

- 1 MANUAL VALVES SYMBOLS & TAGGING**
 * DARK COLOR FILLED VALVE = N/C
- GENERIC VALVE (GNV-2001)
 - ANGLE VALVE (ANV-2001)
 - 3 WAY VALVE (3WV-2001)
 - 4 WAY VALVE (4WV-2001)
 - DIAPHRAGM VALVE (DIV-2001)
 - GLOBE VALVE (GBV-2001)
 - BUTTERFLY VALVE (BFV-2001)
 - GATE VALVE (GAV-2001)
 - KNIFE VALVE (KNV-2001)
 - DOUBLE GATE VALVE (DBV-2001)
 - BALL VALVE (BLV-2001)
 - PLUG VALVE (PLV-2001)
 - NEEDLE VALVE (NDV-2001)
 - SAMPLE VALVE (SPV-2001)
 - CHANNEL GATE VALVE (CGV-2001)
 - WALL GATE VALVE (WGV-2001)
 - CHANNEL STOP LOG (CSL-2001)
 - TELESCOPIC VALVE (TSV-2001)
- 2 SELF CONTROLLED VALVES SYMBOLS & TAGGING**
 * DARK COLOR FILLED VALVE = N/C
- CHECK VALVE (CHV-2001)
 - OVER PRESSURE/AIR RELEASE VALVE (PSV/ASV-2001)
 - RESTRICTION ORRIFICE (ROR-2001)
 - OVER PRESSURE RAPTURE DISK (PSE-2001)
 - VACUUM RAPTURE DISK (PSE-2001)
- 3 GENERAL PIPING EQUIPMENT SYMBOLS & TAGGING**
 * NON CONTROLLED
- HEAT EXCHANGER (HEX-2001)
 - TUBE & SHELL EXCH. (HEX-2001)
 - PARTICULATE FILTER (PRF-2001)
 - LINE STRAINER (LST-2001)
 - STEAM TRAP (STT-2001)
 - STATIC MIXER (SMX-2001)
 - DIAPHRAGM (CHEMICAL SEPARATOR) (SPD-2001)
 - SILENCER (SL-2001)
 - DRESSER (EXPANSION BELLOW) (DRS-2001)
 - PRESSURE/ EXPANSION VESSEL (PWT-2001)
 - LIQUID SEPARATOR/ CONDENSATE TRAP (ODT-2001)
 - FLAME ARRESTOR (FLA-2001)

