

INSTRUMENT SPECIFICATION SHEETS (R1)

1. GENERAL

1.1 References - General

- .1 Refer To Section 17010.

1.2 Instrument Specification Sheets

- .1 The following data sheets provide information for instruments included as part of this Work.

I-101	Instrument Specification Sheet – Gas Detection
I-102	Instrument Specification Sheet – Motion Detectors
I-103	Instrument Specification Sheet – Door Switches
I-104	Instrument Specification Sheet – Temperature Transmitter
I-105	Instrument Specification Sheet – Float Switch
I-106	Instrument Specification Sheet – Magnetic Flow Transmitter
I-107	Instrument Specification Sheet – Submersible Level Transmitter
I-108	Instrument Specification Sheet – Pressure Gauge
I-109	Instrument Specification Sheet – Pressure Switch
I-110	Instrument Specification Sheet – Pressure Transmitter
I-111	Instrument Specification Sheet – Solenoid Valve
I-112	Instrument Specification Sheet – Water Temperature Transmitter
I-113	Instrument Specification Sheet – DO Transmitter
I-114	Instrument Specification Sheet – pH Transmitter
I-115	Instrument Specification Sheet – Pressure Switch
I-116	Instrument Specification Sheet – Temperature Transmitter
I-117	Instrument Specification Sheet – Heating Coil Freeze stat
I-118	Instrument Specification Sheet – Differential Pressure Switch
I-119	Instrument Specification Sheet – Indicator (Panel Mount)
I-120	Instrument Specification Sheet – Electronic Buzzer (Panel Mount)
I-121	Instrument Specification Sheet – Methanol Leakage Sensor
I-122	Instrument Specification Sheet – Methanol Level Transmitter
I-123	Instrument Specification Sheet – Ground Permissive Interlock
I-124	Instrument Specification Sheet – Status Indicator Light
I-125	Instrument Specification Sheet – Annunciator Horn

- .2 All instruments described on each instrument Specification sheet are to be from a single source. Design has been based on the first named Product.

2. PRODUCTS

- .1 Not used.

3. EXECUTION

- .1 Not used.

INSTRUMENT SPECIFICATION SHEETS (R1)

INSTRUMENT SPECIFICATION NUMBER:	I101
DEVICE:	Gas Detection
TAG:	C500-AE/AIT C501-AE/AIT
SENSOR TYPE:	Catalytic Bead,
SERVICE:	H2S inside Exhaust Fan Room
HOUSING:	Explosion proof aluminum
CABLE LENGTH:	TBC
TRANSMITTER TYPE:	Digital Electronic
ENCLOSURE:	EEMAC/NEMA 4X
OUTPUT:	4 Form C N/O relay contacts High, High High, Instrument Fail
INPUT METHOD:	Remote Programmer
INDICATOR:	4 Digit LED Display
RANGE:	0-50 PPM Alert at 10 PPM Alarm at 15 PPM
POWER SUPPLY:	18 to 30 VDC
MOUNTING:	(SENSOR) Surface mount with remote mounting kit (TRANSMITTER) Wall mount
SPECIAL INSTRUCTIONS	To be wired directly to Beacon/Strobe (Blue) Local Station to house Silence Button.
ACCESSORIES:	Calibration kit complete with sample gas
MANUFACTURER AND MODEL:	Thermo Electron, Net Safety Monitoring, MSA, Or approved Equal

INSTRUMENT SPECIFICATION SHEETS (R1)

INSTRUMENT SPECIFICATION NUMBER:	I102
DEVICE:	Motion Detector
TAG:	C910-ZS C912-ZS C914-ZS C916-ZS
TYPE:	Combination Infra-red and microwave
SERVICE:	Electrical Room Control Room Blower Room Exhaust Fan Room
CALIBRATION:	User adjustable detection patterns
OUTPUT:	Form C Reed Relay rated 500 mA at 300 VDC
POWER SUPPLY:	9 to 30 VDC
MOUNTING:	Surface Mount
MANUFACTURER AND MODEL:	C&K Systems DT-450C or approved equal

INSTRUMENT SPECIFICATION SHEETS (R1)

