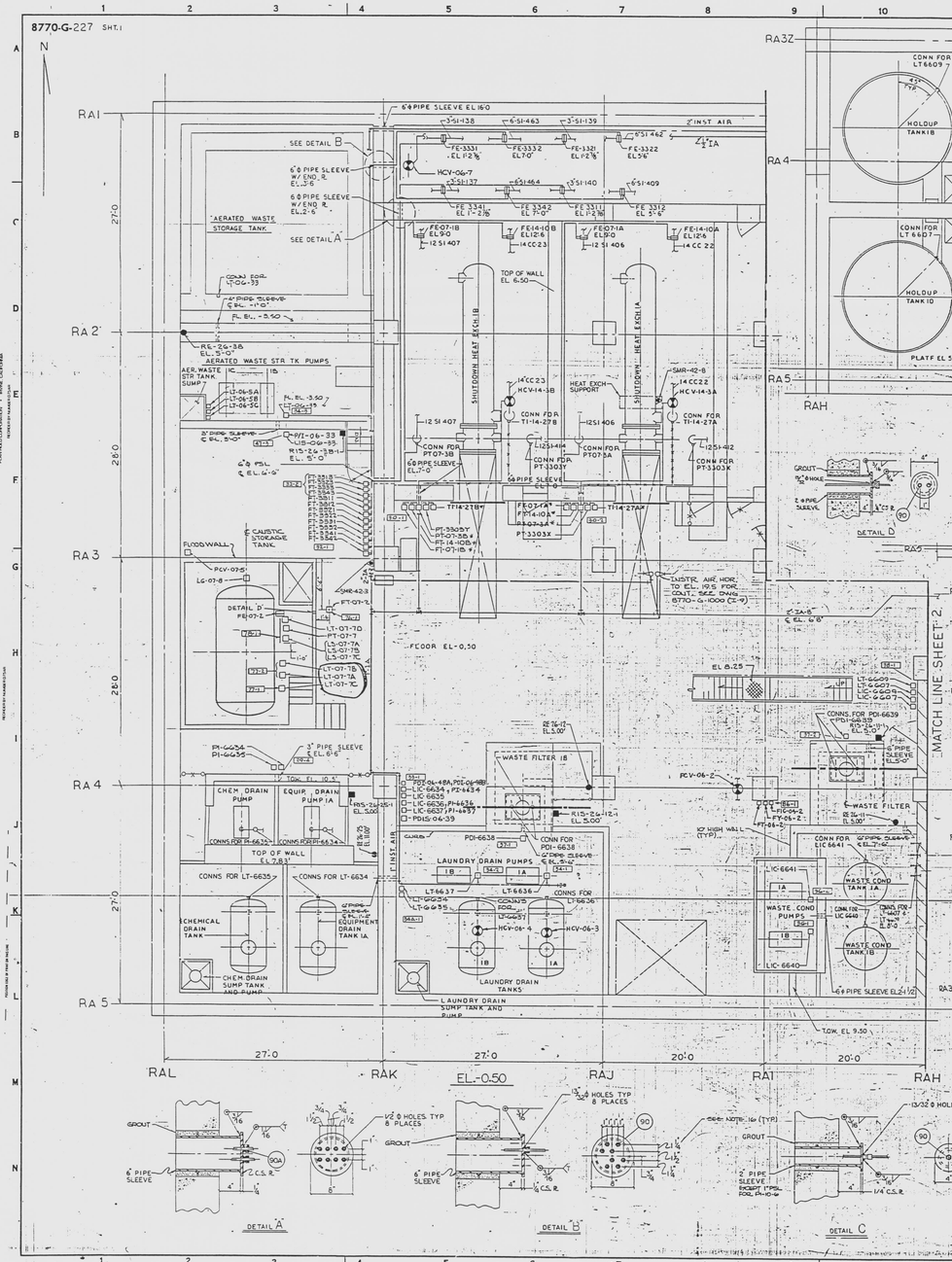