- INSTRUMENTATION/CONTROL SYMBOLS & TAGGING**
 * UPPER TAG = 2 LETTERS ACCORDING TO EQUIP. FUNC. IDENTIF. TABLE + 2 LETTERS EQ. TYPE IN C LOWER TAG = P&ID NO. + S.A.
- CONTROLLED VALVES SYMBOLS & TAGGING**
 * DARK COLOR FILLED VALVE = N/C
- DISCRETE ON SITE**
- GENERIC ACTUATOR
 - GENERIC ACTUATOR WITH MANUAL WHEEL
 - GENERIC ACTUATOR WITH POSITIONER
 - PRESSURE BALANCED DIAPHRAGM ACTUATOR
 - LINEAR PNEUMATIC ACTUATOR
 - ROTARY PNEUMATIC ACTUATOR
 - MOTORIZED ACTUATOR
 - SOLENOID ACTUATOR
 - LEVEL REGULATED VALVE
 - PRESSURE REGULATED VALVE INTERNAL CONTROL
 - PRESSURE REGULATED VALVE EXTERNAL CONTROL
- DISCRETE WITH HMI**
- GENERIC ACTUATOR
 - GENERIC ACTUATOR WITH MANUAL WHEEL
 - GENERIC ACTUATOR WITH POSITIONER
 - PRESSURE BALANCED DIAPHRAGM ACTUATOR
 - LINEAR PNEUMATIC ACTUATOR
 - ROTARY PNEUMATIC ACTUATOR
 - MOTORIZED ACTUATOR
 - SOLENOID ACTUATOR
 - LEVEL REGULATED VALVE
 - PRESSURE REGULATED VALVE INTERNAL CONTROL
 - PRESSURE REGULATED VALVE EXTERNAL CONTROL
- PLC CONT. ON SITE**
- GENERIC ACTUATOR
 - GENERIC ACTUATOR WITH MANUAL WHEEL
 - GENERIC ACTUATOR WITH POSITIONER
 - PRESSURE BALANCED DIAPHRAGM ACTUATOR
 - LINEAR PNEUMATIC ACTUATOR
 - ROTARY PNEUMATIC ACTUATOR
 - MOTORIZED ACTUATOR
 - SOLENOID ACTUATOR
 - LEVEL REGULATED VALVE
 - PRESSURE REGULATED VALVE INTERNAL CONTROL
 - PRESSURE REGULATED VALVE EXTERNAL CONTROL
- PLC CONT. WITH HMI**
- GENERIC ACTUATOR
 - GENERIC ACTUATOR WITH MANUAL WHEEL
 - GENERIC ACTUATOR WITH POSITIONER
 - PRESSURE BALANCED DIAPHRAGM ACTUATOR
 - LINEAR PNEUMATIC ACTUATOR
 - ROTARY PNEUMATIC ACTUATOR
 - MOTORIZED ACTUATOR
 - SOLENOID ACTUATOR
 - LEVEL REGULATED VALVE
 - PRESSURE REGULATED VALVE INTERNAL CONTROL
 - PRESSURE REGULATED VALVE EXTERNAL CONTROL
- MANUAL / SELF OPERATED VALVES WITH FEEDBACK**
 * DARK COLOR FILLED VALVE = N/C
- GENERIC VALVE + POSITION SWITCH (GNV-ZS 2001)
 - CHECK VALVE + FLOW SWITCH (CHV-FS 2001)
 - GATE VALVE + POSITION SW. (GAV-ZS 2001)
 - O.P. RAPTURE DISK + CHANGE STATE (PSE-XS 2001)

