

PROCESS FLOW	CONNECTIONS	IN-LINE ITEMS (CONT.)	VALVE SYMBOLS (CONT.)	BOUNDARIES	FIRE & SAFETY (CONT.)	PIPING AND DUCTWORK IDENTIFICATION
<p>MAIN PROCESS FLOW</p> <p>SECONDARY PROCESS FLOW</p> <p>MAIN PROCESS FLOW (BURIED PIPE)</p> <p>SECONDARY PROCESS FLOW (BURIED PIPE)</p> <p>PIPING BY CONTRACTOR OTHER THAN BECHTEL</p> <p>HEAT TRACING E = ELECTRIC (SHOWN) S = STEAM</p> <p>EQUIPMENT SKID OR BUILDING OUTLINE</p>	<p>BLIND FLANGE</p> <p>FLANGES INSULATING FLANGES (IF) DIELECTRIC UNION (DU) (SHOWN)</p> <p>CIRCULAR/HAMMER BLIND</p> <p>SPECTACLE BLIND (OPEN)</p> <p>SPECTACLE BLIND (CLOSED)</p> <p>FLEXIBLE CONNECTION</p> <p>FLEXIBLE HOSE CONNECTION</p> <p>HOSE CONNECTION</p> <p>REMOVABLE SPOOL</p> <p>ORIFICE UNION</p> <p>IN-LINE ITEMS</p> <p>EXPANSION JOINT</p> <p>IN-LINE MIXING TEE</p> <p>IN-LINE MIXER</p> <p>LOOP SEAL</p> <p>ATMOSPHERIC VENT</p> <p>AUTOMATIC VENT</p> <p>DRAIN</p> <p>DRAIN (HARD-PIPED)</p> <p>TRENCH</p> <p>MANUAL DRAIN</p> <p>INLINE SILENCER</p> <p>VENT SILENCER</p>	<p>DOWNWARD SLOPE</p> <p>UPWARD SLOPE</p> <p>FLAME ARRESTER</p> <p>WATER HAMMER ARRESTER</p> <p>EXHAUST HEAD</p> <p>TEMPORARY STRAINER</p> <p>T-TYPE STRAINER</p> <p>SCREEN TYPE STRAINER</p> <p>AUTOMATIC SELF-CLEANING STRAINER</p> <p>REFRIGERANT STRAINER</p> <p>Y-TYPE STRAINER</p> <p>BASKET STRAINER</p> <p>DOUBLE BASKET STRAINER</p> <p>CONE TYPE STRAINER (STARTUP)</p> <p>TRAP</p> <p>VALVE SYMBOLS</p> <p>OPEN</p> <p>CLOSED</p> <p>GATE VALVE</p> <p>GLOBE VALVE</p> <p>PLUG VALVE</p> <p>BALL VALVE</p> <p>BUTTERFLY VALVE</p> <p>THROTTLE ('L' USED WHEN LOCKED IN THROTTLING POSITION)</p> <p>NEEDLE VALVE</p> <p>DIAPHRAGM</p> <p>PINCH VALVE</p> <p>SLIDE GATE VALVE</p>	<p>Y-PATTERN GLOBE (WHERE ONLY Y-PATTERN IS ACCEPTABLE)</p> <p>PACKLESS GLOBE VALVE</p> <p>CLOSED DOUBLE-BODY VENT OR DRAIN VALVE</p> <p>DOUBLE-BODY INSTRUMENT VALVE (OPEN) (CLOSED)</p> <p>ANGLE GLOBE VALVE-MANUAL</p> <p>WAFER/ROTARY VALVE</p> <p>3-WAY BALL VALVE</p> <p>3-WAY PLUG VALVE</p> <p>4-WAY PLUG VALVE</p> <p>CHECK VALVE</p> <p>Y-STOP CHECK VALVE</p> <p>STOP CHECK VALVE</p> <p>ANGLE STOP CHECK</p> <p>WAFER CHECK</p> <p>TESTABLE CHECK VALVE</p> <p>COMBINED