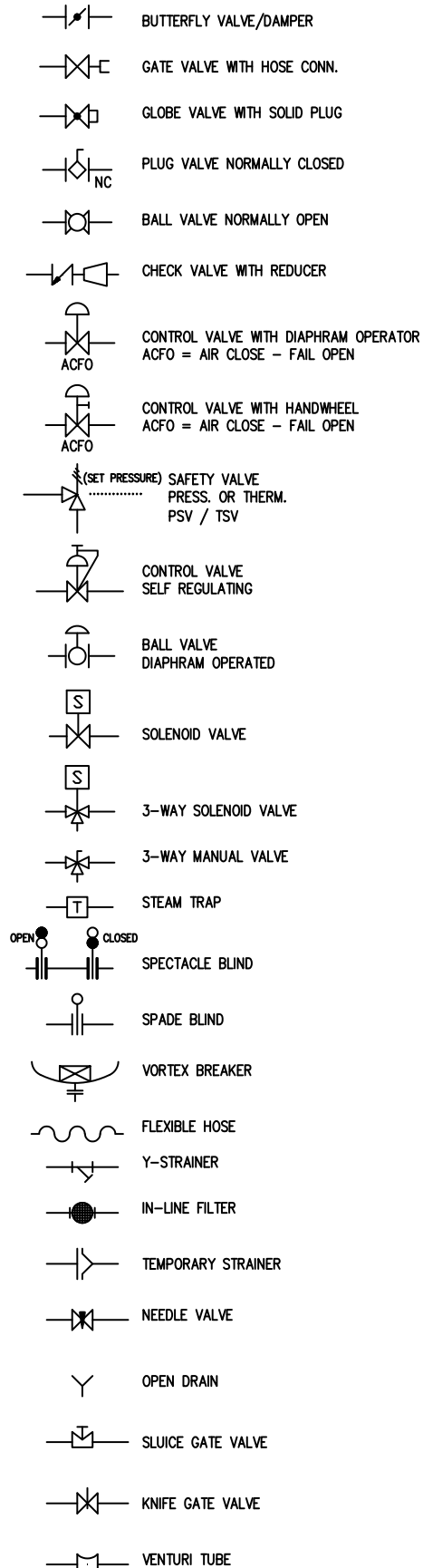
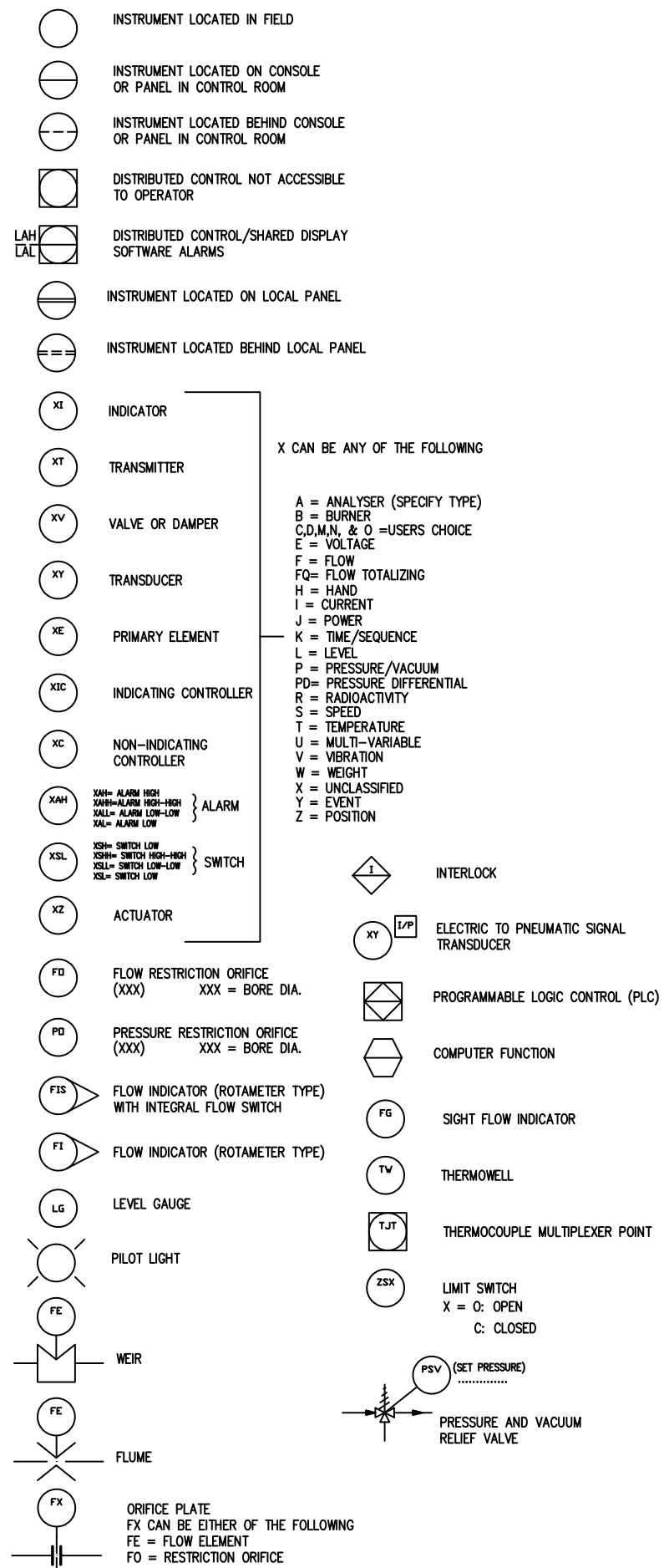