- 3 MEASURING ELEMENTS/ ELECTRODS SYMBOLS & TAGGING**
 * UPPER TAG = 2 LETTERS ACCORDING TO EQUIP. FUNC. IDENTIF. TABLE + 2 LETTERS EQ. TYPE IN C LOWER TAG = P&ID NO. + S.A.
- DISCRETE SENSOR SITE VISIBLE**
- DISCRETE SWITCHING SENSOR VISIBLE ON HMI (XS.XX XXXX)
 - PRESS. INDICATOR HIGH BOURDON TUBE TYPE SITE VISIBLE (PI.HI 2001)
 - GENERIC SENSOR CLOSE COUPLED TRANSMITTER VISIBLE ON HMI (XX.XX XXXX)
 - LAZER LEVEL SENSOR CLOSE COUPLED TRANSMITTER + LEVEL HIGH & LOW ALARMS VISIBLE ON HMI (LE.LZ 2001)
- DISCRETE SWITCHING SENSOR VISIBLE ON HMI**
- DISCRETE SWITCHING SENSOR VISIBLE ON HMI (XS.XX XXXX)
 - GENERIC SENSOR CLOSE COUPLED TRANSMITTER VISIBLE ON HMI (XX.XX XXXX)
 - GENERIC SENSOR CLOSE COUPLED TRANSMITTER + CONDUCT. HIGH ALARM VISIBLE ON HMI (XX.XX XXXX)
 - ULTRA SONIC FLOW SENSOR CLOSE COUPLED TRANSMITTER + HIGH FLOW ALARM VISIBLE ON HMI (FIT 2001)
 - ORRIFICE FLOW METER (OFM 2001)
 - PITOT FLOW METER (PIT 2001)
 - THERMAL MASS FLOW METER (TMF 2001)
 - CORIOLIS MASS FLOW METER (CMF 2001)
 - VORTEX FLOW METER (VFM 2001)
- DISCRETE SWITCHING SENSOR VISIBLE ON HMI**
- DISCRETE SWITCHING SENSOR VISIBLE ON HMI (XS.XX XXXX)
 - GENERIC SENSOR CLOSE COUPLED TRANSMITTER VISIBLE ON HMI (XX.XX XXXX)
 - GENERIC SENSOR CLOSE COUPLED TRANSMITTER + CONDUCT. HIGH ALARM VISIBLE ON HMI (XX.XX XXXX)
 - ULTRA SONIC FLOW SENSOR CLOSE COUPLED TRANSMITTER + HIGH FLOW ALARM VISIBLE ON HMI (FIT 2001)
 - ORRIFICE FLOW METER (OFM 2001)
 - PITOT FLOW METER (PIT 2001)
 - THERMAL MASS FLOW METER (TMF 2001)
 - CORIOLIS MASS FLOW METER (CMF 2001)
 - VORTEX FLOW METER (VFM 2001)
- DISCRETE SWITCHING SENSOR VISIBLE ON HMI**
- DISCRETE SWITCHING SENSOR VISIBLE ON HMI (XS.XX XXXX)
 - GENERIC SENSOR CLOSE COUPLED TRANSMITTER VISIBLE ON HMI (XX.XX XXXX)
 - GENERIC SENSOR CLOSE COUPLED TRANSMITTER + CONDUCT. HIGH ALARM VISIBLE ON HMI (XX.XX XXXX)
 - ULTRA SONIC FLOW SENSOR CLOSE COUPLED TRANSMITTER + HIGH FLOW ALARM VISIBLE ON HMI (FIT 2001)
 - ORRIFICE FLOW METER (OFM 2001)
 - PITOT FLOW METER (PIT 2001)
 - THERMAL MASS FLOW METER (TMF 2001)
 - CORIOLIS MASS FLOW METER (CMF 2001)
 - VORTEX FLOW METER (VFM 2001)
- 4 PUMPS, COMPRESSORS, BLOWERS, MIXERS SYMBOLS & TAGGING**
 * UPPER TAG = ACCORDING TO EQUIP. FUNCTIONALITY IDENTIFICATION LETTERS TABLE LOWER TAG = P&ID NO. + S.A.
- DISCRETE TEMPERATURE SWITCH HIGH SITE VISIBLE ONLY (TS.HI 2001)
 - CENTRIFUGAL PUMP (PCN-2001)
 - PROGRESSIVE PUMP (MONO) (PPG-2001)
 - POSITIVE DISPLACEMENT PUMP (PPD-2001)
 - LOBES PUMP (PLB-2001)
 - LIQUID RING COMPR./ BLOWER (CLR-2001)
 - DIAPHRAGM COMPR./ BLOWER (CDP-2001)
 - TURBO COMPR./ BLOWER (CTB-2001)
 - TOPN MIXER/ AGITATOR/ FAN (MTE-2001)
 - REMOTE SPEED CONTROL INDICATOR & TRANSMITTER VISIBLE ON HMI (SCIT 2001)
 - SCREW PUMP (PSC-2001)
 - DIAPHRAGM PUMP (PDP-2001)
 - PERISTALTIC PUMP (PPS-2001)
 - CENTRIFUGAL COMPR./ BLOWER (CCN-2001)
 - LOBES COMPR./ BLOWER (CLB-2001)
 - SCREW COMPR./ BLOWER (CSC-2001)
 - PISTON COMPR./ BLOWER (CPI-2001)
 - TANGENTIAL MIXER/ AGITATOR (MTN-2001)