INSTRUMENT SPECIFICATION NUMBER: I103

DEVICE: Door Switch

TAG: C911-ZS
C913-ZS
C915-ZS
C917-ZS

SERVICE: Electrical Room
Control Room
Blower Room
Exhaust Fan Room

TYPE: Electronic

DISPLAY: LED Status Indicator

OUTPUT: SPDT Contact suitable for 120 VAC pilot duty

POWER SUPPLY: 120 VAC, 60 Hz

ENCLOSURE: Surface Mount

MANUFACTURER AND MODEL: Edwards
Approved equal

INSTRUMENT SPECIFICATION SHEETS (R1)

INSTRUMENT SPECIFICATION NUMBER:	I104
DEVICE:	Temperature Indicating Transmitter with RTD Sensor
TAG:	C410-TIT, C420-TIT C430-TIT, C440-TIT
TYPE:	RTD Sensor with Thermowell and Remote Transmitter
SERVICE:	Blower intake Ambient Air
RTD PROBE:	Platinum 100 Ohm Pt Spring loaded
RANGE:	0°C to 50°C
INACCURACY:	±0.5% of span or better
INDICATION:	3 ½ Digit LED display scaled in engineering units
PROCESS CONNECTION:	3/4" NPT 316 SST Thermowell with insertion of 1/3 the pipe diameter.
OUTPUT:	4 to 20 mA DC into 500 ohm load
POWER:	Loop powered
ENCLOSURE:	EEMAC/NEMA 4X.
MOUNTING:	(SENSOR) Pipe (TRANSMITTER) Pipe/Wall mount
MANUFACTURER AND MODEL:	Rosemount Approved equal

INSTRUMENT SPECIFICATION SHEETS (R1)

INSTRUMENT SPECIFICATION NUMBER:	I105
DEVICE:	Float Switch
TAG:	LSH-C005
SERVICE:	Refer to Instrument Index and P&IDs.
OUTPUT:	SPDT Contacts
ENCLOSURE:	Polypropylene float casing with preterminated signal cable. Minimum
MOUNTING:	Provide strain relief-type connectors to suspend float at desired location. Fabricate mounting brackets from fiberglass or PVC. Provide sway control rings as required.
MANUFACTURER AND MODEL:	Flygt ENM-10 Magnetrol or approved equal

INSTRUMENT SPECIFICATION SHEETS (R1)

INSTRUMENT SPECIFICATION NUMBER:	I106
DEVICE:	Magnetic Flow Meter
TAG:	R256-FIT, W350-FIT W905-FIT, R923-FIT
SERVICE:	WAS, Treated Centrate, Flushing Water, RAS, Centrate
SIZE AND MATERIAL:	Refer to attached and Process Drawings for flow meter size and piping materials
AREA CLASSIFICATION	See Division 16
LINER MATERIAL:	Neoprene
ELECTRODES:	Bullet Nose – 316 SST
GROUNDING:	Grounding Rings or probes for both inlet and outlet– 316 SST
RANGE:	Refer to Process Drawings
SIGNAL CABLE LENGTH:	25m
INACCURACY:	± 0.5 % of span
OUTPUT:	4 to 20 mA DC into 500 ohm load, HART protocol
POWER SUPPLY:	120 VAC, 60 HZ
MOUNTING:	(TRANSMITTER) Remote Wall Mount (SENSOR) Flanged Mount
ELECTRONIC ENCLOSURE:	EEMAC/NEMA 4X Transmitter Housing EEMAC/NEMA 4X Sensor
SPECIAL INSTRUCTIONS:	EEMAC/NEMA 6 Sensor for C256-FE/FIT, rated for water submersion.
MANUFACTURER AND MODEL:	Rosemount 8700 ABB Magmaster E&H Promag 33 or approved equal

INSTRUMENT SPECIFICATION SHEETS (R1)

Device Tag	Line Size	Normal Flow	Max Flow	Min Flow
	mm	L/s	L/s	L/s
FE/FIT-C256, WAS	200	80	100	0
FE/FIT-C350, TCE	250	80	100	0
FE/FIT-C923, RAS	250	100	200	25
FE/FIT-C905,FW+CE	350	50	75	0

INSTRUMENT SPECIFICATION SHEETS (R1)