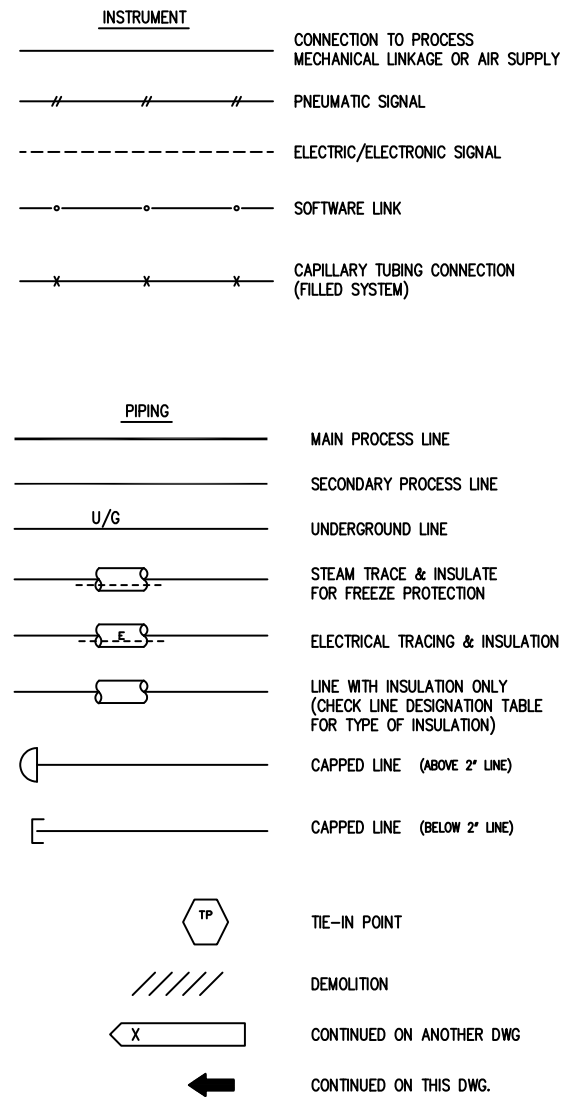
PIPING SYMBOLS



INSTRUMENT SYMBOLS



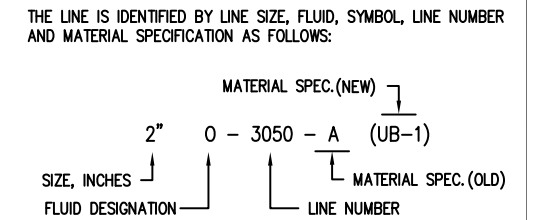
LEGEND



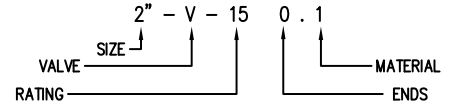
| SYMBOL | FLUID                |
|--------|----------------------|
| AA     | AERATION-AIR         |
| AI     | INSTRUMENT AIR       |
| AO     | OZONE-AIR            |
| AR     | REGENERATION-AIR     |
| AU     | UTILITY-AIR          |
| BD     | BLOWDOWN & RELIEF    |
| BO     | BOILER BLOW-OFF      |
| BS     | SLOPS & PUMPOUT      |
| C      | CATALYST             |
| CA     | CATALYST-AIR         |
| DO     | STORM WATER          |
| DP     | PROCESS DRAIN        |
| DT     | TANK DRAIN           |
| EA     | EXHAUST AIR          |
| GF     | FUEL GAS             |
| GL     | FLUE GAS             |
| GH     | HYDROGEN             |
| GN     | NITROGEN             |
| GP     | PURGE GAS            |
| GS     | HYDROGEN SULFIDE GAS |
| HS     | SULPHURIC-ACID       |
| I      | INHIBITOR            |
| KA     | AMMONIA              |
| KC     | CAUSTIC              |
| KL     | TETRA-ETHYL LEAD     |
| KP     | PROCESS CHEMICALS    |
| O      | OIL OR OIL VAPOUR    |
| OF     | FUEL OIL             |
| OG     | GLAND OR SEAL OIL    |
| OH     | HYDRAULIC OIL        |
| OL     | LUBE OIL             |
| PO     | PUMPOUT              |
| S      | SATURATED STEAM      |
| SC     | STEAM CONDENSATE     |
| SE     | EXHAUST-STEAM        |
| SL     | LP STEAM             |