- PIPING CONNECTIONS**
- FLANGED CONNECTION
 - BLIND FLANGE
 - CAP (REMOVABLE)
 - THREADED CONNECTION
 - PIPE COUPLING
 - HOSE CONNECTION
 - REDUCER (DIA. CHANGE)
 - FLEXIBLE PIPE (HOSE)
 - VENT (ATMOSPHERIC)
- INSTRUMENT TO INSTRUMENT CONNECTIONS LINE SYMBOLS & TAGGING**
- UNDEFINED CONNECTION
 - PNEUMATIC CONNECTION
 - ELECTRONIC CONNECTION
 - HYDRAULIC CONNECTION
 - CAPILLARY CONNECTION
 - ELECTROMAGNETIC, SONIC, OPTICAL CONN.
 - COMMUNICATION BETWEEN SHARED CONTROL SYSTEMS
 - COMMUNICATION BETWEEN INDEPENDENT COMPUTER SYS.
 - MECHANICAL CONNECTION
 - LINE DESCRIPTION DRAWING NO. DWG. TO DWG. CONNECTION
- INSTRUMENT TO PROCESS LINE CONNECTIONS LINE SYMBOLS & TAGGING**
- HEAT TRACED INSTRUMENT CONN. (ELECTRICAL)
 - FLANGED INSTRUMENT CONNECTION
 - THREADED INSTRUMENT CONNECTION
 - SOCKET WELD INSTRUMENT CONNECTION
 - WELDED INSTRUMENT CONNECTION
- PIPING IDENTIFICATION TAGGING**
 * 20-001-PE-12-RAS = P&ID NO. + LINE S.A. + MATERIAL + DIA. + SERVICE
- PIPE SERVICE**
- AA - AMBIENT AIR
 - BG - BIO GAS
 - CA - COMPRESSED AIR
 - CE - CENTRATE
 - CD - CHEMICAL DOSAGE
 - CHW - CHILLED WATER
 - CW - COLD WATER
 - DR - DRAIN
 - EF - EFFLUENT
 - FL - FILTRATE
 - HPC - HYPOCHLORITE
 - HW - HOT WATER
 - ML - MIXED LIQUOR
 - OD - ODOUR
 - OF - OVER FLOW
 - PE - POLYMER
 - PR - PERMEATE/ PRODUCT
 - PS - PRIMARY SLUDGE
 - RAS - REC. ACTIVATED SLUDGE
 - RWW - RAW WASTE WATER
 - ST - LOW PRESSURE STEAM
 - SW - SERVICE WATER
 - TW - TAP WATER
 - WAS - WASTE ACTIVATED SLUDGE
 - WW - WASTE WATER
- PIPE MATERIAL**
- CS - CARBON STEEL
 - PE - POLYETHYLENE
 - HDPE - HIGH DENSITY PE
 - PTEF - TEFLON
 - PVC - POLYVINYL CHLORIDE
 - SS - STAINLESS STEEL
 - DPX - DUPLEX
 - SPX - SUPER DUPLEX

EQUIPMENT FUNCTIONALTY IDENTIFICATION LETTERS TABLE

FIRST LETTERS	SUCCEEDING LETTERS				
	COLUMN 1	COLUMN 2	COLUMN 3	COLUMN 4	COLUMN 5
A ANALYSIS	VARIABLE MODIFIER	ALARM	READOUT/ PASSIVE FUNC.	USER'S CHOICE	USER'S CHOICE
B BURNER, COMBUSTION	USER'S CHOICE	USER'S CHOICE	CONTROL	DEVIATION	
C USER'S CHOICE	DIFFERENCE, DIFFERENTIAL				
E VOLTAGE		SENSOR, PRIMARY ELEMENT			
F FLOW	RATIO				
G USER'S CHOICE		GLASS, GAUGE, VIEW DEVICE			
H HAND				HIGH	
I CURRENT		INDICATE			
J POWER		SCAN			
K TIME, SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION		
L LEVEL		LIGHT		LOW	
M USER'S CHOICE				MIDDLE, INTERMEDIATE	
N USER'S CHOICE		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE	
O USER'S CHOICE		ORIFICE, RESTRICTION		OPEN	
P PRESSURE		POINT			
Q QUANTITY	INTEGRATE, TOTALIZE	INTEGRATE, TOTALIZE			
R RADIATION		RECORD		RUN	
S SPEED, FREQUENCY	SAFETY		SWITCH	STOP	
T TEMPERATURE			TRANSMIT		
U MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION		
V VIBRATION, MECH. ANALYSIS			VALVE, DAMPER, LOUVER		
W WEIGHT, FORCE		WELL, PROBE			
X UNCLASSIFIED	X- AXIS	ACCESSORY, UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	
Y EVENT, STATE, PRESENCE	Y- AXIS		AUXILIARY DEVICE		
Z POSITION, DIMENSION	Z- AXIS, SAFETY INSTRUM.		DRIVER, ACTUATOR		

