

201020-W

### HVAC LINES

- DUCTED AIR FLOW
- AIR MOVEMENT (NON-DUCTED)
- DUCTED AIR FLOW TO SPACE
- DUCTED AIR FLOW FROM SPACE
- EXHAUST HOOD
- ESSENTIAL AIR MOVEMENT (NON-DUCTED) FOR NUCLEAR PLANTS

### FANS

- CENTRIFUGAL BLOWER OR COMPRESSOR
- CENTRIFUGAL FAN
- CENTRIFUGAL FAN WITH INLET VANES
- VANE AXIAL FAN
- PROPELLER FAN
- UNIT HEATER  
ELECTRIC COIL SHOWN  
(SEE UNDER COILS FOR DEFINITIONS OF OTHER LETTER SYMBOLS)

### DAMPERS

- OPPOSED BLADE
- PARALLEL BLADE
- BACKDRAFT OR GRAVITY RELIEF
- SINGLE BLADE OR BUTTERFLY
- MANUAL BALANCE
- FUSIBLE LINK FIRE DAMPER OR FIRE DOOR
- BUBBLE TIGHT
- SPRING ACTUATED BACKDRAFT DAMPER

NOTE: REFER TO SHEET M-020104 FOR ACTUATOR SYMBOLS

### SUPPLEMENTARY INSTRUMENT DESIGNATIONS

**FIRE DETECTION**

- ID - IONIZATION DETECTOR
- PD - PHOTOELECTRIC DETECTOR
- FD - FLAME DETECTOR
- NT - FIXED TEMPERATURE THERMAL DETECTOR
- RT - RATE OF RISE THERMAL DETECTOR
- CD - RATE COMPENSATED THERMAL DETECTOR
- LD - CONTINUOUS LINE TYPE DETECTOR

**FIRE ALARM BELL**

- YAN - YAN
- YAN - YAN
- YAN - YAN
- YAN - YAN

**PARALLEL MOUNTED ALARMS**

- YAN - YAN
- YAN - YAN
- YAN - YAN

### EQUIPMENT & FIXTURES

- CSK - CUP SINK (SHOWN)
- DF - DRINKING FOUNTAIN
- ENYE - EMERGENCY SHOWER & EYE WASH
- EW - EYE WASH
- EWC - ELECTRIC WATER COOLER
- HB - HOSE BIB
- KS - KITCHEN SINK
- L - LAVATORY
- LSK - LABORATORY SINK
- MSK - MOP SINK
- HWSK - HOT MOP SINK
- SH - SHOWER
- SK - SINK
- SSK - SERVICE SINK
- UR - URINAL
- US - UTILITY STATION
- WC - WATER CLOSET
- WF - WASH FOUNTAIN
- WH - WALL HYDRANT
- YH - YARD HYDRANT
- W - WASHER
- HSW - HOT SHOWER
- DW - DISHWASHER
- SKK - FIRST AID SINK

### DUCTWORK IDENTIFICATION

LINE IDENTIFICATION NUMBER WILL BE AS FOLLOWS

PLANT UNIT NO. + SYSTEM DESIGNATOR + SEQUENCE NO.

ADDITIONAL INFORMATION SUCH AS DUCT CLASS & SIZE WILL BE ADDED AS FOLLOWS

DUCT CLASS: 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10 - 11 - 12 - 13 - 14 - 15 - 16 - 17 - 18 - 19 - 20

DUCT SIZE: 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10 - 11 - 12 - 13 - 14 - 15 - 16 - 17 - 18 - 19 - 20

GENERAL NOTES

- LINE NUMBERS AND SYSTEM DESIGNATORS WILL BE ASSIGNED IN ACCORDANCE WITH STANDARD ENGINEERING DEPARTMENT PROCEDURES
- UNIT NUMBER AND SYSTEM DESIGNATOR WILL APPEAR IN THE P & ID TITLE BLOCK AND NOT BE REPEATED ON THE LINES
- DUCTWORK AND DAMPER CLASSES ARE DESIGNATED BY A THREE CHARACTER ALPHANUMERIC CODE. THE FIRST CHARACTER INDICATES THE DUCT PRIMARY PRESSURE RATING. THE SECOND CHARACTER DESCRIBES THE MATERIAL AND THE THIRD INDICATES APPLICABLE STANDARDS.

**FIRST CHARACTER - PRIMARY PRESSURE RATING**

- 1 - LESS THAN 1/2" WG
- 2 - 1/2" TO 3/4" WG
- 3 - 3/4" TO 1" WG
- 4 - 1" TO 1 1/4" WG
- 5 - 1 1/4" TO 1 3/4" WG
- 6 - 1 3/4" TO 2" WG
- 7 - 2" TO 2 1/2" WG
- 8 - GREATER THAN 2 1/2" WG

**SECOND CHARACTER - MATERIAL**

- B - CARBON STEEL
- C - AUSTENITIC STAINLESS STEEL
- A - ALUMINUM
- N - CARBON STEEL - GALVANIZED (FOR ADDITIONAL TYPE OF MATERIAL REFER TO DRAWING M-020103)

**THIRD CHARACTER - APPLICABLE BECHTEL POWER CORPORATION HVAC DUCTWORK STANDARDS**

- K - STANDARD CONSTRUCTION
- L - GAS TIGHT WELDED CONSTRUCTION
- M - SEISMIC CATEGORY I CONSTRUCTION, INCLUDING HANGER AND SUPPORTS
- N - SEISMIC CATEGORY I CONSTRUCTION, HANGERS AND SUPPORTS ONLY
- P - SEISMIC CATEGORY I CONSTRUCTION, INCLUDING HANGERS AND SUPPORTS OF GAS TIGHT WELDED DUCTWORK
- R - SEISMIC CATEGORY I CONSTRUCTION, HANGERS AND SUPPORTS ONLY FOR GAS TIGHT WELDED DUCTWORK
- S - DUST OR MATERIAL HANDLING DUCTWORK