| SS     | SUPERHEATED STEAM    |
| SU     | UTILITY-STEAM        |
| WB     | BOILER FEEDWATER     |
| WC     | COOLING WATER        |
| WD     | POTABLE WATER        |
| WE     | EFFLUENT WATER       |
| WF     | FIRE WATER           |
| WL     | LAKE WATER           |
| WP     | PROCESS WATER        |
| WS     | SOUR WATER           |
| WT     | TEMPERED WATER       |
| WU     | UTILITY WATER        |

GENERAL NOTES

LINE DESIGNATION  
LINE IDENTIFICATION SYMBOLS



VALVE DESIGNATION  
VALVE IDENTIFICATION



| VALVE TYPE    | RATING          | ENDS            | MATERIAL             |
|---------------|-----------------|-----------------|----------------------|
| A - ANGLE     | 15 - ANSI 150   | 0 - FLANGED     | 1 - CARBON STEEL     |
| B - BALL      | 30 - ANSI 300   | 1 - BUTT WELD   | 2 - 1 1/4 CHR 1/2 MO |
| C - CHECK     | 60 - ANSI 600   | 2 - SOCKET WELD | 3 - 2 1/4 CHR 1/2 MO |
| G - GLOBE     | 80 - ANSI 800   | 3 - SCREWED     | 4 - 5 CHR 1/2 MO     |
| P - PLUG      | 90 - ANSI 900   | 4 - COMBINATION | 5 - 9 CHR 1/2 MO     |
| V - GATE      | 150 - ANSI 1500 | eg. (M.SCRD/SW) | 6 - 316 SS           |
| W - BUTTERFLY |                 |                 | 7 - 321 SS           |
| N - NEEDLE    |                 |                 | 8 - 347 SS           |
| K - KNIFE     |                 |                 | 9 - ALLOY 20         |
|               |                 |                 | 10 - MONEL           |

