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PIPE LINE IDENTIFICATION

XX"–XXX–XXXX–XXX–XX–XX

- LINE SIZE
- FLUID CODE
- LINE NUMBER
- PIPING MATERIAL CODE
- INSULATION CODE
- TRACING CODE
  E = ELECTRIC TRACING
  S = STEAM TRACING

FLUID CODES

MOX	METHODIXDE
WVO	WASTE VEGETABLE OIL
H2O	WATER
GLY	GLYCEROL
WBIOD	WET BIODIESEL
CA	COMPRESSED AIR
BIOD	BIODIESEL
WAST	WASTE (GLYCEROL, SALTS)

PIPING MATERIAL CODES

CODE	PIPING MATERIAL	SERVICE
SS	STAINLESS STEEL	PROCESS
MDP	MEDIUM DENSITY POLYETHYLENE	METHOXIDE
CLRT	CLEAR TUBING	METHOXIDE
RSS	RIGID STAINLESS STEEL	PROCESS

INSULATION CODES

AS	ANTI–SWEAT
CC	COLD CONSERVATION
F	FIRE PROTECTION
FP	FREEZE PROTECTION
HC	HEAT CONSERVATION
PP	PERSONAL PROTECTION

EQUIPMENT CODES

A	AGITATORS
E	EXCHANGERS
F	FILTERS
M	MECH. EQUIPMENT
P	PUMPS
R	REACTORS
T	TANKS
V	VESSELS
Y	SEPARATORS
PSC	PALLET SPILL CONTAINMENT

LINE SYMBOLS

- PRIMARY PROCESS LINE
- SECONDARY PROCESS LINE
- INSTRUMENT LINE
- PNEUMATIC LINE
- CAPILLARY LINE
- ELECTRIC SIGNAL
- SOFTWARE SIGNAL
- DIGITAL SIGNAL
- ELECTROMAGNETIC/SONIC SIGNAL
- MECHANICAL LINK
- HYDRAULIC LINE
- UNDERGROUND LINE
- VESSEL INTERNALS
- EQUIPMENT SKID BOUNDARY LINE
- SLOPE — LINE SLOPE DOWN IN DIRECTION OF ARROW
- EQUIP No./DESCRIPTION LINE NUMBER — LINE SOURCE OR DESTINATION (INSIDE P&ID BOUNDARY)
- DESCRIPTION — LINE SOURCE OR DESTINATION (OUTSIDE P&ID BOUNDARY)

EQUIPMENT CONNECTIONS

- MANWAY
- MANWAY W/ NOZZLE
- FLANGED NOZZLE (4" & LARGER)
- FLANGED NOZZLE (3" & SMALLER)
- NIPPLE/COUPLING/BUSHING, ETC.

VALVE SYMBOLS

- VALVE – NORMALLY OPEN
- VALVE – NORMALLY CLOSED
- BALL VALVE

CONTROL VALVE SYMBOLS

- PNEUMATIC 2–WAY CONTROL VALVE
- PNEUMATIC 3–WAY CONTROL VALVE
- S — 2–WAY SOLENOID VALVE
- S — 3–WAY SOLENOID VALVE (ARROW INDICATES VENT PORT)
- M — MOTOR OPERATED VALVE
- HV, XX — HAND ON/OFF VALVE (XX DENOTES FAIL POSITION)
- PCV — PRESSURE REDUCING VALVE (SELF CONTAINED)
- PCV — PRESSURE REDUCING VALVE (EXTERNAL PRESSURE TAP)
- PCV — BACKPRESSURE CONTROL VALVE (SELF CONTAINED)
- PCV — BACKPRESSURE CONTROL VALVE (EXTERNAL PRESSURE TAP)

PIPING SYMBOLS

- FLANGED CONNECTION
- SANITARY CONNECTION
- ORIFICE PLATE (FO)
- CONCENTRIC REDUCER
- ECCENTRIC REDUCER
- HOSE COUPLING (QUICK CONNECT)
- BLIND FLANGE
- PIPE PLUG
- PIPE CAP (THREADED)
- PIPE CAP (WELDED)
- FLEXIBLE HOSE