RECIRCULATION AND CHECK VALVE</p> <p>FOOT CHECK VALVE</p> <p>EXCESS FLOW CHECK VALVE</p> <p>BACKFLOW PREVENTER</p> <p>GAGE VALVE</p> <p>THREE WAY VALVE</p> <p>FOUR WAY VALVE</p> <p>EXTRACTION VALVE (NON-RETURN)</p> <p>EXTRACTION VALVE W/ PISTON (NON-RETURN)</p>	<p>SYSTEM CHANGE</p> <p>LINE SEQUENCE SPECIFICATION CHANGE</p> <p>BECHTEL/ VENDOR INTERFACE</p> <p>FIRE AND SAFETY</p> <p>DELUGE VALVE</p> <p>PREACTION VALVE</p> <p>ALARM CHECK VALVE</p> <p>DRY PIPE VALVE</p> <p>BALL DRIP VALVE</p> <p>CHECK VALVE WITH AUTOMATIC DRAIN BALL DRIP VALVE</p> <p>POST INDICATOR VALVE</p> <p>HOSE VALVE</p> <p>SIAMESE CONNECTION</p> <p>FIRE HYDRANT</p> <p>FIRE HYDRANT WITH MONITOR</p> <p>FIRE HYDRANT WITH HOSE HOUSE</p> <p>FIRE HYDRANT WITH HOSE HOUSE AND MONITOR</p> <p>FIRE MONITOR</p> <p>FOAM MONITOR</p>	<p>HOSE REEL</p> <p>HOSE RACK</p> <p>SPRINKLERS OPEN HEAD</p> <p>SPRINKLERS CLOSED HEAD</p> <p>EYE WASH</p> <p>SHOWER/EYE WASH</p> <p>MISCELLANEOUS LABELS</p> <p>RAINCAP</p> <p>SPECIALTY ITEM CALLOUT</p> <p>PRESSURE SAFETY VALVE CALLOUT</p> <p>NOZZLE CALLOUT</p> <p>LC - LOCKED CLOSED</p> <p>LO - LOCKED OPEN</p> <p>FO - FAIL OPEN (SHOWN)</p> <p>FC - FAIL CLOSED</p> <p>FI - FAIL INDETERMINATE</p> <p>FAI - FAIL AS IS</p> <p>ACTUATOR</p> <p>G - GEAR (SHOWN)</p> <p>A - AIR WRENCH</p> <p>CH - CHAIN</p> <p>X - EXTENSION STEM</p> <p>S - SPECIAL TYPE</p> <p>STEAM CONDITIONING VALVE (SHOWN WITH AIR OPERATOR)</p>	<p>LINE SEQUENCE PREFIX</p> <p>LINE SEQUENCE NO</p> <p>SYSTEM LOCATOR</p> <p>UNIT CODE</p> <p>JOB NUMBER</p> <p>LINE SEQUENCE SPECIFICATION</p> <p>NOMINAL DIA.</p> <p>NOMINAL DIA. UNITS</p> <p>12345-1A-AD-L-001-CID-2"</p> <ol style="list-style-type: none"> JOB NUMBER WILL APPEAR IN THE P&ID TITLE BLOCK AND NOT REPEATED ON THE LINES. FOR ADDITIONAL PIPING INFORMATION, REFER TO PIPING CLASS SHEETS. THE COMMODITY GROUP IS UNDERSTOOD TO BE PL FOR LARGE PIPE, PS FOR SMALL PIPE AND MD FOR DUCTS. IT IS NOT SHOWN ON THE LINES. THE LINE SEQUENCE SPECIFICATION CONSISTS OF A THREE CHARACTER CODE. FOR THE CONVENTIONAL POWER PROJECTS THREE CHARACTER CODE, SEE ENGINEERING DESIGN STANDARD NUMBER 3DS-P72G-01000.
<p>P&ID CONNECTORS</p> <p>PIPING CONNECTOR BY VENDOR</p> <p>PIPING CONNECTORS</p> <p>UTILITY CONNECTOR</p> <p>OPEN DRAIN CONNECTOR</p> <p>OFF PAGE UTILITY CONNECTOR</p> <p>TIE-IN MARKER OR TERMINAL POINT DESIGNATOR</p>	<p>HOSE CONNECTION</p> <p>REMOVABLE SPOOL</p> <p>ORIFICE UNION</p>	<p>TEMPORARY STRAINER</p> <p>T-TYPE STRAINER</p> <p>SCREEN TYPE STRAINER</p> <p>AUTOMATIC SELF-CLEANING STRAINER</p> <p>REFRIGERANT STRAINER</p> <p>Y-TYPE STRAINER</p> <p>BASKET STRAINER</p> <p>DOUBLE BASKET STRAINER</p> <p>CONE TYPE STRAINER (STARTUP)</p> <p>TRAP</p>	<p>ANGLE GLOBE VALVE-MANUAL</p> <p>WAFER/ROTARY VALVE</p> <p>3-WAY BALL VALVE</p> <p>3-WAY PLUG VALVE</p> <p>4-WAY PLUG VALVE</p> <p>CHECK VALVE</p> <p>Y-STOP CHECK VALVE</p> <p>STOP CHECK VALVE</p> <p>ANGLE STOP CHECK</p> <p>WAFER CHECK</p> <p>TESTABLE CHECK VALVE</p> <p>COMBINED RECIRCULATION AND CHECK VALVE</p> <p>FOOT CHECK VALVE</p> <p>EXCESS FLOW CHECK VALVE</p> <p>BACKFLOW PREVENTER</p> <p>GAGE VALVE</p> <p>THREE WAY VALVE</p> <p>FOUR WAY VALVE</p> <p>EXTRACTION VALVE (NON-RETURN)</p> <p>EXTRACTION VALVE W/ PISTON (NON-RETURN)</p>	<p>DELUGE VALVE</p> <p>PREACTION VALVE</p> <p>ALARM CHECK VALVE</p> <p>DRY PIPE VALVE</p> <p>BALL DRIP VALVE</p> <p>CHECK VALVE WITH AUTOMATIC DRAIN BALL DRIP VALVE</p> <p>POST INDICATOR VALVE</p> <p>HOSE VALVE</p> <p>SIAMESE CONNECTION</p> <p>FIRE HYDRANT</p> <p>FIRE HYDRANT WITH MONITOR</p> <p>FIRE HYDRANT WITH HOSE HOUSE</p> <p>FIRE HYDRANT WITH HOSE HOUSE AND MONITOR</p> <p>FIRE MONITOR</p> <p>FOAM MONITOR</p>	<p>EYE WASH</p> <p>SHOWER/EYE WASH</p> <p>MISCELLANEOUS LABELS</p> <p>RAINCAP</p> <p>SPECIALTY ITEM CALLOUT</p> <p>PRESSURE SAFETY VALVE CALLOUT</p> <p>NOZZLE CALLOUT</p> <p>LC - LOCKED CLOSED</p> <p>LO - LOCKED OPEN</p> <p>FO - FAIL OPEN (SHOWN)</p> <p>FC - FAIL CLOSED</p> <p>FI - FAIL INDETERMINATE</p> <p>FAI - FAIL AS IS</p> <p>ACTUATOR</p> <p>G - GEAR (SHOWN)</p> <p>A - AIR WRENCH</p> <p>CH - CHAIN</p> <p>X - EXTENSION STEM</p> <p>S - SPECIAL TYPE</p> <p>STEAM CONDITIONING VALVE (SHOWN WITH AIR OPERATOR)</p>	<p>12345-1A-AD-L-001-CID-2"</p> <ol style="list-style-type: none"> JOB NUMBER WILL APPEAR IN THE P&ID TITLE BLOCK AND NOT REPEATED ON THE LINES. FOR ADDITIONAL PIPING INFORMATION, REFER TO PIPING CLASS SHEETS. THE COMMODITY GROUP IS UNDERSTOOD TO BE PL FOR LARGE PIPE, PS FOR SMALL PIPE AND MD FOR DUCTS. IT IS NOT SHOWN ON THE LINES. THE LINE SEQUENCE SPECIFICATION CONSISTS OF A THREE CHARACTER CODE. FOR THE CONVENTIONAL POWER PROJECTS THREE CHARACTER CODE, SEE ENGINEERING DESIGN STANDARD NUMBER 3DS-P72G-01000.
<p>REDUCER/INCREASERS</p> <p>CONCENTRIC DIAMETER CHANGE</p> <p>ECCENTRIC DIAMETER CHANGE</p>	<p>ATMOSPHERIC VENT</p> <p>AUTOMATIC VENT</p> <p>DRAIN</p> <p>DRAIN (HARD-PIPED)</p> <p>TRENCH</p> <p>MANUAL DRAIN</p> <p>INLINE SILENCER</p> <p>VENT SILENCER</p>	<p>VALVE SYMBOLS</p> <p>OPEN</p> <p>CLOSED</p> <p>GATE VALVE</p> <p>GLOBE VALVE</p> <p>PLUG VALVE</p> <p>BALL VALVE</p> <p>BUTTERFLY VALVE</p> <p>THROTTLE ('L' USED WHEN LOCKED IN THROTTLING POSITION)</p> <p>NEEDLE VALVE</p> <p>DIAPHRAGM</p> <p>PINCH VALVE</p> <p>SLIDE GATE VALVE</p>	<p>BACKFLOW PREVENTER</p> <p>GAGE VALVE</p> <p>THREE WAY VALVE</p> <p>FOUR WAY VALVE</p> <p>EXTRACTION VALVE (NON-RETURN)</p> <p>EXTRACTION VALVE W/ PISTON (NON-RETURN)</p>	<p>SIAMESE CONNECTION</p> <p>FIRE HYDRANT</p> <p>FIRE HYDRANT WITH MONITOR</p> <p>FIRE HYDRANT WITH HOSE HOUSE</p> <p>FIRE HYDRANT WITH HOSE HOUSE AND MONITOR</p> <p>FIRE MONITOR</p> <p>FOAM MONITOR</p>	<p>MISCELLANEOUS LABELS</p> <p>RAINCAP</p> <p>SPECIALTY ITEM CALLOUT</p> <p>PRESSURE SAFETY VALVE CALLOUT</p> <p>NOZZLE CALLOUT</p> <p>LC - LOCKED CLOSED</p> <p>LO - LOCKED OPEN</p> <p>FO - FAIL OPEN (SHOWN)</p> <p>FC - FAIL CLOSED</p> <p>FI - FAIL INDETERMINATE</p> <p>FAI - FAIL AS IS</p> <p>ACTUATOR</p> <p>G - GEAR (SHOWN)</p> <p>A - AIR WRENCH</p> <p>CH - CHAIN</p> <p>X - EXTENSION STEM</p> <p>S - SPECIAL TYPE</p> <p>STEAM CONDITIONING VALVE (SHOWN WITH AIR OPERATOR)</p>	<p>12345-1A-AD-L-001-CID-2"</p> <ol style="list-style-type: none"> JOB NUMBER WILL APPEAR IN THE P&ID TITLE BLOCK AND NOT REPEATED ON THE LINES. FOR ADDITIONAL PIPING INFORMATION, REFER TO PIPING CLASS SHEETS. THE COMMODITY GROUP IS UNDERSTOOD TO BE PL FOR LARGE PIPE, PS FOR SMALL PIPE AND MD FOR DUCTS. IT IS NOT SHOWN ON THE LINES. THE LINE SEQUENCE SPECIFICATION CONSISTS OF A THREE CHARACTER CODE. FOR THE CONVENTIONAL POWER PROJECTS THREE CHARACTER CODE, SEE ENGINEERING DESIGN STANDARD NUMBER 3DS-P72G-01000.