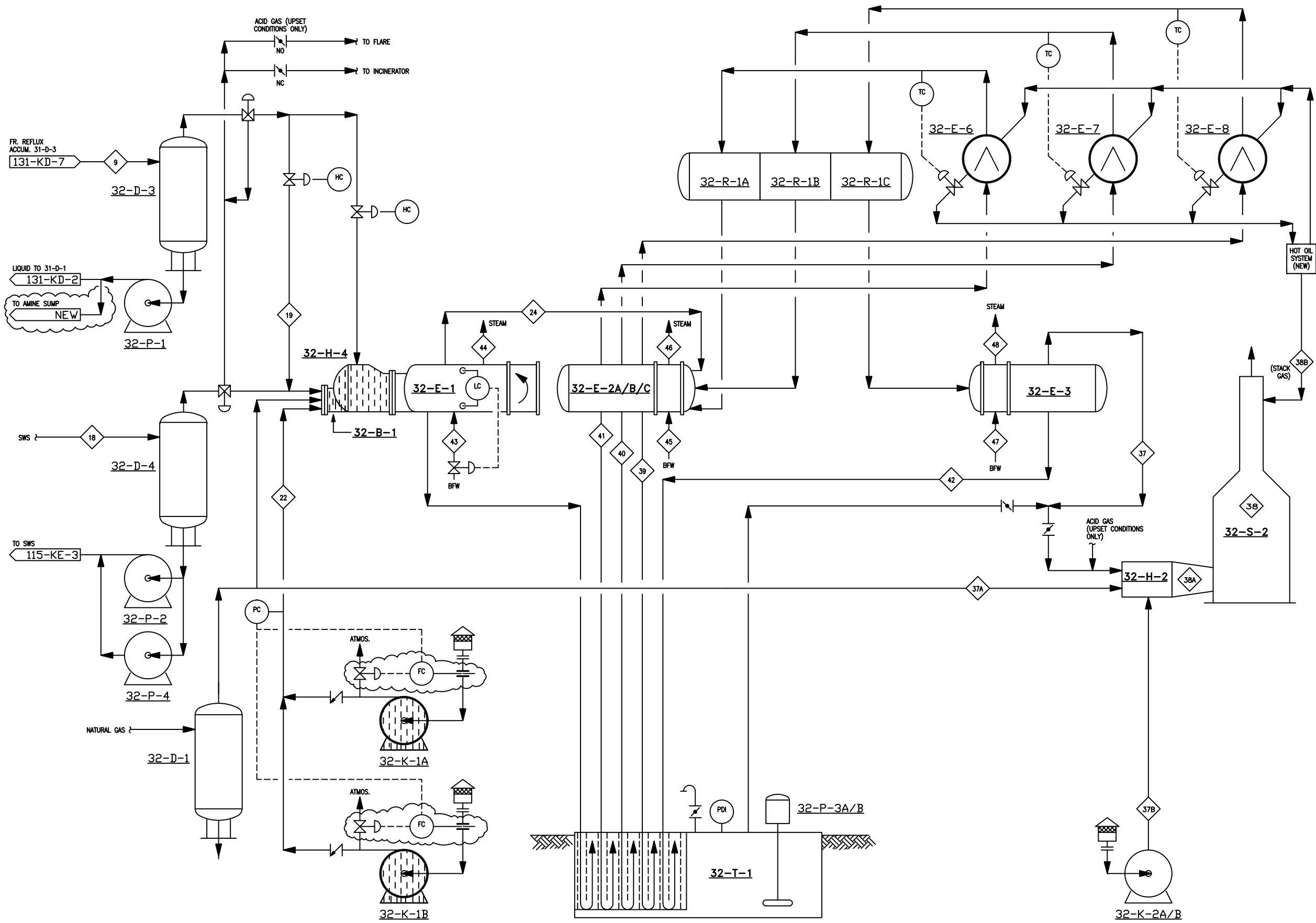
| SERVICE                         | MATERIAL        | SPECIFICATION |      |      | PREVIOUS SPEC. |                 |      |
|---------------------------------|-----------------|---------------|------|------|----------------|-----------------|------|
|                                 |                 | ANSI RATING   |      |      | ANSI RATING    |                 |      |
|                                 |                 | 150           | 300  | 600  | 150            | 300             | 600  |
| PROCESS NON-CORROSIVE           | CS              | UB-1          | UD-1 | UJ-1 | 15-1           | 30-1            | 60-1 |
| FUEL OIL                        | CS              | UB-1          | -    | -    | 15-1           | -               | -    |
| FUEL GAS                        | CS              | UB-1          | -    | -    | 15-1           | -               | -    |
| RELIEF & FLARE                  | CS              | UB-1          | -    | -    | 15-1           | -               | -    |
| GENERAL PROCESS/UTILITY         | CS              | UB-1          | UD-1 | -    | 15-1, A/B1/B2  | 30-1, B         | -    |
| LPG                             | CS              | UB-1          | UD-1 | -    | 15-7, A        | 30-7, BL,C1     | -    |
| INSTRUMENT AIR                  | CS              | WA-3          | -    | -    | 15-1           | -               | -    |
| INSTRUMENT AIR HEADERS          | CS              | AA-1          | -    | -    | 15-1           | -               | -    |
| PROCESS HEAVY CORROSIVE         | CS              | UB-2          | UD-2 | -    | 15-2, AN/AY    | 30-2, BY        | -    |
| HYDROGEN BEARING LINES          | CS              | UB-3          | UD-3 | -    | 15-3           | 30-3, BB        | -    |
| CAUSTIC 30%                     | CS              | XB-1          | XD-1 | -    | 15-6, AK       | 30-6, BK        | -    |
| CAUSTIC ALL CONC.               | CS              | XB-2          | XD-2 | -    | 15-6, AK       | 30-6, BK        | -    |
| PLATFORM REACTOR CIRCUITS       | 1 1/4 Cr-1/2 Mo | -             | UE-2 | -    | -              | 30-12,30-10, BG | -    |
