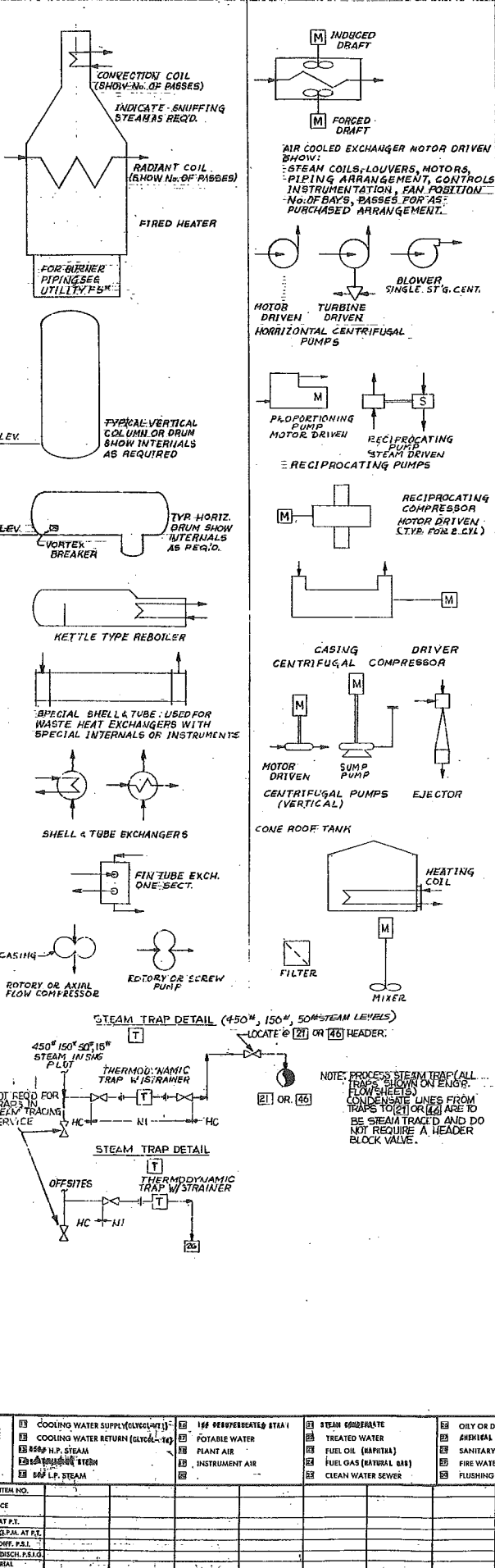
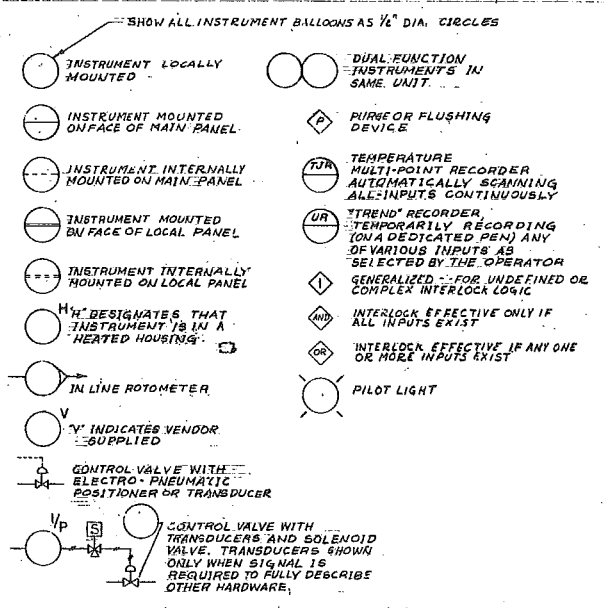