<p>CAPS</p> <p>WELDED CAP</p> <p>SCREWED CAP</p> <p>BREATHER CAP</p>	<p>ATMOSPHERIC VENT</p> <p>AUTOMATIC VENT</p> <p>DRAIN</p> <p>DRAIN (HARD-PIPED)</p> <p>TRENCH</p> <p>MANUAL DRAIN</p> <p>INLINE SILENCER</p> <p>VENT SILENCER</p>	<p>VALVE SYMBOLS</p> <p>OPEN</p> <p>CLOSED</p> <p>GATE VALVE</p> <p>GLOBE VALVE</p> <p>PLUG VALVE</p> <p>BALL VALVE</p> <p>BUTTERFLY VALVE</p> <p>THROTTLE ('L' USED WHEN LOCKED IN THROTTLING POSITION)</p> <p>NEEDLE VALVE</p> <p>DIAPHRAGM</p> <p>PINCH VALVE</p> <p>SLIDE GATE VALVE</p>	<p>BACKFLOW PREVENTER</p> <p>GAGE VALVE</p> <p>THREE WAY VALVE</p> <p>FOUR WAY VALVE</p> <p>EXTRACTION VALVE (NON-RETURN)</p> <p>EXTRACTION VALVE W/ PISTON (NON-RETURN)</p>	<p>SIAMESE CONNECTION</p> <p>FIRE HYDRANT</p> <p>FIRE HYDRANT WITH MONITOR</p> <p>FIRE HYDRANT WITH HOSE HOUSE</p> <p>FIRE HYDRANT WITH HOSE HOUSE AND MONITOR</p> <p>FIRE MONITOR</p> <p>FOAM MONITOR</p>	<p>MISCELLANEOUS LABELS</p> <p>RAINCAP</p> <p>SPECIALTY ITEM CALLOUT</p> <p>PRESSURE SAFETY VALVE CALLOUT</p> <p>NOZZLE CALLOUT</p> <p>LC - LOCKED CLOSED</p> <p>LO - LOCKED OPEN</p> <p>FO - FAIL OPEN (SHOWN)</p> <p>FC - FAIL CLOSED</p> <p>FI - FAIL INDETERMINATE</p> <p>FAI - FAIL AS IS</p> <p>ACTUATOR</p> <p>G - GEAR (SHOWN)</p> <p>A - AIR WRENCH</p> <p>CH - CHAIN</p> <p>X - EXTENSION STEM</p> <p>S - SPECIAL TYPE</p> <p>STEAM CONDITIONING VALVE (SHOWN WITH AIR OPERATOR)</p>	<p>12345-1A-AD-L-001-CID-2"</p> <ol style="list-style-type: none"> JOB NUMBER WILL APPEAR IN THE P&ID TITLE BLOCK AND NOT REPEATED ON THE LINES. FOR ADDITIONAL PIPING INFORMATION, REFER TO PIPING CLASS SHEETS. THE COMMODITY GROUP IS UNDERSTOOD TO BE PL FOR LARGE PIPE, PS FOR SMALL PIPE AND MD FOR DUCTS. IT IS NOT SHOWN ON THE LINES. THE LINE SEQUENCE SPECIFICATION CONSISTS OF A THREE CHARACTER CODE. FOR THE CONVENTIONAL POWER PROJECTS THREE CHARACTER CODE, SEE ENGINEERING DESIGN STANDARD NUMBER 3DS-P72G-01000.

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CO2 KARSTO PROJECT

PIPING & INSTRUMENT DIAGRAM
SYMBOLS AND LEGENDS

GASSNOVA	OWNER DOCUMENT NUMBER 10112936-PB-P-PID-0003	JOB NO. 25474-000	DRAWING NO. M6J-YA-00003	REV 0
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LEVELS 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100