INSTRUMENT SPECIFICATION NUMBER:	I107
DEVICE:	Submersible Level Transmitter
TAG:	C005-LT, C100-LT-1, C100-LT-2 C200-LT-1, C200-LT-2, C300-LT-1, C300-LT-2
SERVICE:	RAS, Treated Centrate
TYPE:	Loop-powered, submersible level transmitter complete with cable
RANGE:	Approximately 10 m water column, See Process Drawings, to be confirmed
POWER SUPPLY:	12 to 28 VDC
OUTPUT:	4 to 20 mA DC into 500 ohm load
CONSTRUCTION:	316 SST suitable for immersion in centrate
CABLE:	Preterminated 15 m cable suitable for immersion in Centrate and Activated Sludge.
MOUNTING:	Suspend from PVC or fiberglass brackets and provide strain relief connector for the cable. Bracket design shall facilitate rapid sensor removal and installation. Provide stilling well to prevent sway in turbulent tanks.
ACCESSORIES:	Quick disconnect Stilling Well Strain relief connector
MANUFACTURER AND MODEL:	Ametek Druck Or approved equal

INSTRUMENT SPECIFICATION SHEETS (R1)

INSTRUMENT SPECIFICATION NUMBER:	I108
DEVICE:	Pressure Compound Gauge
TAG:	C510-PI1
SERVICE:	SBR and Equalization Tank Exhaust Exhaust Fan Suction
PROCESS CONNECTION:	0.5' NPTF
SENSOR:	Brass bellows
CASE:	100 mm Stainless steel case
RANGE:	0 to 100 mm Vacuum, 0 to 100 mm water column
MOUNTING:	Bottom, stem mounted
ENCLOSURE:	EEMAC/NEMA 4X
ACCESSORIES:	Block & bleed manifold
MANUFACTURER AND MODEL:	Ashcroft H O Trerice Winters Or Approved Equal

INSTRUMENT SPECIFICATION SHEETS (R1)

INSTRUMENT SPECIFICATION NUMBER:	I109
DEVICE:	Pressure Switch
TAG:	C300-PSL C300-PSH
SERVICE:	SBR and Equalization Tank
PROCESS CONNECTION:	0.5' NPTF
SENSOR:	Brass bellows
RANGE:	0 to 100 mm Water Column Vacuum 0 to 100 mm Water Column
MOUNTING:	Bottom, stem mounted
ENCLOSURE:	EEMAC/NEMA 4X
OUTPUT:	Form C Contacts rated 5 amps at 120 VAC
ACCESSORIES:	Block & bleed manifold
MANUFACTURER AND MODEL:	United Electric Ashcroft or approved equal

INSTRUMENT SPECIFICATION SHEETS (R1)

INSTRUMENT SPECIFICATION NUMBER:	I110
DEVICE:	Pressure Transmitter
TAG:	C300-PIT W350-PIT C427-PIT C437-PIT
SERVICE:	Equalization Tank, Treated Centrate, Process Air
PROCESS CONNECTIONS:	0.50" NPTF
RANGE:	0 to 100 mmWC vac. to +100 mmWC (C300, W350) 0-15mWC (C427, C437)
INACCURACY:	±1 percent of span or lower
OUTPUT:	4 to 20 mADC into 500 OHM load
POWER SUPPLY:	Loop powered 24 VDC
CONSTRUCTION:	316 SST
ELECTRONIC ENCLOSURE:	EEMAC/NEMA 4X
ACCESSORIES:	Block & bleed manifold
MANUFACTURER AND MODEL:	Rosemount ABB Ametek Or approved Equal

INSTRUMENT SPECIFICATION SHEETS (R1)

INSTRUMENT SPECIFICATION NUMBER:	I111
DEVICE:	Solenoid Valve (Water Service)
TAG:	C106-SV C206-SV
AREA CLASSIFICATION:	See Division 16
SERVICE:	Flushing Water
PROCESS CONNECTIONS:	1" NPT
MATERIALS:	304 SS
OPERATION:	Normally Closed
DIFFERENTIAL PRESSURE:	Min: 0 kPa, Max: 800 kPa
ENCLOSURE:	EEMAC/NEMA 4X
POWER SUPPLY:	120VAC/60Hz
MANUFACTURER AND MODEL:	ASCO 8210 or approved equal

INSTRUMENT SPECIFICATION SHEETS (R1)