### COILS

- (H) HEATING COIL
- (HW) HOT WATER (SHOWN)
- (S) STEAM
- (E) ELECTRIC
- (G) GAS
- (C) COOLING COIL
- (CH) REFRIG. CHILLED WATER (SHOWN)
- (CW) COOLING WATER
- (DX) REFRIGERANT DIRECT EXPANSION

### AIR CLEANING DEVICES

- LOW EFFICIENCY ROLL TYPE FILTER
- LOW - LOW EFFICIENCY ROUGHING FILTER, 15% TO 85% EFFICIENCY BY ASHRAE WS-2HT TEST
- MOD - MODERATE EFFICIENCY FILTER, 20% TO 80% EFFICIENCY BY ASHRAE STAIN TEST
- HIGH - HIGH EFFICIENCY FILTER, 85% EFFICIENCY BY ASHRAE STAIN TEST TO 90% EFFICIENCY FOR 0.30 MICROMETER DOP
- HEPA - HIGH EFFICIENCY PARTICULATE AIR FILTER, 99.97% EFFICIENCY FOR 0.30 MICROMETER DOP
- CHAR - ACTIVATED CHARCOAL ADSORBER TRAY OR DEEP BED TYPE
- ELEC - ELECTROSTATIC PRECIPITATOR
- SU - LOW EFFICIENCY FILTER TO BE REMOVED AFTER START UP
- MS - MOISTURE SEPARATOR

### FIRE PROTECTION EQUIPMENT

- FIRE HYDRANT
- FIRE HYDRANT WITH HOSE HOUSE
- HOSE REEL STATION
- HOSE RACK STATION
- DELUGE VALVE
- ALARM CHECK VALVE
- DRY PIPE VALVE
- POST INDICATOR VALVE
- BALL DRIP VALVE
- FIRE SYSTEM WATER MOTOR ALARM
- WALON SYSTEM SELECTOR VALVE
- WALON SYSTEM CYLINDER CONTROL VALVE
- WALON SYSTEM MANUAL PNEUMATIC ACTUATOR VALVE
- WALON SYSTEM MANUAL J-BOX RESISTIVE SWITCH VALVE
- WALON SYSTEM BUBBLE VALVE
- STEAM PIPE FIRE BRIDGECOMPENSATING SPRING LEAD
- SPRAY NOZZLE
- EXTRACTOR TEST CONNECTION

### PLUMBING LINES

- CW - DOMESTIC COLD WATER
- HW - DOMESTIC HOT WATER SUPPLY
- HWRT - DOMESTIC HOT WATER RETURN
- THW - DOMESTIC TEMPERED HOT WATER SUPPLY
- THWR - DOMESTIC TEMPERED HOT WATER RETURN
- VAC - VACUUM
- SD - STORM DRAINAGE
- SAN - SANITARY DRAINAGE
- V - SANITARY VENT
- AW - ACID WASTE
- AV - ACID VENT
- OW - OILY WASTE
- OV - OILY VENT
- TP - TRAP PRIMER
- GCS - GRAVITY COLLECTION SYSTEM
- LRW - POTENTIALLY RADIOACTIVE LIQUID WASTE
- LRV - POTENTIALLY RADIOACTIVE LIQUID WASTE VENT
- ARW - POTENTIALLY RADIOACTIVE CHEMICAL WASTE
- ARV - POTENTIALLY RADIOACTIVE CHEMICAL WASTE VENT
- SRW - POTENTIALLY RADIOACTIVE DETERGENT WASTE
- SRV - POTENTIALLY RADIOACTIVE DETERGENT WASTE VENT
- G - NATURAL MIXED OR MANUFACTURED GAS
- DRW - DIRTY RADWASTE FLOOR AND EQUIPMENT DRAINS (NORMALLY NON-TITRIATED)
- CRW - CLEAN RADWASTE FLOOR AND EQUIPMENT DRAINS (NORMALLY TITRIATED)
- DRV - DIRTY RADWASTE FLOOR AND EQUIPMENT DRAINS (NORMALLY NON-TITRIATED) 5% VENT
- CPV - CLEAN RADWASTE FLOOR AND EQUIPMENT DRAINS (NORMALLY TITRIATED) 5% VENT

### DRAINS

- DIRECT DRAIN
- INDIRECT DRAIN
- ROOF DRAIN
- FLOOR DRAIN OR SURFACE COLLECTION UNIT
- EQUIPMENT DRAIN COLLECTION UNIT
- FLUGGED FLOOR DRAIN OR SURFACE COLLECTION UNIT
- EQUIPMENT DRAIN

### HUMIDIFIERS

- (SG) LOW PRESSURE STEAM GRID (SHOWN)
- (S) STEAM PAN
- (H) HOT WATER PAN
- (E) ELECTRIC PAN

### LOUVERS

- FIXED
- ADJUSTABLE

### DUST COLLECTORS

- (CDC) CYCLONE DUST COLLECTOR (SHOWN)
- (BDC) BAG TYPE DUST COLLECTOR
- DYNAMIC TYPE DUST COLLECTOR

### TI APERTURE CARD

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No drawing shall be drawn or used in any way without the written consent of the author. The author's name shall be printed on the drawing. The author's name shall be printed on the drawing. The author's name shall be printed on the drawing.

REVIEW LEVEL 1	DATE	BY	CHKD	APP'D

BECHTEL  
SNUPPS

SYMBOLS AND LEGEND FOR SYSTEM FLOW AND PIPING AND INSTRUMENTATION DIAGRAMS

10466 M-020103

PDR RDS

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