKE UP THE FIELD DEVICE EQUIPMENT REQUIREMENTS. NOT ALL FIELD DEVICES REQUIRED ARE SHOWN ON THE P&ID'S.
14. PROVIDE DOOR WITHOUT WINDOW COVERING (PILOTS, PUSH BUTTONS, AND DISPLAYS) ON ALL CONTROL PANELS THAT ARE MOUNTED OUTSIDE.
15. OUTSIDE EQUIPMENT MUST BE RATED FOR -40 TO 150 DEG F.
16. PROVIDE ANALOG SURGE SUPPRESSOR FOR ALL FIELD MOUNTED TRANSMITTERS.
17. PROVIDE 20% SPARE I/O MINIMUM FOR EACH DISCRETE AND ANALOG TYPE PER PANEL.
18. UTP CABLE SHALL BE TESTED WITH A CATEGORY 6A, LEVEL III, TYPE TESTER FOR PERMANENT LINK.
19. UTP TEST RESULTS SHALL BE DELIVERED, UNALTERED, TO THE CONSULTANT WITHIN 3 WEEKS OF THE COMPLETION OF TESTING.
20. THE TESTER MAIN UNIT, REMOTE UNIT, AND ADAPTER HEADS SHALL BE CALIBRATED WITHIN THE MANUFACTURERS RECOMMENDED SCHEDULING.

ABBREVIATIONS:

Ø	PHASE
A	AMPERE(S)
A/C	AIR CONDITIONING
AI	ANALOG INPUT
ALT	ALTERNATE
AO	ANALOG OUTPUT
ARV	AIR RELEASE VALVE
AS	AIR SUPPLY
ASB	ALARM SILENCE BUTTON
AWG	AMERICAN WIRE GAUGE
BFV	BUTTERFLY VALVE
C	CONDUIT
CAT	CATEGORY
CB	CIRCUIT BREAKER
CLAR	CLARIFIER
CLSD	CLOSED
CMD	COMMAND
CMR	CAMERA
CP	CONTROL PANEL
CR	CONTROL RELAY
CSF	CARBON STORAGE & FEED
CT	CURRENT TRANSFORMER
CTRL	CONTROL
DB	DUCTBANK
DI	DISCRETE INPUT
DISC	DISCONNECT
DO	DISCRETE OUTPUT
DWG	DRAWING
EFF	EFFLUENT
EM	EMERGENCY
ENET	ETHERNET
ETI	ELAPSED TIME INDICATOR
FACP	FIRE ALARM CONTROL PANEL
FB	FUSE BLOCK / FEEDER BREAKER
F.C.	FAIL CLOSE
FDBK	FEEDBACK
FIT	FLOW INDICATING TRANSMITTER
FLT	FAULT
F.O.	FAIL OPEN
FO	FIBER OPTIC
FOC	FIBER OPTIC CONVERTER
FOPP	FIBER OPTIC PATCH PANEL
FVNR	FULL VOLTAGE NON-REVERSING
FWP	FINISHED WATER PUMP
G / GND	GROUND
GA	GAUGE
GAL	GALLON(S)
GALV	GALVANIZED
GEN	GENERATOR
GFCI/GFI	GROUND FAULT CIRCUIT INTERRUPTER
GS	GAS SUPPLY
HOA	HAND-OFF-AUTO
HORIZ	HORIZONTAL
HP	HORSEPOWER
HS	HYDRAULIC SUPPLY
HSP	HIGH SERVICE PUMP (FINISHED WATER)
HTR	HEATER
HTS-X	HEAT TRACE SYSTEM
HZ	HERTZ
I/O	INPUT/OUTPUT
INC	IN-USE COVER
IWH	EYE WASH HEATER
KVA	KILO-VOLT-AMPS
LC-X	LIGHTING CONTROL PANEL
LP-XX	LOW VOLTAGE 120/208V PANEL
LCP	LOCAL CONTROL PANEL (I/O)
LVL	LEVEL
M	MOTOR
MA	MILLIAMP
MB	MAIN BREAKER
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MCP	MAIN CONTROL PANEL
MH	MAN HOLE
MIN	MINIMUM
MLO	MAIN LUG ONLY
MM	MULTI-MODE
MP	METERED PUMP
MS	MOTOR STARTER
MTR	MOTOR
N	NEUTRAL
NO.	NUMBER
NS	NITROGEN SUPPLY
O.C.	ON CENTER
OIP	OPERATOR INTERFACE PANEL
OL	OVERLOAD
OPND	OPENED
ORP	OXIDATION REDUCTION POTENTIAL
P	POLE
P.B.	PUSHBUTTON
PDB	POWER DISTRIBUTION BLOCK
PDIT	PRESSURE DIFFERENTIAL CURRENT TRANSMITTER
PEP	PRE-ENGINEERED PANEL
PH	PHASE
PLC	PROGRAMMABLE LOGIC CONTROLLER
PM	PHASE MONITOR
PP-XX	POWER PANEL
PV	PROCESS VARIABLE
PVC	POLYVINYL CHLORIDE
R	RESET
RAD	RADIANT
RCP	REMOTE CONTROL PANEL (R I/O)
RL	RUNNING LIGHT
RMC	RIGID METALLIC CONDUIT
RPM	ROTATIONS PER MINUTE
RTD	RESISTANCE TEMPERATURE DETECTOR
RW/RWI	RAW WATER/RAW WATER INTAKE
RWP	RAW WATER PUMP
SCHED	SCHEDULE
SD	SEDIMENTATION
SEL	SELECTOR
SF	SLUDGE FILTRATE
SHLD	SHIELDED
SKD	SKID
SP	SET POINT
SPD	SURGE PROTECTIVE DEVICE / SPEED
SS	STAINLESS STEEL / STEAM SUPPLY
STA	STATION
T	THERMOSTAT / TRIP
TB-X	TIE BREAKER
TCP	THICKENER CONTROL PANEL
TNK	TANK
TRBD	TURBIDITY
TRQE	TORQUE
TURB	TURBIDITY
TRN	TRAIN
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSION
TYP.	TYPICAL
UPS	UNINTERRUPTIBLE POWER SUPPLY
V	VOLTAGE
VA	VOLT AMPS
VAC	VOLTAGE ALTERNATING CURRENT
VDC	VOLTAGE DIRECT CURRENT
VDS	VIDEO DISPLAY STATION
VERT	VERTICLE
VFD	VARIABLE FREQUENCY DRIVE
VLV	VALVE
W	WATT / WIRE
W/	WITH
WP	WEATHERPROOF
WS	WATER SUPPLY
WTP	WATER TREATMENT PLANT
WTP-AC-	ACCESS CONTROL PANEL
WTP-PP-	PATCH PANEL/NETWORK PANEL
XFMR	TRANSFORMER

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BID SET

ALABAMA LICENSED PROFESSIONAL ENGINEER No. 21936 ANDREW SUMMER

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES
SOUTHEAST WATER TREATMENT PLANT
INSTRUMENTATION NOTES AND ABBREVIATIONS

Project No.:	200-11740-10003
Designed By:	DAB
Drawn By:	TAC
Checked By:	DAB

I-0002

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Bar Measures 1 inch

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