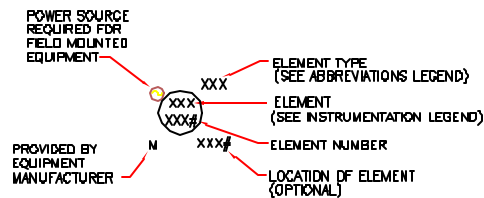


INSTRUMENTATION SYMBOL LEGEND

PROPOSED	DESCRIPTION	EXISTING
	PROCESS FLOW	
	ELECTRICAL POWER OR PROCESS CONNECTION	
	ELECTRICAL SIGNAL	
	A/B DATA HWAY PLUS	
	PLC INPUT/OUTPUT	
	DISCRETE OUTPUT SIGNAL	
	ANALOG OUTPUT SIGNAL	
	DISCRETE INPUT SIGNAL	
	ANALOG INPUT SIGNAL	
	INTERLOCK MASTER INTERLOCK I.D. LETTER	
	INTERLOCK SLAVE INTERLOCK I.D. LETTER	
	PROGRAMMABLE LOGIC CONTROLLER	
	OPERATOR TERMINAL INTERFACE	
	CONTROLLER	
	LOCAL (FIELD MOUNTED)	
	FRONT PANEL MOUNTED	
	REAR PANEL MOUNTED	
	INTEGRAL EQUIPMENT	
	SIGNAL SPLITTER CONVERTER/ BOOSTER (SEE BELOW)	
	MOTOR	
	ALARM/ STATUS LIGHT	



TYPICAL INSTRUMENTATION SYMBOL

CONTROL LOOPS

LOOP NO.	DESCRIPTION
10	CHAIN AND FLIGHT DRIVES
20	SLUDGE CROSS COLLECTOR SCREW DRIVES
30	PRIMARY SEDIMENTATION BASIN EFFLUENT CHANNEL LEVEL MONITORING
40	ROTATING SCUM PIPE ACTUATORS
50	ROTATING SCUM PIPE FLUSHING VALVES
60	SCUM DECAN'T PUMPS
70	SCUM CONCENTRATING PIT, HIGH LEVEL SWITCHES
71	CONTROL PANEL, CP-1, GENERAL
80	CHEMICAL STORAGE TANK LEVEL MONITORING
90	CHEMICAL STORAGE CONTAINMENT HIGH LEVEL
100	CHEMICAL FILL STATION ALARM AND HORN
110	VENTILATION SYSTEM EXHAUST FANS
120	CONTROL PANEL, CP-3, INTERFACE WITH OTHER CONTROLS
130	CONTROL PANEL, CP-3, GENERAL
140	ODOR CONTROL ROOM SLUMP PUMP STATION
200	ODOR CONTROL FAN (BY SPECIFICATION SECTION 11250)
210	ODOR CONTROL SCRUBBER STAGE 1 (BY SPECIFICATION SECTION 11250)
220	ODOR CONTROL SCRUBBER STAGE 2 (BY SPECIFICATION SECTION 11250)
230	RECIRCULATION PUMP NO 1 (BY SPECIFICATION SECTION 11250)
240	RECIRCULATION PUMP NO 2 (BY SPECIFICATION SECTION 11250)
250	PLANT WATER FEED STAGE 1 (BY SPECIFICATION SECTION 11250)
260	PLANT WATER FEED STAGE 2 (BY SPECIFICATION SECTION 11250)
270	CHEMICAL MONITORING STAGE 1 (BY SPECIFICATION SECTION 11250)
280	CHEMICAL MONITORING STAGE 2 (BY SPECIFICATION SECTION 11250)
300	NODCH FEED PUMPS (BY SPECIFICATION SECTION 11250)
310	NODCH FEED PUMPS (BY SPECIFICATION SECTION 11250)
320	CONTROL PANEL, CP-2, GENERAL (BY SPECIFICATION SECTION 11250)

