MECHANICAL SYMBOLS AND ABBREVIATIONS

ABBREVIATIONS

SYMBOL	DESCRIPTION
HVAC PIPING	
— CWS —	CHILLED WATER SUPPLY
— CWR —	CHILLED WATER RETURN
— HWS —	HEATING WATER SUPPLY
— HWR —	HEATING WATER RETURN
— TWS —	TOWER WATER SUPPLY
— TWR —	TOWER WATER RETURN
— LPS —	LOW PRESSURE STEAM
— MPS —	MEDIUM PRESSURE STEAM
— HPS —	HIGH PRESSURE STEAM
— C —	CONDENSATE, GRAVITY
— PC —	CONDENSATE, PUMPED
— FOS —	FUEL OIL SUPPLY
— FOR —	FUEL OIL RETURN
— FOG —	FUEL OIL GAGE LINE
— FOV —	FUEL OIL TANK VENT
PLUMBING	
— CW —	COLD WATER
— HW —	HOT WATER
— HWC —	HOT WATER CIRCULATING
— W —	WATER
— NPW —	NON POTABLE WATER
— S —	SANITARY SEWER
— V —	VENT
— D —	GRAVITY DRAIN
— PD —	PRESSURE DRAIN
— AD —	ACID WASTE, GRAVITY
— AV —	ACID VENT
— PAD —	ACID DRAIN, PUMPED
— RWL —	RAIN WATER LEADER
— ORWL —	OVERFLOW RAIN WATER LEADER
— SS —	STORM SEWER
SPECIALTY GASES	**(CLASSIFICATION)**
— AsH_3 —	ARSINE (HIGHLY TOXIC)
— Cl_2 —	CHLORINE (CORROSIVE)
— DMC —	DIMETHYLCADMIUM (METAL ORGANIC)
— DMT —	DIMETHYLTELLURIUM (METAL ORGANIC)
— H_2Se —	HYDROGEN SELENIDE (TOXIC)
— HCL —	HYDROGEN CHLORIDE (CORROSIVE)

SYMBOL	DESCRIPTION
— NH_3 —	AMMONIA (TOXIC)
— F —	FLUORINE
— PAR —	PROCESS ARGON
— PH_3 —	PHOSPHINE (HIGHLY TOXIC)
— PN_2 —	PROCESS NITROGEN
— R12 —	DICHLORODIFLUOROMETHANE
— R14 —	TETRAFLUOROMETHANE
— Si_2H_6 —	DISILANE (PYROPHORIC/TOXIC)
— SiH_4 —	SILANE (PYROPHORIC/TOXIC)
GASES	
— AR —	ARGON
— BA —	BREATHING AIR
— CA —	COMPRESSED AIR
— CDA —	CLEAN DRY AIR
— CH_4 —	METHANE
— C_2H_2 —	ACETYLENE
— CO_2 —	CARBON DIOXIDE
— G —	NATURAL GAS
— H_2 —	HYDROGEN
— HCV —	HOUSE CLEANING VACUUM
— HE —	HELIUM
— LAR —	LIQUID ARGON
— LCO_2 —	LIQUID CARBON DIOXIDE
— LH_2 —	LIQUID HYDROGEN
— LN_2 —	LIQUID NITROGEN
— LO_2 —	LIQUID OXYGEN
— LPG —	LIQUID PETROLEUM GAS
— N_2 —	NITROGEN
— O_2 —	OXYGEN
— PV —	PROCESS VACUUM
— VAC —	VACUUM
PROCESS LIQUIDS	
— DI —	DEIONIZED WATER
— HF —	HYDROFLUORIC ACID
— PCWR —	PROCESS COLD WATER RETURN
— PCWS —	PROCESS COLD WATER SUPPLY
— POR —	PROCESS OIL RETURN

SYMBOL	DESCRIPTION
— POS —	PROCESS OIL SUPPLY
— RO —	REVERSE OSMOSIS WATER
— SCW —	SOFTENED COLD WATER
GENERAL NOTATION	
D.A.	DIRECT ACTING
R.A.	REVERSE ACTING
do.	DITTO
E.W.C.	ELECTRIC WATER COOLER
G.F.E.	GOVERNMENT FURNISHED EQUIPMENT
N.C.	NORMALLY CLOSED
N.O.	NORMALLY OPENED
O.A.E.	OR APPROVED EQUAL
P.C.C.	PLANT CONTROL CENTER
S.F.E.	SANDIA FURNISHED EQUIPMENT
S.M.	SHEET METAL
V.T.R.	VENT THRU ROOF
W/	WITH
W/O	WITHOUT
HVAC DUCTWORK	
A.D.	ACCESS DOOR
A.P.V.	AIR PROPORTIONING VANE
V.D.	VOLUME DAMPER
S	SPLITTER DAMPER
S.D.	SMOKE DAMPER
F.D.	FIRE DAMPER
MISCELLANEOUS	
	CENTRIFUGAL PUMP
NUMBER	DETAIL BUBBLE
1	EQUIPMENT LIST DESIGNATION
	END POINT OF REMOVAL
1	KEYED CONSTRUCTION NOTE
MH	MAN HOLE
	POINT OF CONNECTION FROM NEW TO EXISTING CONSTRUCTION
LETTER	SECTION BUBBLE
	ARROW HEAD USED FOR LEADERING
	BREAK