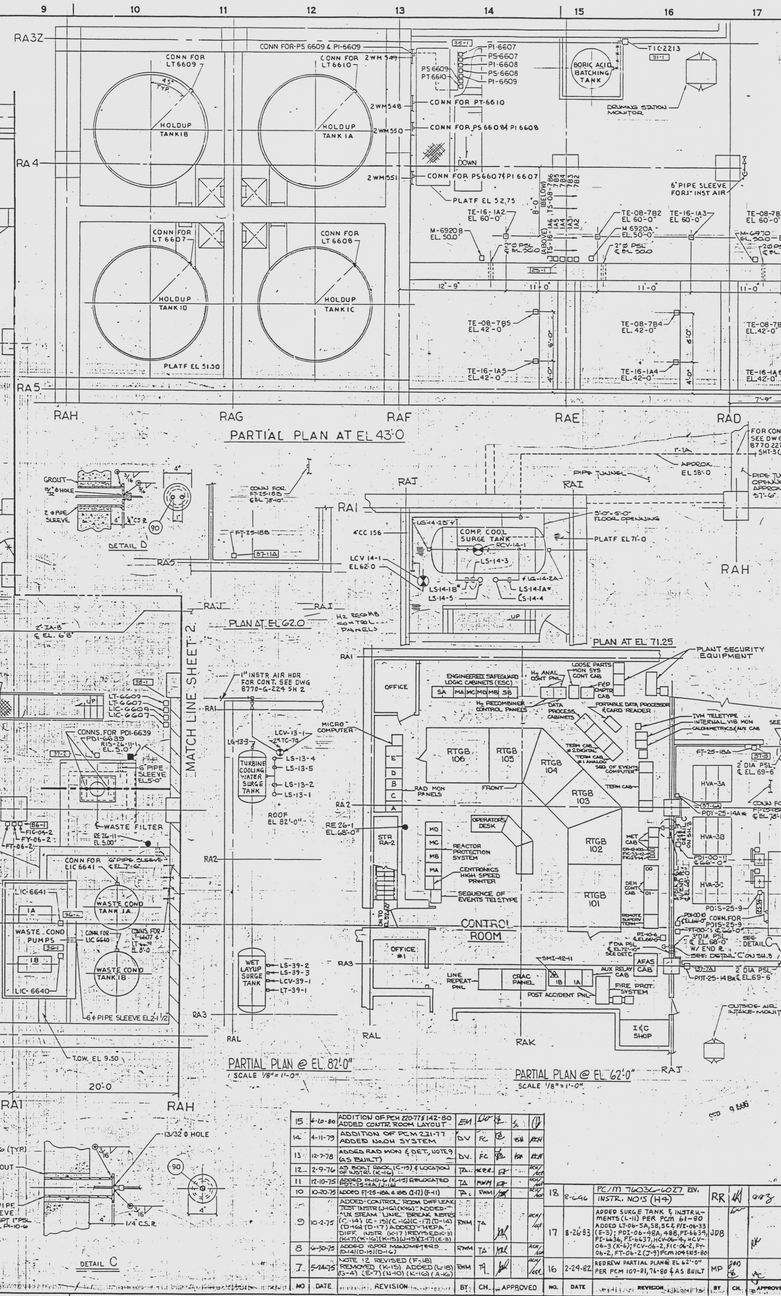
8770-G-227 SHT. 1