(A) CONTROLLED VALVES UPPER + ADDER
 * UPPER **XV/ **XVY IDENTIFICATION

- GN - GENERIC VALVE
- AN - ANGLE VALVE
- 3W - 3 WAY VALVE
- 4W - 4 WAY VALVE
- SO - SOLENOID VALVE
- DI - DIAPHRAGM VALVE
- GB - GLOBE VALVE
- BF - BUTTERFLY VALVE
- GA - GATE VALVE
- KN - KNIFE VALVE
- DB - DOUBLE GATE VALVE
- BL - BALL VALVE
- PL - PLUG VALVE
- ND - NEEDLE VALVE
- SP - SAMPLING VALVE
- CG - CHANNEL GATE VALVE
- WG - WALL GATE VALVE
- TL - TELESCOPIC VALVE

(B) G. ANALYZERS ADDITIONAL IDENTIFICATION TAGGING
 * WRITTEN ON LOWER RIGHT SIDE OF DIRECT SYMBOL

- AIR - EXCESS AIR
- CO - CARBON MONOXIDE
- CO2 - CARBON DIOXIDE
- EC - ELEC. CONDUCTIVITY
- DEN - DENSITY
- DS - DISSOLVED SOLIDS
- GC - GAS CHROMATOGRAPHY
- H2O - WATER
- H2S - HYDROGEN SULFIDE
- HUM - HUMIDITY
- MST - MOISTURE
- DO - DISSOLVED OXYGEN
- ORP - OXIDATION REDUCT.
- PH - HYDROGEN ION
- TC - THERMAL CONDUCT.
- TDL - TUNAB. DIODE LASER
- TU - TURBIDITY
- VIS - VISIBLE LIGHT
- VSC - VISCOSITY
- CH4 - METHANE
- CL2 - HYPOCHLORITE
- NH4 - AMMONIUM

(C) MEASURING ELEMENT TYPE
 * FE-20-2001 = MAGNETIC FLOW ELEMENT

- MG - MAGNETIC
- RD - RESISTANCE/CONDUCTIVITY
- OR - ORIFICE
- TM - THERMAL MASS
- TR - TURBINE
- VN - VENTURI
- CR - CORIOLIS
- RT - ROTOMETER
- VR - VORTEX
- US - ULTRA SONIC
- LZ - LAZER BEAM
- RR - RADAR
- TD - TORODIAL
- BT - BOURDON TUBE
- IS - ION SELECTIVE
- IR - INFRA RED
- OP - OPTICAL
- CB - CELL BUFFER
- VB - VIBRATING
- FL - FLOAT
- CP - CAPACITANCE
- UV - ULTRA VIOLET
- AC - AMPEROMETRIC CELL
- CM - COLORIMETRIC

(D) MEASURING ELEMENTS ALARMS
 * ADDED ON THE RIGHT SIDE OF 2ND CONTROL SYMBOL.