| REACTOR VAPOUR LINE (CATALYTIC) | 1 1/4 Cr-1/2 Mo | -             | UE-2 | -    | -              | 30-12,30-10, BG | -    |
| GENERAL PROCESS HIGH TEMP/CORR. | 5Cr- 1/2 Mo     | -             | UE-3 | -    | 15-13          | 30-13, BO       | -    |
| PROCESS LINES (CAT. UNIT)       | 5Cr- 1/2 Mo     | -             | UE-3 | -    | -              | 30-13, BO       | -    |
| HYDROBON REACTOR CIRCUIT        | 321 SS          | -             | UE-6 | -    | -              | 30-15           | -    |
| FLUE GAS (& MISC. CONN.-REGEN.) | 304H SS         | -             | UD-5 | -    | -              | 30-16           | -    |
| STEAM                           | CS              | SB-1          | SD-1 | -    | 15-1           | 30-1            | -    |
| STEAM/B.F.W.                    | CS              | SB-1          | SD-1 | -    | 15-5, AX       | 30-5            | -    |
| BOILER FEED WATER               | CS              | SB-1          | SD-1 | -    | 15-1           | 30-1            | -    |
| CONDENSATE                      | CS              | SB-1          | -    | -    | 15-1           | -               | -    |
| STEAM TRACING                   | 304 SS/CS/CU    | T1,T2         | -    | -    | 15-1           | -               | -    |
| UTILITY WATER                   | CS              | WA-1          | -    | -    | 15-1           | -               | -    |
| TEMPERED WATER                  | CS              | WA-1          | -    | -    | 15-1           | -               | -    |
| COOLING WATER                   | CS              | WA-1          | -    | -    | 15-1           | -               | -    |
| POTABLE WATER (ABOVE GROUND)    | CS (GALV.)      | WA-3          | -    | -    | 15-4           | -               | -    |
| FIREWATER (UNDERGROUND)         | CS              | H-1           | -    | -    | -              | -               | -    |
| UTILITY AIR                     | CS              | AA-1          | -    | -    | 15-1           | -               | -    |
| PILOT GAS                       | 304 SS          | UB-4          | -    | -    | 15-15          | -               | -    |
| AMINE                           | CS              | UB-2          | -    | -    | 15-1           | -               | -    |