EQUIPMENT SYMBOLS



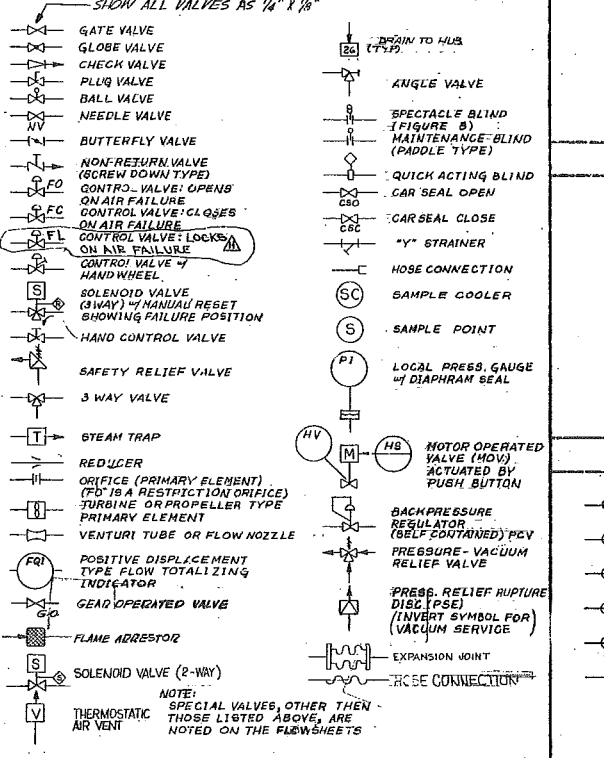
INSTRUMENT SYMBOLS AND NOTES



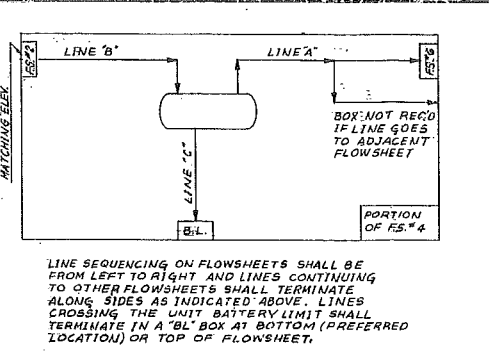
INSTRUMENT NUMBERING

THE INSTRUMENT ENGINEER WILL ASSIGN FW INSTRUMENT NUMBERS TO THE INSTRUMENTS INDICATED ON THE FLOWSHEETS...

GENERAL PIPING SYMBOLS

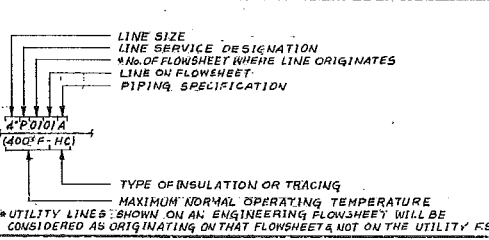


LINE SEQUENCE



LINE SEQUENCING ON FLOWSHEETS SHALL BE FROM LEFT TO RIGHT AND LINES CONTINUING TO OTHER FLOWSHEETS SHALL TERMINATE ALONG SIDES AS INDICATED ABOVE...

LINE NUMBERING SYSTEM



LINE SERVICE DESIGNATIONS

- BD BLOWDOWN (STEAM)
BW BOILER FEED WATER
CL STEAM CONDENSATE, LOW PRESSURE
CW COOLING WATER
D DRAIN, HAZARDOUS
DW DRINKING WATER (CITY WATER - POTABLE)
FG FUEL GAS (STRETFORD GAS)
FM FLOW METER
FO FLOW ORIFICE
FW FRESH WATER
H HYDROGEN
HP HIGH PRESSURE, UTILITY WATER
IA INSTRUMENT AIR WITH OIL
IG INERT GAS
IS PROCESS SERVICE - LIQUID OR VAPOUR
PA PLANT AIR
PC PROCESS CONDENSATE
PL PROCESS LIQUID (CARBONATE SOLUTION)
PP PROPANE
R RELIEF VALVE DISCHARGE (ALSO FLARE HEADER, HAZARDOUS)
RW RAW WATER
SH STEAM, HIGH PRESSURE (450°)
SL STEAM, LOW PRESSURE (52°) 9/16" DESUR STEAM
SW NON-DEAERATED BOILER FEED WATER (W/OX GEN)
V VENT TO ATMOSPHERE OR FLARE, HAZARDOUS
SA STEAM, HAZARDOUS (60°)
SC SOLENOID VALVE
SG STEAM, NON-HAZARDOUS
SH STEAM, HAZARDOUS
SV STEAM, NON-HAZARDOUS
UN VENT, NON-HAZARDOUS
RAI RELIEF, NON-HAZARDOUS
PN PROCESS, NON-HAZARDOUS (STRETFORD SOLUTION & SLURRY)

LINE TYPES USED FOR FLOWSHEETS

- (THICK LINE) TO BE USED FOR MAIN PROCESS LINES ONLY
(NORMAL LINE) FOR ALL OTHER PROCESS OR UTILITY LINES, EQUIPMENT, INSTRUMENTATION, ETC.
(LINE WITH FLECHS) FOR INSTRUMENT, PNEUMATIC SIGNAL PIPING
(LINE WITH CROSSES) FOR CAPILLARY TUBING
(DASHED LINE) 1. FOR ELECTRICAL WIRING
2. FOR EXISTING PIPING & EQUIP.
(DOT-DASH LINE) 1. EXTENT OF PACKAGE SUPPLY
2. FOR FUTURE INSTALLATION