17. GENERAL NOTES CONT.
MINIMUM BENDING RADIUS FOR ALL TUBING SHALL BE AS FOLLOWS:

OD	MIN R
1/4	9/16
3/8	15/16
1/2	1 1/2

A MANDREL SHALL BE USED TO MAKE ALL TUBE BENDS

GENERAL NOTES

1. INSTRUMENT TUBING, PIPING AND AIR HEADER ARE SHOWN DIAGRAMMATICALLY ONLY. EXACT ROUTING TO BE DETERMINED BY THE FIELD.
2. DO NOT ROUTE TUBING OR PIPING ACROSS EQUIPMENT AREAS, BELOW MONORAILS OR CRANES, NOR ABOVE HATCHES.
3. FIELD TO SUPPORT TUBING AT 4'-0" MAXIMUM SPACING, UTILIZING COLUMNS, BEAMS AND WALLS FOR SUPPORT SURFACES AS REQUIRED. WHEN TUBE TRAYS OR CONDUITS ARE USED TO PROTECT TUBING, THEY SHALL BE SUFFICIENTLY RIGID CONSTRUCTION TO WITHSTAND THE RIGORS OF NORMAL CONSTRUCTION AND MAINTENANCE PRACTICES.
4. INSTRUMENT SENSING LINES TO SLOPE CONTINUOUSLY TOWARD THE INSTRUMENT WHEN MOUNTED BELOW PIPE CONNECTIONS, OR SLOPED TOWARD THE PIPE CONNECTION WHEN THE INSTRUMENT IS MOUNTED ABOVE THE PIPE CONNECTION. MIN. SLOPE 1"/FT.
5. FOR TYPICAL INSTRUMENT AIR HEADER, SUBHEADER BRANCH CONNECTIONS SEE DWG. 8770-231 SHT. 18-6.
6. TUBE RUNS SHALL BE INSTALLED WITH A MINIMUM OF SPLICING. IF SPLICES ARE REQUIRED REFER TO INSTRUMENT INSTALLATION DETAILS FOR TYPES OF UNIONS OR COUPLINGS TO BE USED.
7. ALL INSTRUMENTS ARE TO BE LOCATED 4'-0 FROM FINISHED FLOOR, UNLESS OTHERWISE INDICATED.
8. INSTRUMENT SUPPORTS SHALL BE DESIGNED AND FURNISHED BY FIELD.
9. ROOT VALVES FOR IMPULSE LINES FROM A HIGH RADIATION AREA TO ACCEPTABLE RADIATION AREA SHALL BE LOCATED OUTSIDE THE SHIELDING WALL.
10. ALL IMPULSE LINES SHALL BE BERM SO AS TO AVOID ANY POTENTIAL FIRE AREAS OR MISSILE ZONES.
11. SHOULD IMPULSE LINES PASS THROUGH POTENTIAL MISSILE ZONES, SUITABLE MISSILE BARRIERS (SOLID UNISTRUT CHANNELS OR EQUIVALENT) SHALL BE PROVIDED TO PROTECT THE IMPULSE LINES AGAINST DAMAGE.
12. IMPULSE LINES AND INSTRUMENTS SHALL BE GROUPED WITH RESPECT TO A PARTICULAR MEASUREMENT OR REDUNDANT CHANNEL. NO TWO IMPULSE LINES BELONGING TO TWO DIFFERENT MEASUREMENT OR REDUNDANT CHANNELS SHALL BE LOCATED ALONGSIDE EACH OTHER UNLESS OTHERWISE IMPRACTICAL. IN THAT CASE, THE IMPULSE LINES FOR REDUNDANT SYSTEMS A & C AS WELL AS REDUNDANT SYSTEMS B & D CAN BE GROUPED TOGETHER WITHOUT PHYSICAL SEPARATION. SPACING OF IMPULSE LINES FOR INDIVIDUAL INSTRUMENTS OR GROUPED PAIRS SHALL BE 4 FT MIN IN ANY DIRECTION. SPACING OF INSTRUMENTS SHALL BE 4 FT MIN IN ALL CASES. THESE DEVICES ARE IDENTIFIED BY ◆.
13. SEPARATE PENETRATIONS SHALL BE USED FOR EACH REDUNDANT CHANNEL IN A GROUP.
14. FIELD TO SET ALL PIPE SLEEVES FOR IMPULSE, TUBING AND INSTRUMENT AIR LINES IN CONCRETE BEFORE CONCRETE IS PLACED.
15. INSTRUMENTS AND VALVES LOCATED ON 2" AND SMALLER PIPE SHALL BE LOCATED IN THE FIELD UNLESS OTHERWISE LOCATED ON INSTRUMENT ARRANGEMENT DRAWINGS.
16. THESE DIMENSIONS ARE TO BE USED AS A GUIDE-DAILY FIELD MAY GRADUATE DIMENSIONS AS TO PROVIDE FOR A PLATEST TUBING INSTALL.

REFERENCE DRAWINGS

1. INSTRUMENT LIST — 8770-B-210
2. INSTRUMENT INSTALLATION DETAILS — 8770-B-231
3. FLOW DIAGRAM CONTAINMENT SPRAY AND REFUELING WATER SYSTEM — 8770-G-088
4. FLOW DIAGRAM COMPONENT COOLING SYSTEM — 8770-G-083
5. PIPING AND INSTRUMENT DIAGRAM CHEMICAL AND VOLUME CONTROL SYSTEM — E-18367-210-120 & 121 (8770-93 & 94)
6. PIPING AND INSTRUMENT DIAGRAM FUEL POOL SYSTEM — E-18367-210-140 (8770-89)
7. PIPING AND INSTRUMENT DIAGRAM SAFETY INJECTION SYSTEM — E-18367-210-130 & 131 (8770-87 & 88)
8. PIPING AND INSTRUMENT DIAGRAM WASTE MANAGEMENT SYSTEM — E-18367-310-160, 161, 162 & 163 (8770-167, 168, 169 & 170)