INSTRUMENT SPECIFICATION NUMBER:	I112
DEVICE:	Water Temperature Transmitter
TAG:	W905-TE/TIT
SERVICE:	Flushing Water
RANGE:	0 to 100°C
PROCESS CONNECTION:	3/4" Stainless Steel NPT Thermowell with insertion of 1/3 the pipe diameter
RTD PROBE:	Platinum 100 OHM Spring loaded
INACCURACY:	±0.5% of span or better
INDICATION:	3 ½ Digit LED Display scaled
OUTPUT:	4 to 20 mA DC into 500 Ohm Load
POWER SUPPLY:	Loop powered
ENCLOSURE:	EEMAC/NEMA 4
MOUNTING:	Direct to process, locate at tee or elbow in system.
MANUFACTURER:	Rosemount Or approved equal

INSTRUMENT SPECIFICATION SHEETS (R1)

INSTRUMENT SPECIFICATION NUMBER: I113

DEVICE: Dissolved Oxygen Transmitter

TAG: AE/AIT-185-1, AE/AIT-285-1

PROBE TYPE: Optical DO

OPERATING PRINCIPLE: Light Scatter

PROBE LENGTH: TBC

AREA CLASSIFICATION: See Division 16

SERVICE: SBR Tanks Centrate
Refer to Process sections for Centrate characteristics

SELF CLEANING/CALIBRATION: Air Jet Cleaner

TEMPERATURE COMPENSATION: Integral

CABLE LENGTH: TBC with Quick connectors

RANGE: 0-10 mg/L

INACCURACY: ±0.5% of span

TRANSMITTER TYPE: Dissolved Oxygen Analyzer

OUTPUT: Isolated 4 to 20 mA Analog Output(s)
2 configurable Form C Alarm Contacts N/O

POWER SUPPLY: 120 VAC, 60 HZ

ENCLOSURE: EEMAC/NEMA 4X Transmitter Housing

MOUNTING: (SENSOR) Pipe Mount
(TRANSMITTER) Wall Mount

ACCESSORIES: Jet Compressor System
Sensor Mounting Kit with jet cleaning attachment
Connections required for 2" tee

MANUFACTURER AND MODEL: Aysix 2000 with Model 10 D.O. Sensor
Royce
Hach
or approved equal

INSTRUMENT SPECIFICATION SHEETS (R1)

INSTRUMENT SPECIFICATION NUMBER:	I114
DEVICE:	pH Transmitter
TAG:	AE/AIT-185-2, AE/AIT-285-2
TYPE:	Plunger PH electrode
AREA CLASSIFICATION:	See Division 16
SERVICE:	SBR Tanks Centrate Refer to Process sections for Centrate characteristics
PROCESS DATA:	Ph and Temperature of Centrate
CONNECTION TYPE:	1”NPT Pipe Tee ¾” Reducing Bushing Use Teflon tape on sensor to permit easy removal
MATERIAL:	316 SS
TEMPERATURE:	0 to 50°C
RANGE:	5-8 ph
ACCURACY:	1Mv @25C ±0.01 pH
OUTPUT:	Isolated 4 to 20 mA Analog Output(s) for PH and Temp. 2 configurable Form C Alarm Contacts
POWER SUPPLY:	120 VAC, 60 HZ
ENCLOSURE:	EEMAC/NEMA 4X Transmitter Housing
MOUNTING:	(SENSOR) Pipe Connection (TRANSMITTER) Wall Mount
ACCESSORIES:	Process connections Self cleaning kit (Air)
MANUFACTURER AND MODEL:	Aysix Model 22 Process Sensor with Model A6-223 PH/ORP Transmitter Rosemount Analytical Hach or approved equal

INSTRUMENT SPECIFICATION SHEETS (R1)

INSTRUMENT SPECIFICATION NUMBER:	I115
DEVICE:	Pressure Gauge
TAG:	C510-PI2
SERVICE:	SBR and Equalization Tank Exhaust Discharge from Exhaust Fan
PROCESS CONNECTION:	0.5" NPTF
SENSOR:	Brass Bellows
CASE:	100 mm Stainless steel
RANGE:	0 to 100 mm water column
MOUNTING:	Bottom, stem mounted
ENCLOSURE:	EEMAC/NEMA 4X
ACCESSORIES:	Block & bleed manifold
MANUFACTURER AND MODEL:	Ashcroft H O Trerice Winters Or Approved Equal

INSTRUMENT SPECIFICATION SHEETS (R1)

INSTRUMENT SPECIFICATION NUMBER:	I116
DEVICE:	Temperature Transmitter
TAG:	C521-TIT C530-TIT C522-TIT C540-TIT C523-TIT C550-TIT C524-TIT C560-TIT C580-TIT
TYPE:	RTD Sensor
SERVICE:	Ambient Air Temperature Transmitter
PROBE:	5 mm dia x100 mm L ambient air probe
RANGE:	0°C to 50°C
ACCURACY:	±0.5°C of span or better
DISPLAY:	Three digit LED display with one decimal point.
OUTPUT:	4 to 20 mA DC into 500 OHM load
ENCLOSURE:	EEMAC/NEMA 4X
MOUNTING:	Wall
ACCESSORIES:	Tamper-proof cover
MANUFACTURER AND MODEL:	Rosemount Type 644H Or Approved Equal

INSTRUMENT SPECIFICATION SHEETS (R1)

INSTRUMENT SPECIFICATION NUMBER:	I117
DEVICE:	Heating Coil Freezestat
TAG:	C551-TSL
TYPE:	Duct Averaging Vapor-Charged Capillary
SERVICE:	Air handling units
RANGE:	-9.4 to 12.8°C
SETPOINT:	1.6°C trip with manual reset
OUTPUT:	1 N.O. and 1 N.C. contacts with pilot duty rating
POWER SUPPLY:	N/A
ENCLOSURE:	Manufacturer's standard
ACCESSORIES:	Duct mounting kit with sensor element holder

INSTRUMENT SPECIFICATION SHEETS (R1)

INSTRUMENT SPECIFICATION NUMBER:	I118
DEVICE:	Differential Pressure Switch
TAG:	C550-PDSH C560-PDSH
SERVICE:	Clogged filter detection
RANGE:	As required, with adjustable set point and differential
PROCESS CONNECTIONS	Barbed tube fittings on switch and static pressure probes.
INACCURACY:	±1.0% of span or better
OUTPUT:	Form C dry contact rated for pilot duty
POWER SUPPLY:	N/A
ENCLOSURE:	Manufacturer's standard
MOUNTING:	Direct mount static pressure probes to the duct. Wall mount bracket for the switch body.
ACCESSORIES:	Wall mount bracket. 5 mm copper sensing lines.

INSTRUMENT SPECIFICATION SHEETS (R1)

INSTRUMENT SPECIFICATION NUMBER:	I119
DEVICE:	Indicator (Panel mount)
TAG:	C720-LI C750-LI
INPUT:	4 to 20 mA
DISPLAY:	4 digit, 20 mm LED
CALIBRATION:	Zero and span adjustable Digital readout scaled in engineering units
INACCURACY	±1 percent or less
POWER SUPPLY:	Loop powered
MOUNTING:	Flush Panel Mount, EEMAC/NEMA 4X
AREA CLASSIFICATION:	Class 1, Zone 2
MANUFACTURER AND MODEL:	Precision Digital Action Instruments Or Approved Equal

INSTRUMENT SPECIFICATION SHEETS (R1)

INSTRUMENT SPECIFICATION NUMBER:	I120
DEVICE:	Electronic Buzzer
TAG:	C700-UY
TYPE:	Piezo Electric Buzzer with Continuous tone, 70 dBA at 600 mm
SERVICE:	Methanol truck unloading panel
POWER SUPPLY:	120 VAC, 60 Hz
ENCLOSURE:	Flush panel mount, EEMAC/NEMA 4X
AREA CLASSIFICATION:	Class 1, Zone 2
MANUFACTURER:	Mallory Or Approved Equal

INSTRUMENT SPECIFICATION SHEETS (R1)