| 2        | JUL 91 | REDRAWN TO CAD FORMAT | WM       | CK'D BY | APP'D BY |
|----------|--------|-----------------------|----------|---------|----------|
| REVISION | DATE   | DESCRIPTION           | DRAWN BY | CK'D BY | APP'D BY |



|                             |                  |             |                        |
|-----------------------------|------------------|-------------|------------------------|
| TITLE                       |                  | DEPARTMENT  |                        |
| PROCESS FLOW SHEET          |                  | AREA NO.    |                        |
| 365 GPM 15% DEA PLANT       |                  | CLASS NO.   |                        |
| 40 LTD SULPHUR RECOVER UNIT |                  | PREL. NO.   |                        |
|                             |                  | DATE        |                        |
|                             |                  | SCALE       |                        |
| DRAWN BY                    | CHECKED OR DRAFT | SECTION NO. | REV. NO.               |
| WM                          | CHECKED ENGINEER | APPROVED BY | 132-KD-7<br>SHT.1 OF 2 |
|                             |                  |             | 2                      |

32-D-1 FUEL GAS K.O. POT    32-D-4 SWS OVHD. K.O. POT    32-D-3 ACID GAS K.O. POT    32-B-1 CLAUS COMBUSTOR™ (NEW)    32-H-4 THERMAL REACTOR (NEW)    32-E-1 WASTE HEAT BOILER    32-E-2A/B/C SULPHUR CONDENSERS    32-R-1A/B/C REACTORS    32-E-6 1ST STAGE REHEAT EXCHANGER (NEW)    32-E-7 2ND STAGE REHEAT EXCHANGER (NEW)    32-E-8 3RD STAGE REHEAT EXCHANGER (NEW)    32-E-3 FINAL SULPHUR CONDENSER    32-H-2 TAIL GAS INCINERATOR    32-S-2 STACK



32-P-1 SOUR WATER TRANSFER PUMP    32-P-2 SW TRANSFER PUMP    32-P-4 SW TRANSFER PUMP    32-K-1A/B AIR BLOWERS    32-T-1 SULPHUR PIT    31-P-3A/B SULPHUR LOADING PUMPS    32-K-2A/B COMBUSTION AIR BLOWERS

**GENERAL NOTES**

- DESIGN BASIS IS 45 LTPD FEED, 43 LTPD RECOVERY, 96% RECOVERY.
- DELETED 32-E-4 INLINE PRE-HEATER. INSTALL NEW INDIRECT REHEAT EXCHANGERS.
- REPLACED BURNER & 32-H-1 WITH NEW SRU BURNER, THERMAL REACTOR & CONTROLS.
- INSTALL NEW HOT OIL HEATING SYSTEM.
- MODIFY EXISTING BLOWERS & INSTALL NEW LARGER MOTORS.
- INCREASE SEAL LEG LENGTHS & SWEEP PIT GASES TO INCINERATOR.
- FOR GENERAL NOTES & LEGEND SEE DWG 132-KD-7 SHT.1.

| 0        | AUG92 | REVISED PER TPA CONTRACT 2065-00 | DN       |          |          |
|----------|-------|----------------------------------|----------|----------|----------|
| REVISION | DATE  | DESCRIPTION                      | DRAWN BY | CHK'D BY | APP'D BY |

TPA, Inc. Consultants/Engineers/Managers  
Dallas, Texas



|   |  |  |   |
|---|--|--|---|
| TITLE<br><b>PROCESS FLOW DIAGRAM<br/>         43 LTD SULFUR<br/>         RECOVERY PLANT</b> |  | DEPARTMENT<br>_____<br>AREA NO.<br>_____<br>CLASS NO.<br>_____<br>PROJ. NO.<br>2065-00<br>DATE<br>8/14/92<br>SCALE<br>NONE |   |
| DRAWN BY<br>NELSON  | CHECKED OR DRAFT<br>_____<br>CHECKED ENGINEER<br>_____ | SECTION NO.<br>_____<br>APPROVED BY<br>_____   | DIV. NO.<br>132-KD-7<br>SHT.2 OF 2<br>REV.<br>0 |