ABBREVIATIONS

CP	CONTROL PANEL
ESTOP	EMERGENCY STOP
HOR	HAND-OFF-REMOTE
HIM	HAND INTERFACE MODULE(VFD)
HS	HAND SWITCH
LCS	LOCAL CONTROL STATION
LGR	LOCAL OFF REMOTE
MCC	MOTOR CONTROL CENTER
MS	MOTOR STARTER
NOT	NORMAL-OFF-TEST
DCS	OPEN-CLOSE-STOP
DPT	OPERATOR TERMINAL
PLC	PROGRAMMABLE LOGIC CONTROLLER
RESET	ALARM RESET
VFD	VARIABLE FREQUENCY DRIVE
EF	EXHAUST FAN

EQUIPMENT SYMBOL LEGEND

PROPOSED	DESCRIPTION	EXISTING
	GENERAL VALVE	
	ULTRASONIC TRANSDUCER	
	PRESSURE TRANSDUCER	
	VENTILATION EXHAUST EF-X	
	MAGNETIC FLOW METER	
	MOTOR OPERATED M	
	SOLENOID S	
	PUMP	

INSTRUMENTATION NOTES:

- REFER TO ELECTRICAL AND PROCESS DRAWINGS FOR LOCATION OF SYSTEM CONTROL PANELS AND FIELD INSTRUMENTATION.
- PROVIDE SIGNAL REPEATERS/CONVERTERS/BOOSTERS AS REQUIRED BASED UPON EQUIPMENT SELECTED BY INSTRUMENTATION SUPPLIER, BASED ON DISTANCE AND LOCATION.
- PROVIDE DRIP SHIELDS TO PROTECT ALL PANELS LOCATED UNDERNEATH PIPES OR OTHER LIQUID-CONTAINING STRUCTURES.
- THE ODOR CONTROL SYSTEM PROVIDER, SPECIFIED IN SPECIFICATION SECTION 11250, SHALL PROVIDE A PLC-BASED SYSTEM CONTROL PANEL, CP-2, TO CONTROL THE ODOR CONTROL EQUIPMENT. CONTROL SYSTEM REQUIREMENTS ARE SPECIFIED IN SPECIFICATION SECTION 13443. INSTRUMENTATION SUPPLIER IS RESPONSIBLE FOR CONNECTION OF THIS VENDOR FURNISHED CONTROL PANEL, CP-2, TO THE EXISTING ALLEN-BRADLEY DATA HIGHWAY PLUS PLC NETWORK. INSTRUMENTATION SUPPLIER IS ALSO RESPONSIBLE FOR SCADA PROGRAMMING OF THIS SYSTEM TO PROVIDE COMPLETE MONITORING, ALARMING AND CONTROL OF THIS EQUIPMENT AS SPECIFIED IN 13443 AND SCADA PROGRAMMING AS PER SPECIFICATION 13442.
- REFER TO SPECIFICATION SECTION 13440, 13441, AND 13442 FOR ADDITIONAL INFORMATION REGARDING INSTRUMENTATION REQUIREMENTS FOR INSTRUMENTATION SUPPLIER.
- THE CONTRACTOR WILL PROVIDE AND INSTALL 15% SPARE INSTRUMENTATION WIRES WITH A MINIMUM OF TWO SPARES PER CONDUIT UP TO THE LIMIT OF CONDUIT FILL AS SPECIFIED BY NEC.
- CONTRACTOR TO COORDINATE NEEDED VOLTAGE BASED UPON EQUIPMENT SUPPLIED.
- ALL FLOOR MOUNTED CONTROL PANELS SHALL BE INSTALLED ON 4" HIGH CONCRETE EQUIPMENT PADS.
- WHERE INPUT AND OUTPUT SIGNALS TO A PLC IS REQUIRED, PROVIDE PROPER TYPE AND QUANTITY OF INPUT/OUTPUT MODULES (I/O).
- REMOTE POSITION ON THE LOCAL CONTROL STATION HAND SWITCH SHALL ACTIVATE A "REMOTE ENABLED" INDICATION AT THE SYSTEM CONTROL PANEL OPERATOR TERMINAL AND AT THE SCADA. THIS SHALL ALLOW THE EQUIPMENT TO BE CONTROLLED FROM THE SYSTEM CONTROL PANEL, PLC, OR SCADA. ANY OTHER POSITION SHALL NOT ALLOW CONTROL OF THE EQUIPMENT FROM THE SYSTEM CONTROL PANEL OR SCADA.
- CONTRACTOR SHALL COORDINATE THE TYPE OF ANALOG SIGNAL PROVIDED BY THE EQUIPMENT OR FIELD DEVICES, WITH THE PROPER TYPE PLC I/O.
- ALL ANALOG CONTROL SIGNALS WILL BE 4-20mA, UNLESS OTHERWISE INDICATED OR REQUIRED.
- FOR CONTROL PANEL REQUIREMENTS, INCLUDING SIZING PROVISIONS AND MINIMUM AND MAXIMUM HEIGHT CONSTRAINTS ON CONTROL DEVICES, REFER TO SPECIFICATION 13440.
- INSTRUMENTATION SUPPLIER SHALL RECEIVE TERMINAL CONNECTION DIAGRAMS FROM ELECTRICAL SUBCONTRACTOR PERTAINING TO TERMINATIONS IN MCC, LOCAL CONTROL STATIONS AND ALL EQUIPMENT SUPPLIED BY ELECTRICAL SUBCONTRACTOR.
- INSTRUMENTATION SUPPLIER SHALL PROVIDE POINT TO POINT WIRING SCHEMATICS TO ELECTRICAL SUBCONTRACTOR TO ALLOW COMPLETION OF ALL CONTROL WIRING BETWEEN DEVICES, ODOR CONTROL PANEL AND ALL EQUIPMENT PROVIDED BY INSTRUMENTATION SUPPLIER AND EQUIPMENT PROVIDED BY ELECTRICAL SUBCONTRACTOR.