TYPES OF INSULATION

- CC - COLD CONSERVATION
ET - ELECTRIC TRACED & INSULATED
HI - HEAT HEATED HOUSING
HC - HEAT CONSERVATION INSULATION
LI - LIQUID TRACING
NI - NOT INSULATED
PP - PERSONNEL PROTECTION INSULATION FOR HOT SERVICE - (ABOVE 175°F)
PS - INSULATED FOR PROCESS STABILIZATION
ST - STEAM JACKETED & INSULATED
BT - STEAM TRACED & INSULATED
PI - PIPE PROOFING INSULATION

TRACING SYMBOLS

- STEAM TRACING (SEE GENERAL NOTE #5)
ELECTRIC TRACING
LIQUID TRACING
STEAM JACKETING
ADD 'T' TO REPRESENT THERMON WHERE REQUIRED FOR ANY TYPE OF TRACING
TERMINATION OF TRACING

EQUIPMENT DESIGNATIONS

- A - ACCUMULATOR
B - BLOWERS, FAN
C - COMPRESSORS
CT - COOLING TOWERS
D - DRUMS
DS - DESUPERHEATERS
E - EXCHANGERS
F - FILTERS
FA - FLAME ARRESTORS
FL - FLARE
H - FIRED HEATERS
HT - HYDRAULIC TURBINES
J - JECTORS & EJECTORS
M - AGITATORS, MIXERS
P - PUMPS (ALL TYPES)
PD - PULSATION DAMPENERS
PC - PACKAGE UNITS
R - REACTORS
S - SEPARATORS
SG - STEAM GENERATORS
SL - SILencers
T - TOWERS
TK - TANKS

WHERE A PIECE OF EQUIPMENT IS SPARED BY ANOTHER OR SEVERAL IDENTICAL PIECES OF EQUIPMENT ARE IN THE SAME SERVICE, A LETTER SHALL BE DESIGNED AFTER THE EQUIPMENT NUMBER.

DRAWINGS

ALL FW DRAWINGS FOR THIS CONTRACT SHALL BE IN ACCORDANCE WITH FW STANDARD PRACTICES AND NUMBERING SYSTEMS. THE TITLE BOX OF ALL FW DRAWINGS SHALL CONTAIN THE FOLLOWING INFORMATION AS A MINIMUM:

GENERAL NOTES

- 1. PIPING INTO FLARE HEADER SHOULD BE FREE DRAINING, WHEN NOT POSSIBLE PROVIDE A LOW POINT DRAIN VALVE WITH PLUG AND STEAM TRACE 10% (10" DIA. 1/2" DIA. 1/4")
2. ALL PROCESS VENTS TO TERMINATE 10' ABOVE NEAREST PLATFORM
3. ALL LETTERING ON DRAWINGS TO BE 1/8" MIN.
4. ELEVATIONS SHOWN ON THE ENGINEERING FLOW DIAGRAMS FOR ALL EQUIPMENT ARE REFERENCED ABOVE A BASE OF FWEC 100'-0" (PGW 30'-0" FWEC 100'-0")
5. SOFT STEAM FOR SECTIONS 100, 200 AND 300 (UNLESS OTHERWISE NOTED) IS STEAM FROM SECTION 150 (PIPE SPEC. P-2)
5" STEAM FOR CAUSTIC LINES PER FLOW DIAGRAM #19.

FW FLOW DIAGRAM NUMBERING

- PROCESS FLOW DIAGRAMS 1773-1-50-101, 102 ETC.
MATERIALS OF CONSTRUCTION 1773-1-50-201, 202 ETC.
DESIGN PRESSURE/TEMP. 1773-1-50-301, 302 ETC.
ENGINEERING, UTILITY AND AUXILIARY ENGR. FLOW DIAG. 1773-1-50-1, 2 ETC.

PGW FLOW DIAGRAM NUMBERING

- ENGINEERING FLOW DIAGRAM 12-A-165, 166, 167 ETC. (FOR 30"x42" FLOW SHEETS)

PHILADELPHIA GAS WORKS

ENGINEERING DEPT. PHILADELPHIA, PA.
NO. 12-A-165
APPROVED

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ENGINEERING UTILITY FLOW DIAGRAM STANDARD SYMBOLS 60 MM SCD 5NG PLANT PHILADELPHIA GAS WORKS

PHILADELPHIA PENNSYLVANIA
EST. NO. 154779 DRAWN BY G.S. 11-16-76 (REV. 1) C.F.S.
CONTRACT NO. 154779 DWG. NO. 1773-1-50-1

Table with columns for ITEM NO., SERVICE, and various equipment types like COOLING WATER SUPPLY, FUEL GAS, and INSTRUMENT AIR.

ADD GENERAL NOTES ON THIS DRAWING. OTHER NOTES ON FIRST & SUCCEEDING ENGINEERING FLOW DIAGRAMS