SAFETY DEVICE SYMBOLS

- PSV — PRESSURE SAFETY VALVE
- PSE — RUPTURE DISC (PRESSURE RELIEF)
- PSE — RUPTURE DISC (VACUUM RELIEF)
- FA, XC — COMBINATION CONSERVATION VENT WITH FLAME ARRESTOR
- XC — CONSERVATION VENT (PIPE AWAY)
- XC — CONSERVATION VENT (END OF LINE)
- FA — FLAME ARRESTOR

EQUIPMENT SYMBOLS

- CENTRIFUGAL PUMP
- SELF–PRIMING PUMP
- AIR PUMP
- GEAR PUMP
- METERING PUMP
- THERMOMETER
- HEATING ELEMENT
- TUBE HEATER
- MISTING CAP
- BUBBLER FRIT
- EQUIPMENT INSULATION XX = INSULATION CODE

GENERAL NOTES

1. UNLESS NOTED OTHERWISE, ALL PRESSURE GAUGE RANGES ARE IN PSIG AND TEMPERATURE GAUGE RANGES ARE IN °F.
2. UNLESS NOTED OTHERWISE, ALL THERMOMETER AND RTD ELEMENTS ARE TO BE FURNISHED WITH THERMOWELLS.
3. REDUCER SYMBOLS ARE INDICATED TO CONVEY A CHANGE IN LINE SIZE. UNLESS A FITTING TYPE IS SPECIFICALLY INDICATED, THE PIPING INSTALLER SHALL UTILIZE THE MOST EFFICIENT FITTING ASSEMBLY.
4. UNLESS NOTED OTHERWISE, HIGH POINT VENTS AND LOW POINT DRAINS SHALL BE PROVIDED IN ALL LINES, WHETHER EXPLICITLY SHOWN ON THE DRAWINGS OR NOT. VENTS SHALL BE MINIMUM 3/4"ø LINE SPEC VALVE WITH PLUG. DRAINS SHALL BE MINIMUM 3/4"ø LINE SPEC VALVES WITH PLUG. VENTS ARE NOT REQUIRED ON PROCESS LINES INTENDED TO BE PURGED WITH NITROGEN.
5. PLUG, CAP OR BLIND FLANGE ALL OPEN ENDED PIPE, FITTINGS AND VALVES.
6. CONTRACTOR SHALL PROVIDE INSTRUMENT AIR SUPPLY FOR ALL PNEUMATIC INSTRUMENTATION AND DEVICES SHOWN ON THE DRAWINGS. MINIMUM INSTRUMENT AIR SUPPLY SHALL BE 1/2" LINE SIZE WITH BALL TYPE ISOLATION VALVE FOR EACH INSTRUMENT OR DEVICE.

ABBREVIATIONS

A/S	AIR SUPPLY
ATM	ATMOSPHERE
BF	BLIND FLANGE
C.O.	CHAIN OPERATOR
(E)	EXISTING
(F)	FUTURE
FC	FAIL CLOSED
FL	FAIL LAST
FO	FAIL OPEN
FV	FULL VACUUM
HH	HAND HOLE
LC	LOCK CLOSED
LO	LOCK OPEN
LG.	LONG
MW	MANWAY
(N)	NEW
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
N.I.C.	NOT IN CONTRACT
PLC	PROGRAMMABLE LOGIC CONTROLLER
SG	SIGHT GLASS
SST	STAINLESS STEEL TUBING
TYP.	TYPICAL
(V)	VENDOR SUPPLIED

REV.	DATE	DESCRIPTION	BY	APP.
A	10/09/2010	PRELIMINARY	SF	MV

REVISIONS

BIODIESEL_PLANT

PIPING_AND_INSTRUMENTATION_DIAGRAM
GENERAL_NOTES_SYMBOLS_AND_ABBREVIATIONS

SCALE:	DRAWN BY:		
N/A	TIMOTHY_PATERNITI		
DATE: 11/05/2010	CHECKED BY:		

DRAWING NO.	SHEET NO.	REV.
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