- L - LOW ALARM
- H - HIGH ALARM
- G - GENERAL FAILURE

- CLARIFICATIONS**
- 1 MANUAL / SELF CONTROLLED VALVES IDENTIFICATION TAGGING**
 * GNV-2001 = D + P&ID NO. + S.A.
- GNV - GENERIC MANUAL VALVE
 - ANV - ANGLE MANUAL VALVE
 - DIV - DIAPHRAGM MANUAL VALVE
 - GBV - GLOBE MANUAL VALVE
 - BFV - BUTTERFLY MANUAL VALVE
 - GAV - GATE MANUAL VALVE
 - KNV - KNIFE MANUAL VALVE
 - BLV - BALL MANUAL VALVE
 - PLV - PLUG MANUAL VALVE
 - NDV - NEEDLE MANUAL VALVE
 - SPV - SAMPLING MANUAL VALVE
 - CGV - CHANNEL GATE VALVE
 - WGV - WALL GATE VALVE
 - CSL - CHANNEL STOP LOG
 - TSV - TELESCOPIC VALVE
 - CHV - CHECK VALVE
 - ASV - AIR RELEASE VALVE
 - PSV - PRESS. RELEASE VALVE
 - ROR - RESTRICTION ORRIFICE
 - PSE - PRESS. RAPTURE DISK
- 2 PIPE FITTINGS/ GENERAL EQUIPMENT IDENTIFICATION TAGGING**
 * GAV-2001 = D + P&ID NO. + S.A.
- PRF - PARTICULATE FILTER
 - LST - LINE STRAINER
 - STT - STEAM TRAP
 - SMX - STATIC MIXER
 - SPD - SEPARATION DIAPHRAGM
 - DRS - DRESSER
 - PRT - PRESSURE VESSEL
 - CDT - CONDENSATE TRAP
 - FLA - FLAME ARRESTOR
 - HEX - HEAT EXCHANGER
- 3 ANALYZERS & INSTRUMENTATION IDENTIFICATION TAGGING**
 * FIRST LETTERS SUCCEEDING LETTERS
- A - G. ANALYZER A - ALARM
 - E - VOLTAGE C - CONTROLLER
 - F - FLOW E - ELEMENT
 - L - LEVEL H - HIGH
 - P - PRESSURE I - INDICATOR
 - R - RADAR L - LOW
 - S - SPEED O - TOTALIZER
 - T - TEMPERATURE R - RECORDER
 - W - WEIGHT S - SWITCH
 - Y - EVENT T - TRANSMITTER
 - Z - POSITION
- 4 EQUIPMENT & MACHINERY IDENTIFICATION TAGGING**
 * PCN-2001 = D + P&ID NO. + S.A.
- PCN - CENTRIFUGAL PUMP
 - PPD - PISTON PUMP
 - PPG - PROGRESSIVE PUMP
 - PPI - DIAPHRAGM PUMP
 - PPD - POSITIVE DISPLAC. PUMP
 - PPS - PERISTALTIC PUMP
 - PLB - LOBES PUMP
 - PSC - SCREW PUMP
 - CCN - CENTRIFUGAL COMPR./BLOWER
 - CLB - LOBES COMPR./BLOWER
 - CLR - LIQUID RING COMPR./BLOWER
 - CSC - SCREW COMPR./BLOWER
 - CDI - DIAPHRAGM COMPR./BLOWER
 - CPI - PISTON COMPR./BLOWER
 - CTB - TURBO COMPR./BLOWER
 - MTN - TOP ENTRY MIXER/ AGITATOR
 - MTN - TANGENTIAL MIXER/ AGITATOR
 - MHP - HYPERBOLIC MIXER
 - T - TANK/ BUFFER
- 5 ELECTRO-MECHANICAL EQUIPMENT IDENTIFICATION TAGGING**
 * GBT-2001 = D + P&ID NO. + S.A.
- SEE PAGE # 2

REVISION FOR CONSTRUCTION FOR TENDER PRELIMINARY

project: **P&ID ISA 5.1 STANDARD**

client: **P&ID-ISA 5.1 P&ID ICONS STANDARD PAGE #1**

levels in: drawing size project number
 scale: **A2**

file number: drawing number

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