LEGEND

1. DENOTES 3 WAY VALVE
2. DENOTES AIR OPERATED (PISTON OR DIAPHRAM CONTROL VALVE)
3. CAPILLARY TUBING
4. DENOTES INSTRUMENTS LOCATED BY COMBUSTION ENGINEERING
5. DENOTES LOCALLY MTD INSTRUMENTS
6. DENOTES MEASUREMENT CHANNEL OR REDUNDANT INSTRUMENTS AND VALVES REQUIRING SEPARATION
7. DENOTES INSTR. RACK IDENT. NO.
8. DENOTES SEISMIC MONITOR
9. DENOTES EXPANSION DETECTOR

WILLIAM J. ROW REGISTERED No. 15106 STATE OF FLORIDA PROFESSIONAL ENGINEER

NO	DATE	REVISION	BY	CH.	APPROVED
15	4-16-80	ADDITION OF PCN 20-77 & 142-80 ADDED CONTR ROOM LAYOUT	EM	LW	
14	4-11-79	ADDITION OF PCN 7.231-77 ADDED WADM SYSTEM	D.V	FC	
13	12-7-78	ADDED RAD MON & DET. WITH AS BUILT	D.V.	FC	
12	2-9-76	AS BUILT (K-16)	TA	KEE	
11	12-10-75	ADDED PI-6634 (J-13) & LOCATION	TA	MWM	
10	10-20-75	ADDED PT-08-4A & 4B (J-17) & (J-11)	TA	MWM	
9	10-2-75	ADDED CONTROL ROOM DWP LEAK TEST INSTRUMENTATION ADDED "UN STEAM LINE" BREAK MERGE (C-14) C-15 (C-16) C-17 (D-14) (D-16) (D-17) & ADDED "MERPA" DWP. NOTE SHT 1 REVISED (J-2) (K-17) (C-16) (K-15) (L-15) (L-16)	TA		
8	6-30-75	ADDED WDRM MANUAL VALVES (E-14) (E-15) (D-4)	RWM	TA	
7	5-24-75	NOTE 12 REVISED (F-15) REMOVED (K-15) ADDED (L-15) (E-14) (E-17) (N-10) (K-16) (A-4)	RWM	TA	
6	4-16-75	ADDED PI-6634 (J-13)	TA		
5	2-24-75	ADDED PT-08-4A, PI-08-4B, LIC-6634, PZ-6434, LIC-6635, LIC-6636, PI-6636, LIC-6637, PI-6637, PDIS-06-39	TA		
4	12-20-74	ADDED PDI-6638	TA		
3	10-2-74	ADDED PT-3503T, PI-07-3B, PI-14-10B, PI-07-1B, PI-07-1A	TA		
2	8-26-74	ADDED PT-3503X, PI-07-3A, PI-14-10A, PI-07-1A	TA		
1	8-12-74	ADDED PT-3303T, PT-3303X	TA		

NO	DATE	REVISION	BY	CH.	APPROVED
18	9-6-86	PC/M 16034-6027 ENV. INSTR. NO'S (H-4)	RR		
17	8-26-83	ADDED SURGE TANK & INSTRUMENTS (L-11) PER PCN 81-80 ADDED LT-09-5A, 5B, 5C & PT-09-33 (E-3) PDI-09-18A, 18B, PT-09-5A, JDB PT-1436, PT-6437, HCV-06-9, HCV-06-3 (K-12) FCV-06-1, FIC-06-2, PT-06-2, PT-06-2 (Z-7) PCN 109-185-80			
16	2-24-82	REVIEW PARTIAL PLANS EL 43'-0" PER PCM 109-81, 74-80 & AS BUILT	MP	JAG	

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FLORIDA POWER & LIGHT COMPANY
HUTCHINSON ISLAND PLANT
1973 - 890,000 KW INSTALLATION - UNIT NO. 1

REACTOR AUXILIARY BL DG.
INSTRUMENT ARRANGEMENT

EBASCO SERVICES INCORPORATED NEW YORK

SCALE 3/8"=1'-0" | DATE July 15, 1977
APPROVED
DIV. I&C
DR. A.C.L.G.
CH. A. FLOOD
8770-G-227
SHEET 1
REV. 18

DRAWING NUMBER 8770-G-227 S1 +.

E