INSTRUMENT SPECIFICATION NUMBER:	I121
DEVICE:	Methanol Storage Tank Leakage Sensor
TAG:	C720-LS C750-LS
LEAKAGE SENSOR TYPE:	Liquid Sensor to detect Methanol
SERVICE:	Interstitial Space for double-wall tanks
OPERATING TEMPERATURE:	-40 to 80°C
AREA CLASSIFICATION:	Class 1, Zone 0
MOUNTING:	(SENSORS) Mounting for tank installation (from top)
APPROVALS:	Intrinsically Safe for Class 1, Zone 0
ACCESSORIES:	Provide all necessary tank accessories for mounting sensors.
MANUFACTURER AND MODEL:	Sequence Controls Or approved Equal

INSTRUMENT SPECIFICATION SHEETS (R1)

INSTRUMENT SPECIFICATION NUMBER:	I122
DEVICE:	Methanol Storage Tank Continuous Level Device
TAG:	C720-LT-1, C720-LT-2 C750-LT-1, C750-LT-2
TRANSMITTER TYPE:	Magnetrostrictive
SERVICE:	Methanol storage tank
CONNECTION:	4" Flange
OPERATING TEMPERATURE:	-40 to 80°C
AREA CLASSIFICATION:	Class 1, Zone 0
PROBE LENGTH:	Refer to Process Drawings
OUTPUT:	4 to 20 mA DC into 500 ohm load
POWER SUPPLY:	24V DC (Loop Powered)
ENCLOSURE:	Explosion Proof
MOUNTING:	Flange Mounting
APPROVAL:	Intrinsically Safe for Class 1, Zone 0
ACCESSORIES:	Provide all necessary tank accessories for top mount application
MANUFACTURER AND MODEL:	K-TEK Or approved Equal

INSTRUMENT SPECIFICATION SHEETS (R1)

INSTRUMENT SPECIFICATION NUMBER:	I123
DEVICE:	Ground Permissive Interlock
TAG:	C700-CSH/CAH
TYPE:	GPI
SERVICE:	Methanol Unloading Truck Connect
OPERATING TEMPERATURE:	-40 to 40°C
AREA CLASSIFICATION:	Class 1, Zone 1
POWER SUPPLY:	120 VAC
OUTPUT:	SPDT 5A@250VAC
ENCLOSURE:	EEMAC/NEMA 4X
INDICATION:	Pilot Indicating lights
CONNECTION:	Grounding Clamp
CABLE LENGTH:	25 FT of cord 14/3 S.O.W.
MANUFACTURER AND MODEL:	SPARTECH Or approved Equal

INSTRUMENT SPECIFICATION SHEETS (R1)

INSTRUMENT SPECIFICATION NUMBER:	I124
DEVICE:	Status Indicator Light
TAG:	C500-XA-1
TYPE:	Multi Color Multi Mode LED Status Light
SERVICE:	Gas Detection
COLOR:	BLUE – H2S Gas RED – Fire, LEL AMBER – Process GREEN – Safe Condition
NOMINAL VOLTAGE:	120 VAC
OPERATING TEMPERATURE:	-40 to 40°C
AREA CLASSIFICATION:	General Purpose
MOUNTING:	Wall
ENCLOSURE:	EEMAC/NEMA 4X
SPECIAL INSTRUCTIONS	Steady on High Alarm, Flash on High High Alarm
ACCESSORIES:	Provide housing to protect light from vandals.
MANUFACTURER AND MODEL:	Fedral Signal Corporation Edwards Or approved Equal

INSTRUMENT SPECIFICATION SHEETS (R1)

INSTRUMENT SPECIFICATION NUMBER:	I125
DEVICE:	Annunciator Horn
TAG:	C500-XA-2
TYPE:	Dual Tone Grille Type Vibrating Horn
SERVICE:	Process Alarms
NOMINAL VOLTAGE:	120 VAC
OPERATING TEMPERATURE:	-40 to 40°C
AREA CLASSIFICATION:	General Purpose
MOUNTING:	Wall mount for Exhaust Fan Building Pole Mount for Methanol Storage Tanks
ENCLOSURE:	EEMAC/NEMA 4X Heavy Duty Zinc Die Cast
SPECIAL INSTRUCTIONS	Sound Levels for Outdoor Applications Tone 1 for High Alarm Tone 2 for High High Alarm Silence Pushbutton to shutdown horn
ACCESSORIES:	4" box for mounting
MANUFACTURER AND MODEL:	Federal Signal Corporation Edwards Or approved Equal

END OF SECTION