INSTRUMENTATION LEGEND

FIRST LETTER	SUCCEEDING LETTER	
1	2	3
A	ANALYSIS	ALARM
B	---	---
C	CONTROL	CONTROL
D	DIFFERENTIAL*	CONTROL DETECT
E	---	ELEMENT
F	FLOW	---
G	GAS	CLASS
H	HAND (MANUAL)	CLASS HIGH**
I	CURRENT	INDICATE
J	POWER	---
K	TIME*	---
L	LEVEL	LOW**
M	MOTOR	INTERMEDIATE
P	PRESSURE	---
Q	QUANTITY OR TOTALIZE*	---
R	RADIATION	RECORD
S	SPEED OR FREQUENCY	SWITCH
T	TEMPERATURE	SIGNAL
V	VACUUM	TRANSMIT
W	TORQUE, WEIGHT, FORCE	VALVE
X	---	---
Y	STATUS	RELAY, COMPUTE, OR CONVERT
Z	POSITION	---

* ALSO USED AS A MODIFIER AFTER FIRST LETTER (i.e. PDT: PRESSURE DIFFERENTIAL INDICATING TRANSMITTER)

** ALSO USED AS A MODIFIER AFTER LAST LETTER (i.e. LSHH: LEVEL SWITCH HIGH HIGH)

PROGRESS PLOTS	DESIGNED FOR REVIEW: 4-4-07	DESIGNED FOR BUILDING: 3-4-07	DATE: 3-4-07	BOOK NO. 20551A	SCALE
DATE	APP'D	REVISING	NO	DRAWN BY: JEL	CHECKED BY: JEL
				DATE: 3-4-07	DATE: 3-4-07
				APPROVED BY: JEL	APPROVED BY: JEL
				DATE: 3-4-07	DATE: 3-4-07
				BOOK NO. 20551A	PROJECT NO. 04006
				SCALE	DATE: 3-4-07
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					PRIMARY SEDIMENTATION BASINS
					UPGRADE WITH ODOR CONTROL FACILITIES
					INSTRUMENTATION LEGENDS, NOTES, SYMBOLS, ABBREVIATIONS, AND CONTROL LOOPS
					DWG 1-1
					58 OF 79