STANDARD SYMBOLS

SYMBOL	DESCRIPTION
VALVES	
	BALL VALVE
	GATE VALVE
	GLOBE VALVE
	PLUG COCK
	SWING CHECK VALVE
	SPRING CHECK VALVE
	HOSE BIBB
	NEEDLE VALVE
	BUTTERFLY VALVE
	MOTOR OPERATED GLOBE VALVE
	MOTOR OPERATED GATE VALVE
	SOLENOID OPERATED VALVE
A B C	SOLENOID OPERATED 3-WAY VALVE
	SELF-CONTAINED TEMP. CONTROL VALVE
	EXTERNAL, PRESSURE REDUCING VALVE
	INTERNAL, PRESSURE REDUCING VALVE
A AB B	3-WAY PNUEMATIC CONTROL VALVE
A AB B	3-WAY MOTORIZED CONTROL VALVE
	ANGLE VALVE
	RELIEF VALVE
	DIAPHRAGM VALVE
	BACKFLOW PREVENTER
FT	F & T TRAP
T	THERMOSTATIC TRAP
B	BUCKET TRAP
TD	THERMODYNAMIC TRAP
FITTINGS	
	SCREWED JOINT
	FLANGED JOINT
	WELDED JOINT
	UNION
	CONCENTRIC REDUCER
	ECCENTRIC REDUCER
	ELBOW, TURNED DOWN
	ELBOW, TURNED UP
	TEE, TURNED UP
	TEE, TURNED DOWN
	VALVE IN RISER
	VALVE ON ELBOW UP
	VALVE ON ELBOW DOWN

SYMBOL	DESCRIPTION
	45° ELBOW
	30° ELBOW
	90° ELBOW
	TEE (SHOW SIZES WHEN REDUCING TEE)
	CAP
	RUPTURE DISK
	SEALED AIR CHAMBER SHOCK ABSORBER
	FLOOR DRAIN
	FLOOR SINK
	EXPANSION JOINT
	LINE STRAINER
COTG	CLEAN-OUT TO GRADE
	OPEN SIGHT DRAIN, AIR GAP
WCO	WALL CLEANOUT (WCO)
FCO	FLOOR CLEANOUT (FCO)
	DIRECTION AND FLOW
	PRESSURE GAUGE
CONTROLS	
A.V.	AIR VENT (SPECIFY MANUAL, AUTOMATIC OR VACUUM)
DM	DAMPER MOTOR
EP	ELECTRIC-PNEUMATIC RELAY
FS	FLOW SWITCH
0-100 PSI	PRESSURE GAUGE (WITH PRESSURE RANGE AND GAUGE COCK)
PE	PNEUMATIC-ELECTRIC RELAY
PS	PRESSURE SWITCH
	ORIFICE FLOW METER
R	RELAY
TS	TEMPERATURE SWITCH
T	THERMOSTAT
40°-140° F	THERMOMETER (WITH TEMPERATURE RANGE)
	VENTURI FLOW METER
- - E - -	ELECTRIC
HVAC	
	ACOUSTICAL LINING (A.L.)
	AIR SUPPLY DIFFUSER
	RETURN AIR OR EXHAUST GRILLE
DL	DOOR LOUVER
	FINNED PIPE RADIATION
	EXHAUST AIR (E. A.)

SYMBOL	DESCRIPTION
	SUPPLY AIR (S. A.)
	RETURN AIR (R. A.)
	OUTSIDE AIR (O. A.)
	PARALLEL BLADE DAMPER
	OPPOSED BLADE DAMPER
FOR REFERENCE ONLY (SYMBOLS AND ABBREVIATIONS DISCONTINUED AND/OR REVISED)	
APV	AIR PROPORTIONING VANE
HD	HAND DAMPER
BD	BALANCING DAMPER
— DCW —	DEMINERALIZED COLD WATER
— CMS —	CENTRAL MONITORING SYSTEM
— PCW —	PROCESS COLD WATER
— RD —	REFRIGERANT DISCHARGE
— RL —	REFRIGERANT LIQUID
— RS —	REFRIGERANT SUCTION
— RWL —	RAINWATER LEADER
FC	FLOW CONTROL VALVE
FT	F & T TRAP
T	THERMOSTATIC TRAP
B	BUCKET TRAP
TD	THERMODYNAMIC TRAP
	BUTTERFLY VALVE
— ST —	STEAM AND CONDENSATE
L	LOUVER OPENING
VAC. RELIEF	VACUUM RELIEF
LETTER A	DETAIL BUBBLE
NUMBER 1	SECTION BUBBLE

NOTE: IF NECESSARY TO ADD SYMBOLS AND ABBREVIATIONS THAT HAVE NOT BEEN SHOWN ON THIS LEGEND THEY SHALL BE ADOPTED FROM ASME/ANSI STANDARDS AND/OR APPROVED BY SNL AND REFLECTED AS AN ADDITION.

REV	DATE	DESCRIPTION	DWN	CKD	APP
	6-15-01	UDS MODS	EG	FL	
B	1/00	REVISED	YMA	DW	
	4-92	REVISED	PES	PHS	

P.O. OR W.O.
PROJECT NO.

U.S. DEPARTMENT OF ENERGY
MANAGEMENT SUPPORT DIVISION
KIRTLAND AIR FORCE BASE EAST ALBUQUERQUE, NEW MEXICO

SANDIA NATIONAL LABORATORIES FACILITIES ENGINEERING
ALBUQUERQUE, NEW MEXICO; LIVERMORE, CALIFORNIA; TONOPAH, NEVADA

SYMBOLS AND ABBREVIATIONS

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P.O. OR W.O.
PROJECT NO.
DRAWN BY M GARDUÑO
CHECKED BY
APPROVED BY
DATE 1/10/95
SEQ.

MECHANICAL STANDARD
M-0001STD
SIZE D+
OLD FILE NAME: 150500M01

CAD DRAWING
COMPUTER SYSTEMS DEPT. 7902
FILE NAME: M-0001STD.dgn
REFERENCE FILES: