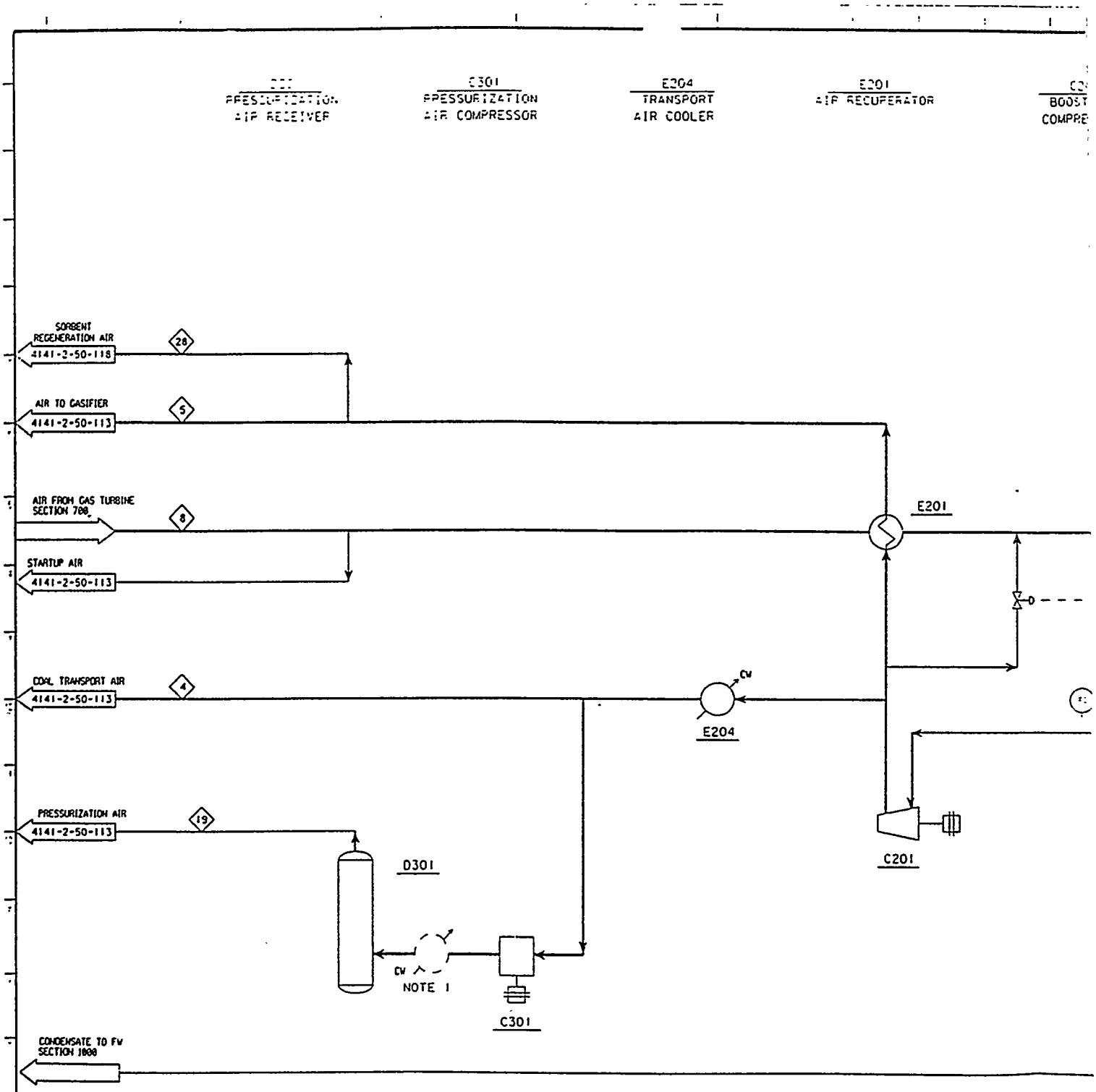
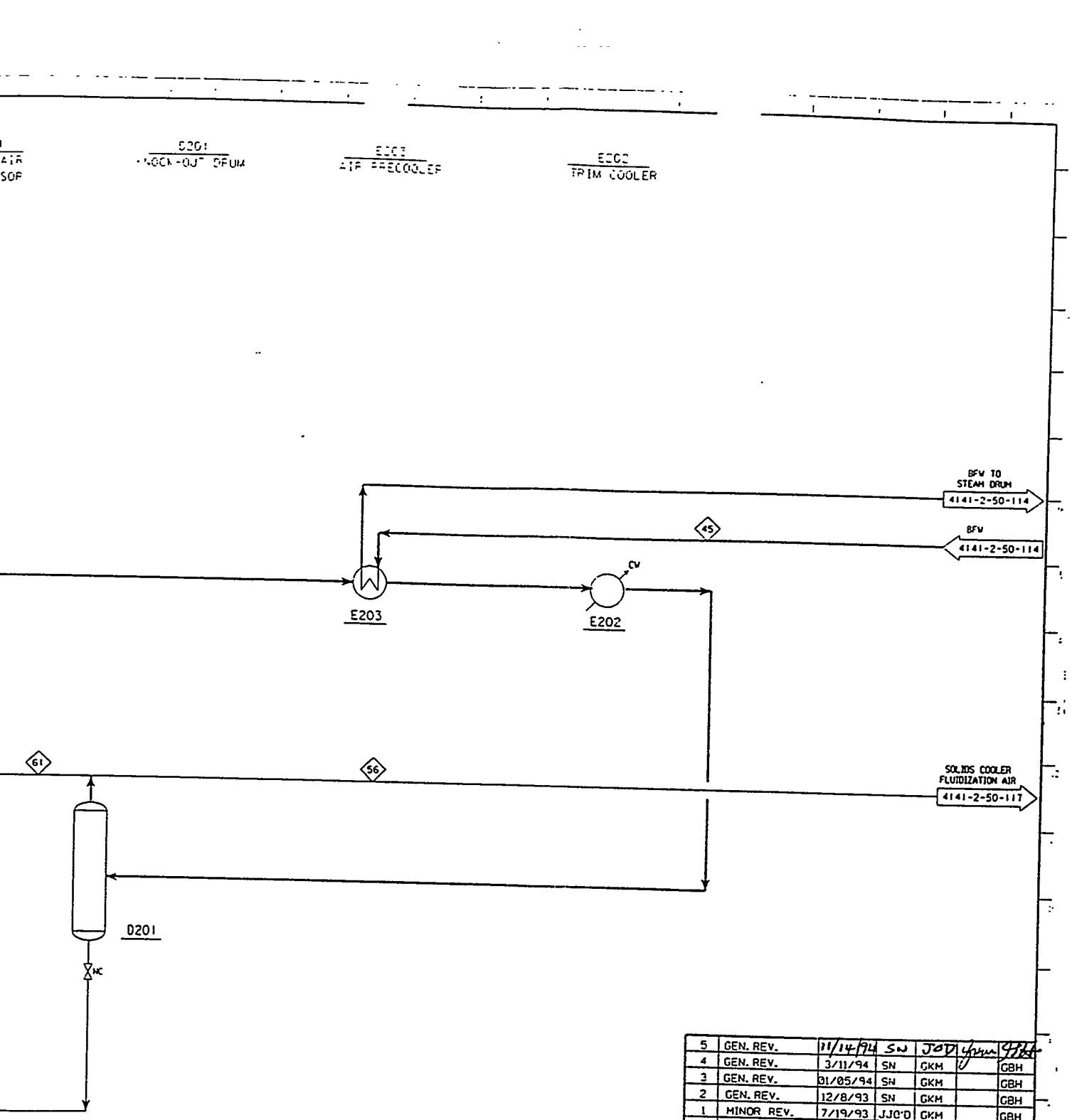

D??
PRESSURIZATION
AIR RECEIVER
C301
PRESSURIZATION
AIR COMPRESSOR
E204
TRANSPORT
AIR COOLER
E201
AIR RECUPERATOR
C?
BOOST
COMPRE
SORBENT
REGENERATION AIR
4141-2-50-118
28
AIR TO GASIFIER
4141-2-50-113
5
AIR FROM GAS TURBINE
SECTION 700
8
STARTUP AIR
4141-2-50-113
E201
COAL TRANSPORT AIR
4141-2-50-113
4
CV
E204
PRESSURIZATION AIR
4141-2-50-113
19
D301
CV
NOTE 1
C301
C201
CONDENSATE TO FW
SECTION 1000



NO.	DECSRIPTION	DATE	BY	CHK	REV.	APP
5	GEN. REV.	11/14/94	SN	JJO'D		GBH
4	GEN. REV.	3/11/94	SN	GKM		GBH
3	GEN. REV.	01/05/94	SN	GKM		GBH
2	GEN. REV.	12/8/93	SN	GKM		GBH
1	MINOR REV.	7/19/93	JJO'D	GKM		GBH
0	INITIAL ISSUE	5/25/93	NSD	GKM		GBH

REVISIONS

ENGINEERED	CHECKED	APPROVED
DRAWN	REVISED	DATED

NOTES:

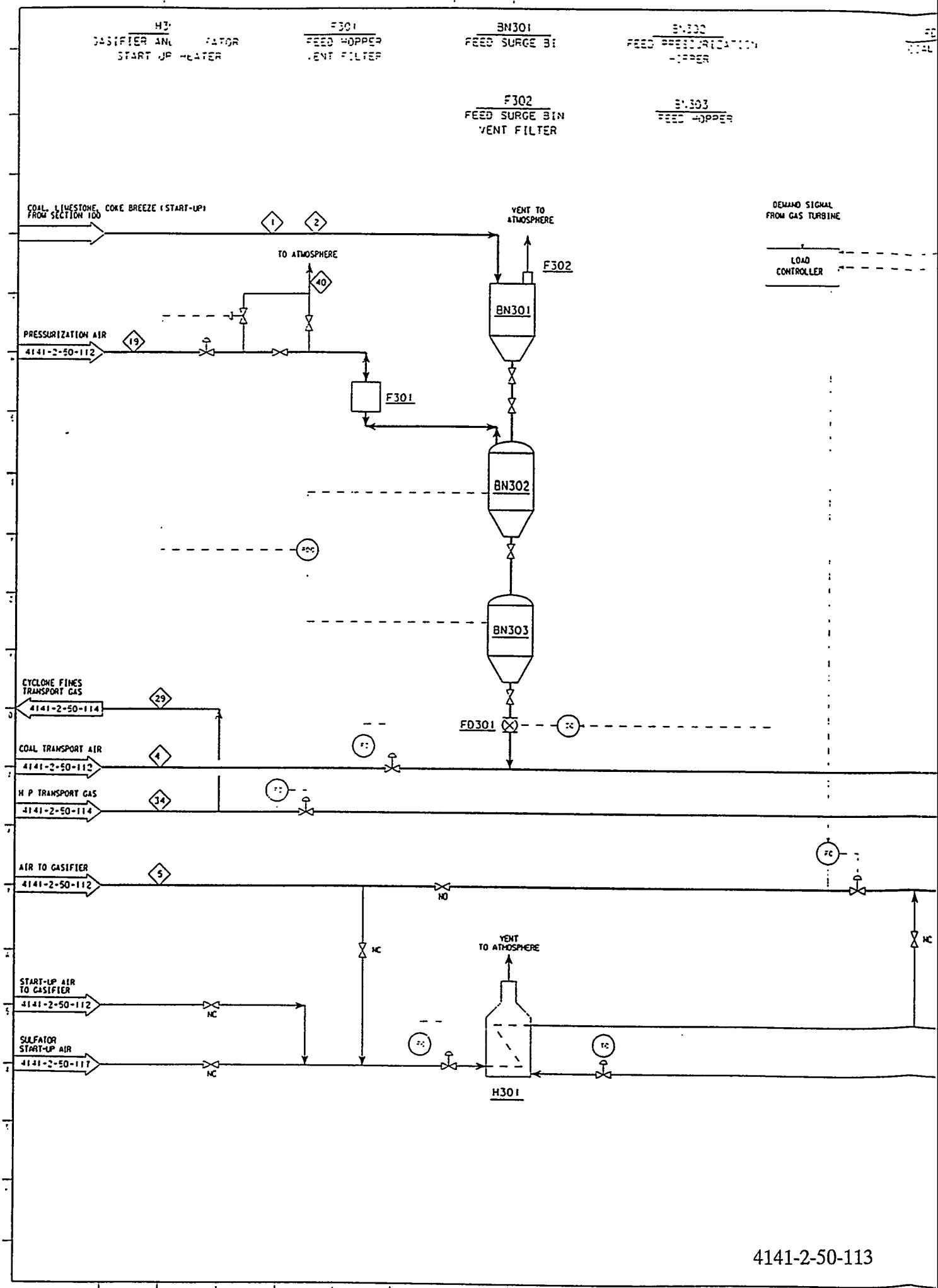
1. AFTER COOLER IS TO BE INCLUDED IN THE COMPRESSOR PACKAGE.

KEY:

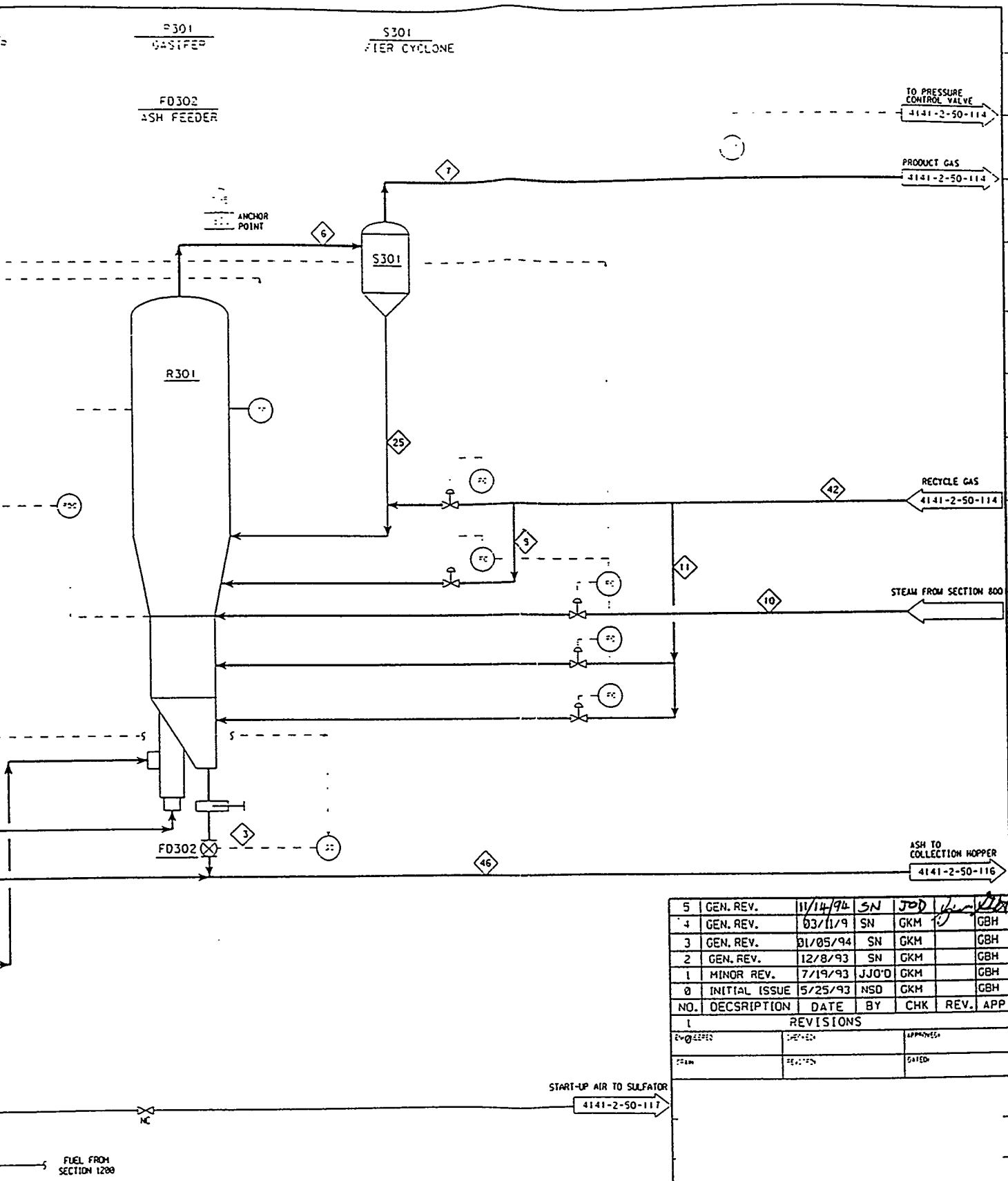
- STREAM ID
- TEMPERATURE, °F
- PRESSURE, psi ods
- DUTY, MMBTU/Hr

SIERRA PACIFIC POWER COMPANY
TRACY 4 - PIÑON PROJECT, RENO, NV
PROCESS FLOW DIAGRAM
OXIDANT COMPRESSION AND SUPPLY
COAL GASIFICATION
SECTION 200 & 300

15-4141


H3
GASIFIER AN FATOR
START UP HEATER
F301
FEED HOPPER
VENT FILTER
BN301
FEED SURGE BI
F302
FEED SURGE BIN
VENT FILTER
BN303
FEED HOPPER
COAL, LIMESTONE, COKE BREEZE (START-UP)
FROM SECTION 100
1
2
VENT TO ATMOSPHERE
F302
TO ATMOSPHERE
40
BN301
DEMAND SIGNAL
FROM GAS TURBINE
LOAD CONTROLLER
PRESSURIZATION AIR
4141-2-50-112
19
F301
BN302
BN303
CYCLONE FINES
TRANSPORT GAS
4141-2-50-114
29
FD301
COAL TRANSPORT AIR
4141-2-50-112
4
H P TRANSPORT GAS
4141-2-50-114
34
AIR TO GASIFIER
4141-2-50-112
5
NO
NC
VENT
TO ATMOSPHERE
START-UP AIR
TO GASIFIER
4141-2-50-112
NC
SULFATOR
START-UP AIR
4141-2-50-117
NC
H301

4141-2-50-113



NO.	DESCRIPTION	DATE	BY	CHK	REV.	APP
5	GEN. REV.	11/14/94	SN	JDD		GBH
4	GEN. REV.	03/11/9	SN	GKM		GBH
3	GEN. REV.	01/05/94	SN	GKM		GBH
2	GEN. REV.	12/8/93	SN	GKM		GBH
1	MINOR REV.	7/19/93	JJO'D	GKM		GBH
0	INITIAL ISSUE	5/25/93	NSD	GKM		GBH

REVISIONS

KEY:

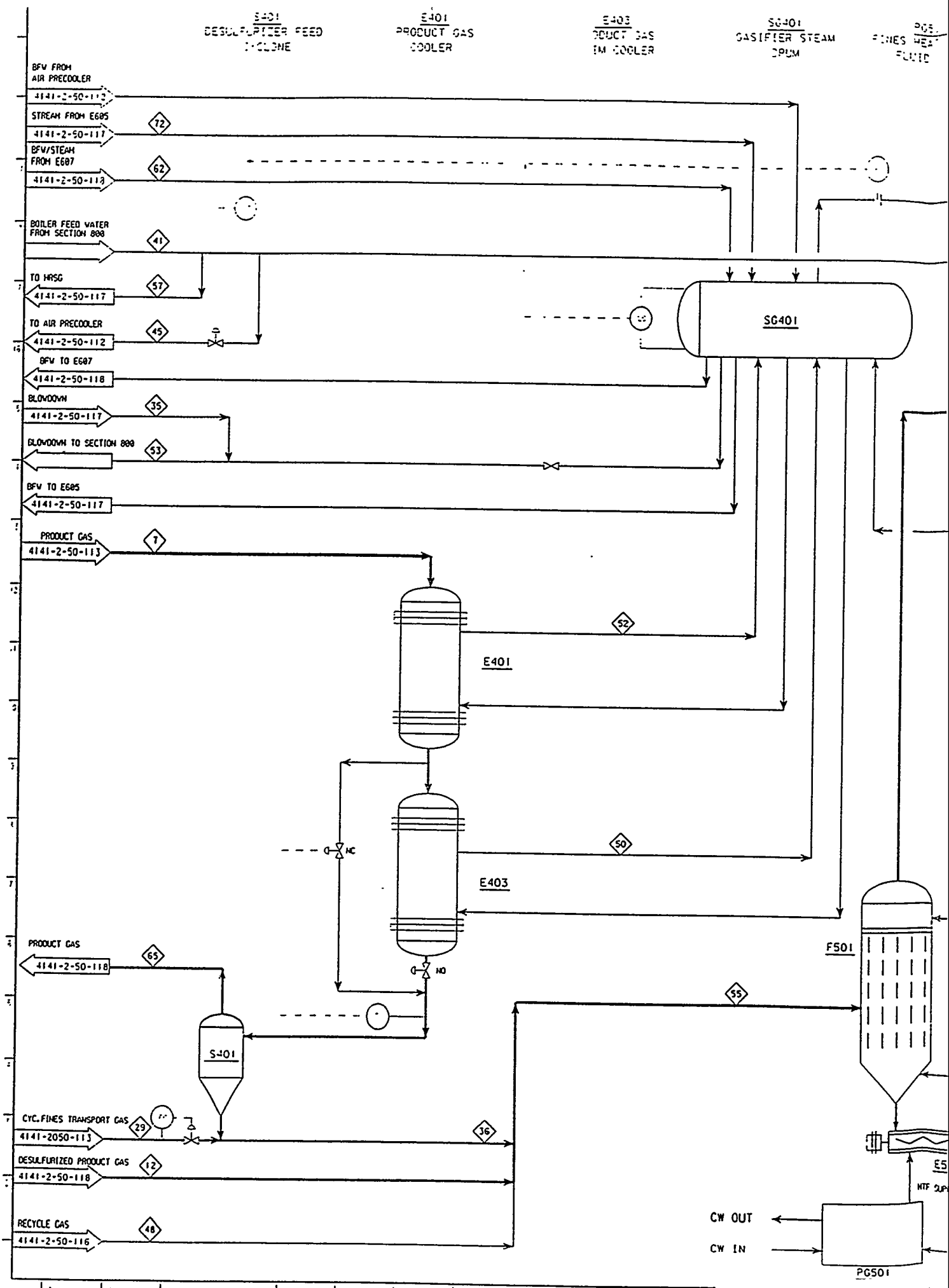
- STREAM ID
- TEMPERATURE, °F
- PRESSURE, psi ads
- DUTY, MMBtu/Hr
- MASS FLOW, LB/Hr

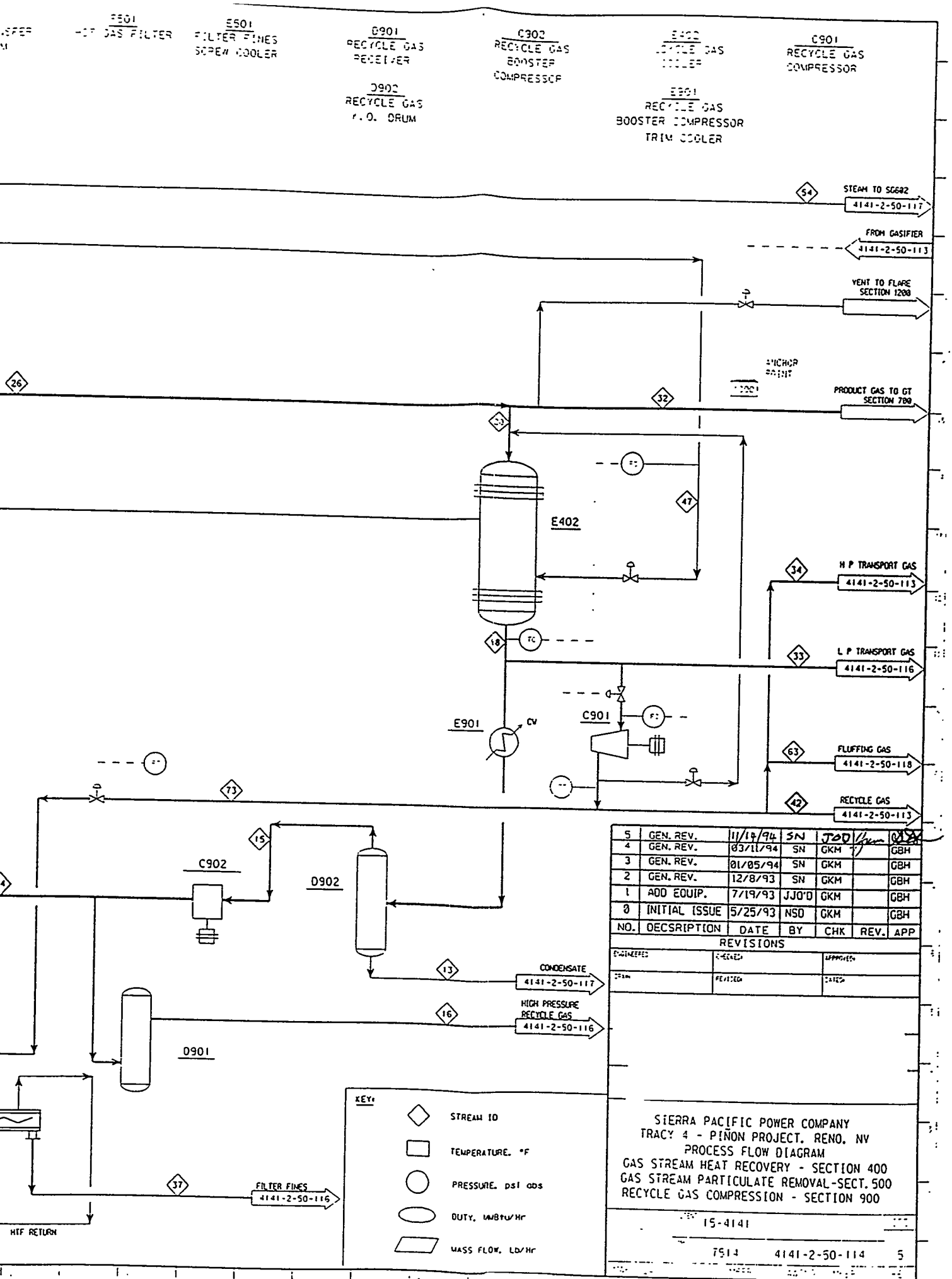
SIERRA PACIFIC POWER COMPANY
TRACY 4 - PIÑON PROJECT, RENO, NV
PROCESS FLOW DIAGRAM

COAL GASIFICATION
SECTION 300

15-4141

7514 4141-2-50-113 5


S401
DESULFURIZER FEED
CYCLONE
E401
PRODUCT GAS
COOLER
E403
PRODUCT GAS
FIN COOLER
SG401
GASIFIER STEAM
DRUM
PGS
FINES HEA
FLUID
BFW FROM
AIR PRECOOLER
4141-2-50-112
STREAM FROM E605
4141-2-50-117
72
BFW/STEAM
FROM E607
4141-2-50-118
62
BOILER FEED WATER
FROM SECTION 800
41
TO HRSG
4141-2-50-117
57
TO AIR PRECOOLER
4141-2-50-112
45
BFW TO E607
4141-2-50-118
BLOWDOWN
4141-2-50-117
35
BLOWDOWN TO SECTION 800
53
BFW TO E605
4141-2-50-117
PRODUCT GAS
4141-2-50-113
7
SG401
52
E401
NC
50
E403
NO
FS01
PRODUCT GAS
4141-2-50-118
65
55
S401
CYC.FINES TRANSPORT GAS
4141-2050-113
29
36
DESULFURIZED PRODUCT GAS
4141-2-50-118
12
RECYCLE GAS
4141-2-50-116
48
CW OUT
CW IN
PG501



NO.	DESCRIPTION	DATE	BY	CHK	REV.	APP
5	GEN. REV.	11/14/94	SN	JJO'D		
4	GEN. REV.	03/11/94	SN	GKM		GBH
3	GEN. REV.	01/05/94	SN	GKM		GBH
2	GEN. REV.	12/8/93	SN	GKM		GBH
1	ADD EQUIP.	7/19/93	JJO'D	GKM		GBH
0	INITIAL ISSUE	5/25/93	NSO	GKM		GBH

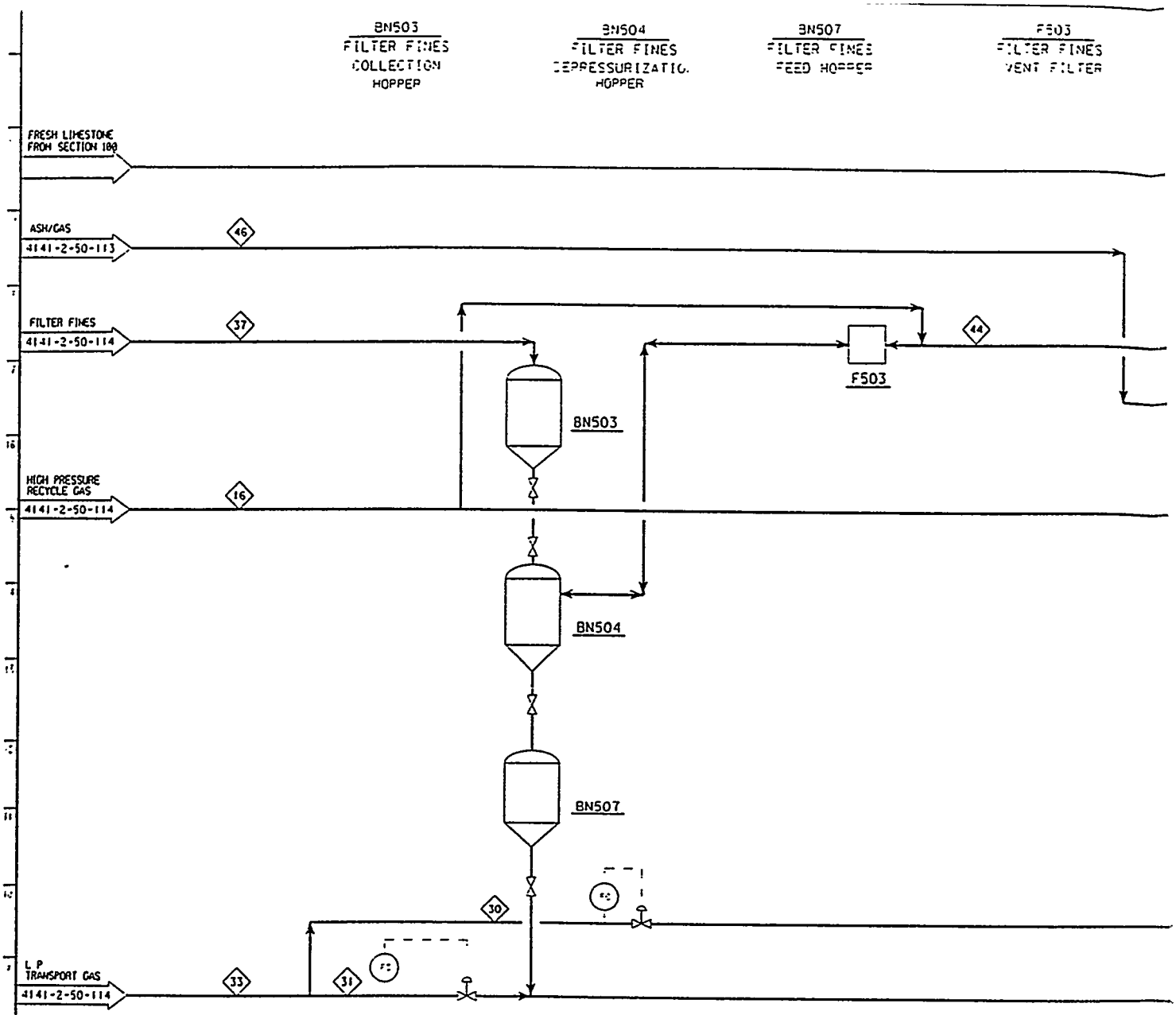
REVISIONS

ENGINEERED	CHECKED	APPROVED
DRAWN	REVIEWED	DATED

SIERRA PACIFIC POWER COMPANY
TRACY 4 - PIÑON PROJECT, RENO, NV
PROCESS FLOW DIAGRAM
GAS STREAM HEAT RECOVERY - SECTION 400
GAS STREAM PARTICULATE REMOVAL-SECT. 500
RECYCLE GAS COMPRESSION - SECTION 900

15-4141

7514 4141-2-50-114 5


BN503
FILTER FINES
COLLECTION
HOPPER
BN504
FILTER FINES
DEPRESSURIZATIO.
HOPPER
BN507
FILTER FINES
FEED HOPPER
F503
FILTER FINES
VENT FILTER
FRESH LIMESTONE
FROM SECTION 100
ASH/GAS
4141-2-50-113
46
FILTER FINES
4141-2-50-114
37
44
F503
BN503
HIGH PRESSURE
RECYCLE GAS
4141-2-50-114
16
BN504
BN507
30
L P
TRANSPORT GAS
4141-2-50-114
33
31

4141-2-50-116

BN501
ASH
COLLECTION HOPPER

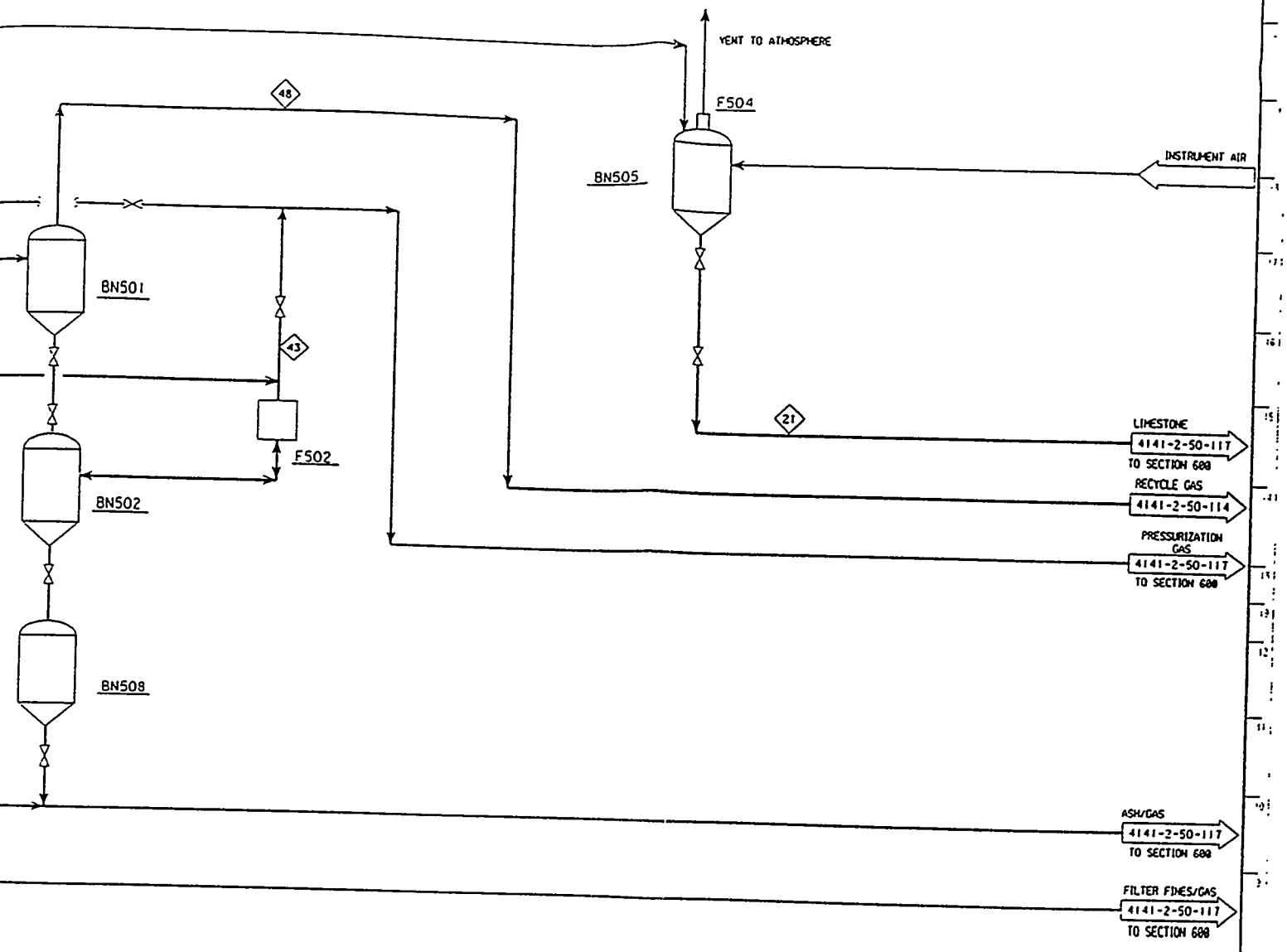
BN502
ASH
DEPRESSURIZATION
HOPPER

BN508
ASH FEED
HOPPER

F502
ASH
VENT FILTER

BN505
LIMESTONE
FEED HOPPER

F504
LIMESTONE FEED
HOPPER VENT FILTER



NO.	DESCRIPTION	DATE	BY	CHK	REV.	APP
5	GEN. REV.	11/14/94	SN	JJO'D		GBH
4	GEN. REV.	03/11/94	SN	GKM		GBH
3	GEN. REV.	01/05/94	SN	GKM		GBH
2	GEN. REV.	12/8/93	SN	GKM		GBH
1	ADD EQUIPMENT	7/19/93	JJO'D	GKM		GBH
0	INITIAL ISSUE	5/25/93	NSD	GKM		GBH

REVISIONS

ENGINEERED	CHECKED	APPROVED
DRAWN	REVISED	DATED

KEY:

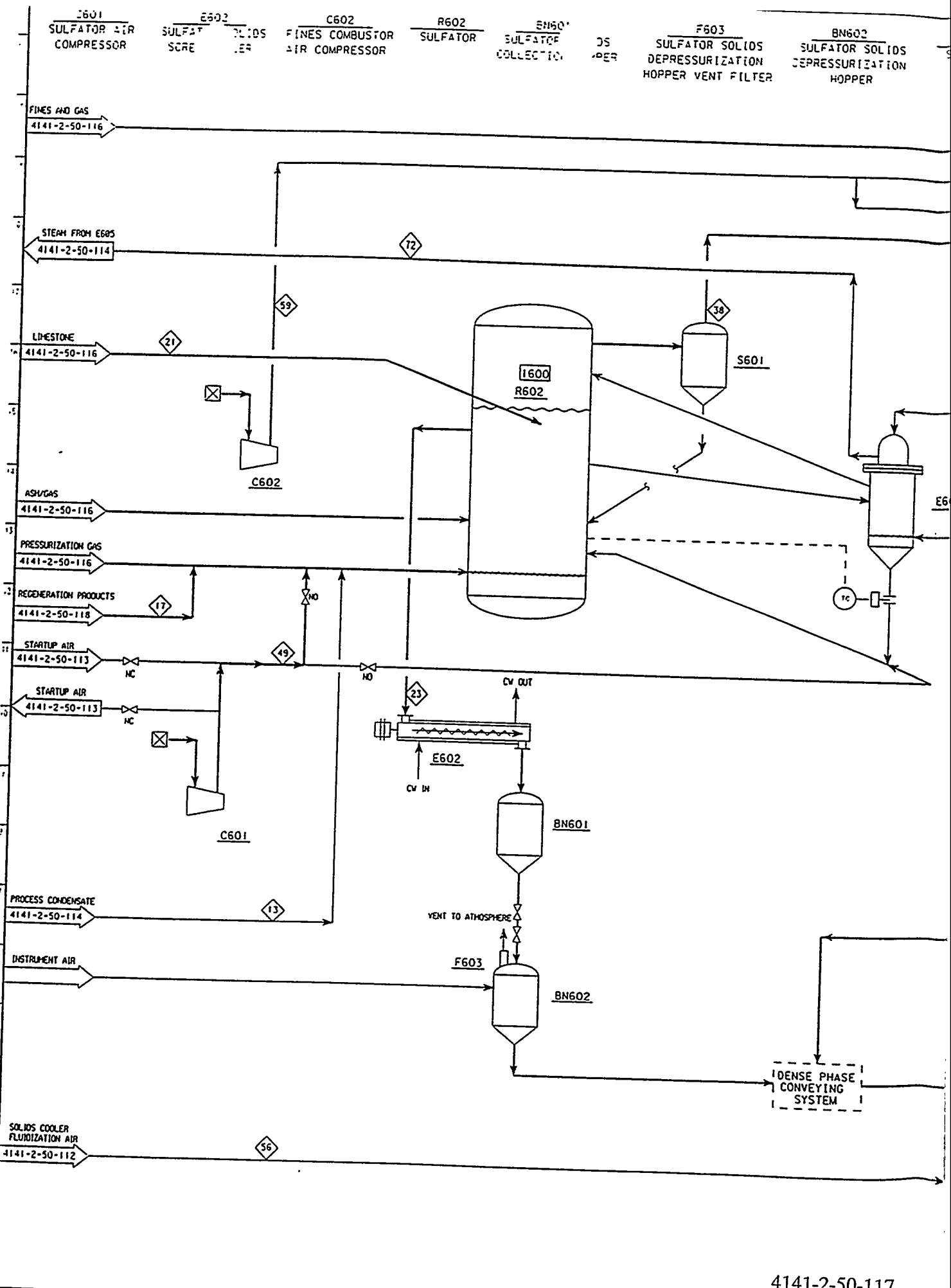
- STREAM ID
- TEMPERATURE, °F
- PRESSURE, psi abs
- DUTY, MMBtu/Hr
- MASS FLOW, LB/Hr

SIERRA PACIFIC POWER COMPANY
TRACY 4 - PIÑON PROJECT, RENO, NV
PROCESS FLOW DIAGRAM

GAS STREAM PARTICULATE REMOVAL -
SECTION 500

15-4141

7514 4141-2-50-116 5


C601
SULFATOR AIR COMPRESSOR
E602
SULFAT
SCRE
C602
FINES COMBUSTOR AIR COMPRESSOR
R602
SULFATOR
BN60
SULFATOR
COLLECTIO
F603
SULFATOR SOLIDS DEPRESSURIZATION HOPPER VENT FILTER
BN602
SULFATOR SOLIDS DEPRESSURIZATION HOPPER
FINES AND GAS
4141-2-50-116
STEAM FROM E605
4141-2-50-114
72
59
38
LIMESTONE
4141-2-50-116
21
1600
R602
S601
C602
ASH/GAS
4141-2-50-116
PRESSURIZATION GAS
4141-2-50-116
REGENERATION PRODUCTS
4141-2-50-118
17
NO
STARTUP AIR
4141-2-50-113
NC
49
NO
STARTUP AIR
4141-2-50-113
NC
23
CV OUT
E602
CV IN
C601
BN601
PROCESS CONDENSATE
4141-2-50-114
13
VENT TO ATHOSPHERE
INSTRUMENT AIR
F603
BN602
DENSE PHASE CONVEYING SYSTEM
SOLIDS COOLER FLUIDIZATION AIR
4141-2-50-112
56

4141-2-50-117

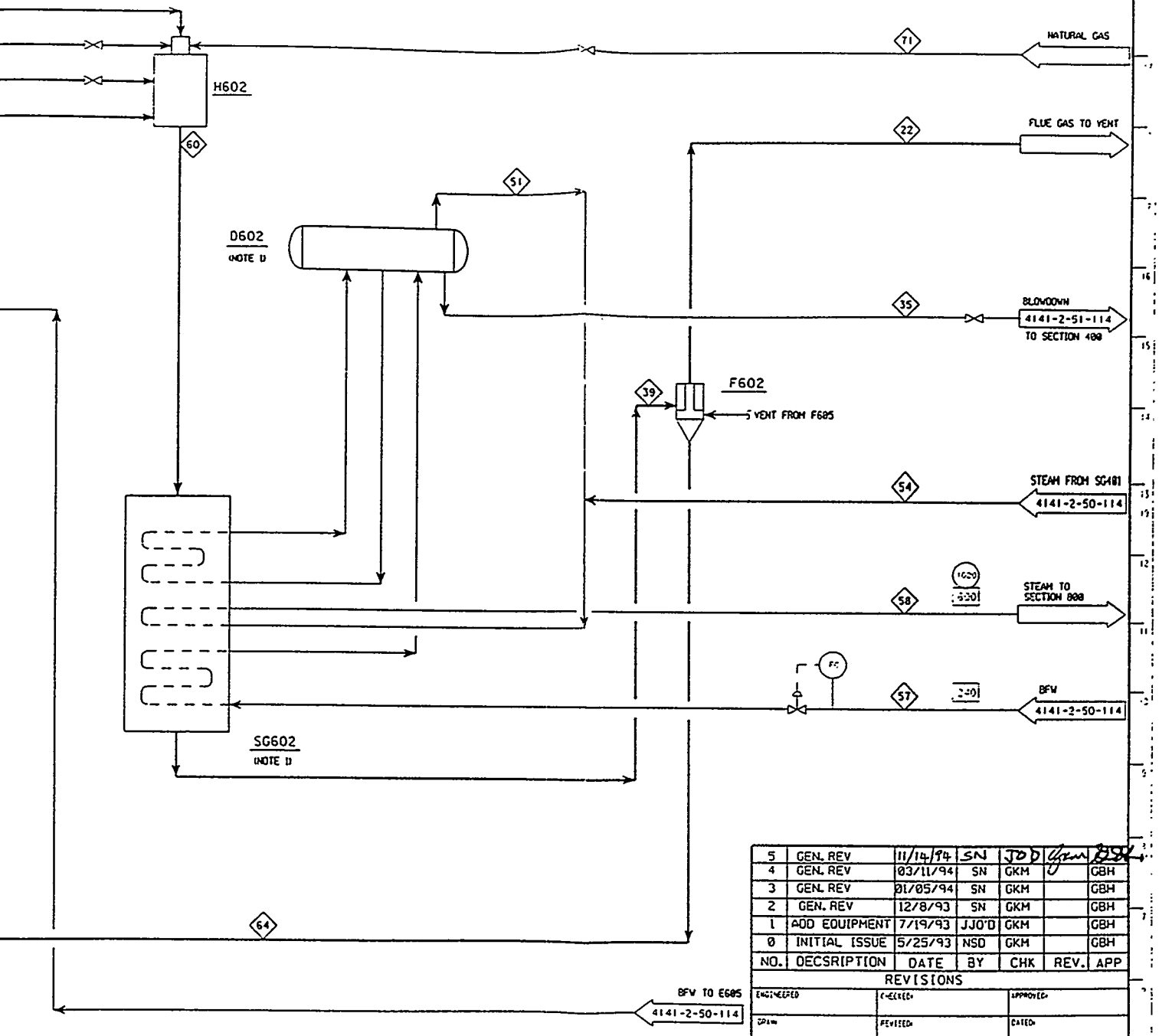
E605
PRIMARY SOLIDS
COOLER

H602
FINES
COMBUSTOR

SG602
HEAT RECOVERY
STEAM GENERATOR

D602
HRSG
STEAM DRUM

F602
SULFATOR FLUE GAS
BAG HOUSE FILTER



NO.	DESCRIPTION	DATE	BY	CHK	REV.	APP
5	GEN. REV	11/14/94	SN	JDD		GBH
4	GEN. REV	03/11/94	SN	GKM		GBH
3	GEN. REV	01/05/94	SN	GKM		GBH
2	GEN. REV	12/8/93	SN	GKM		GBH
1	ADD EQUIPMENT	7/19/93	JJO'D	GKM		GBH
0	INITIAL ISSUE	5/25/93	NSD	GKM		GBH

REVISIONS

ENGINEERED	CHECKED	APPROVED
DRAWN	REVISED	DATED

KEY:

- STREAM ID
- TEMPERATURE, °F
- PRESSURE, psi ABS
- DUTY, MMBtu/Hr
- MASS FLOW, LB/Hr

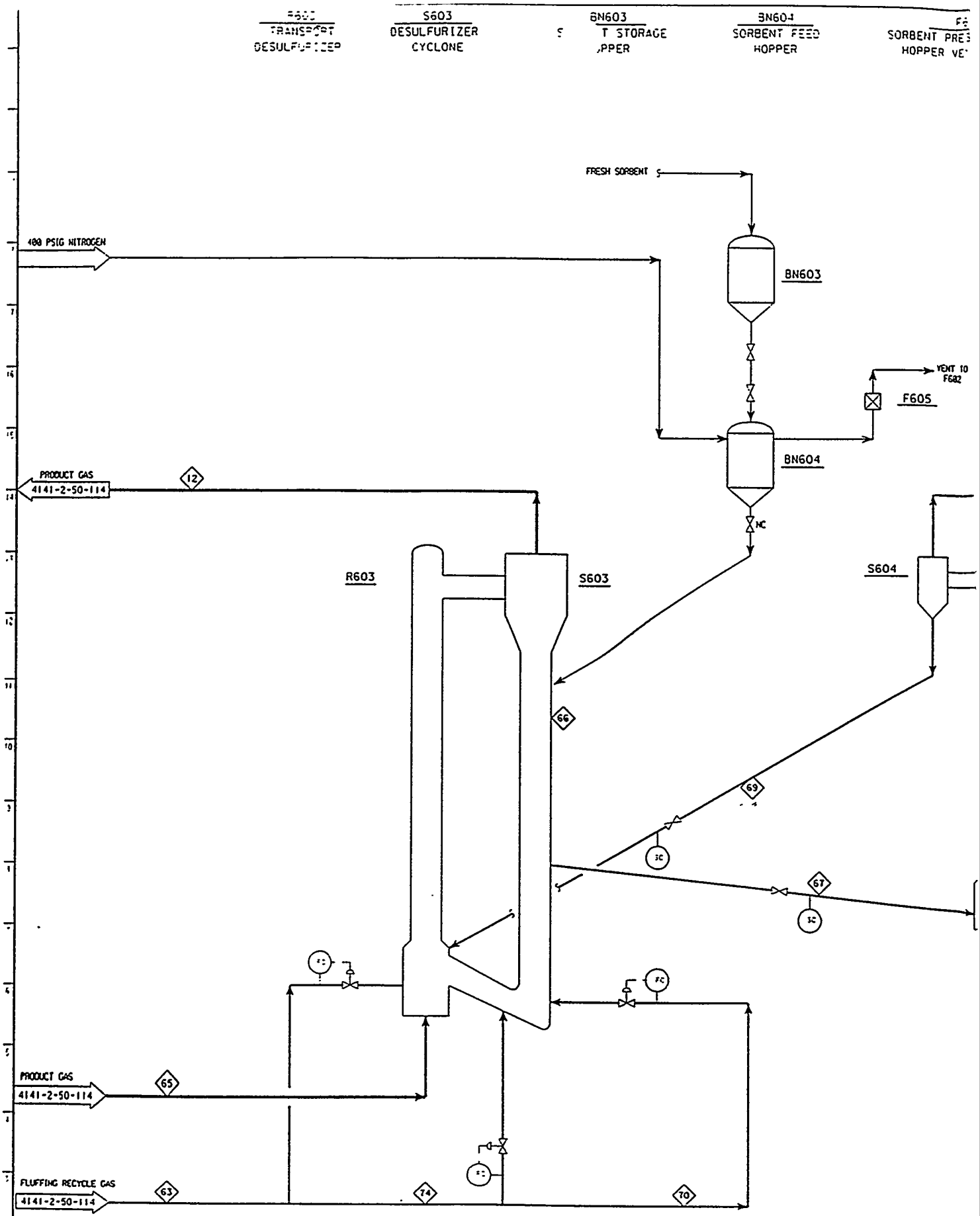
NOTES:
1. D602 AND SG602 ARE TO BE PART OF A PACKAGE BOILER PACKAGE.

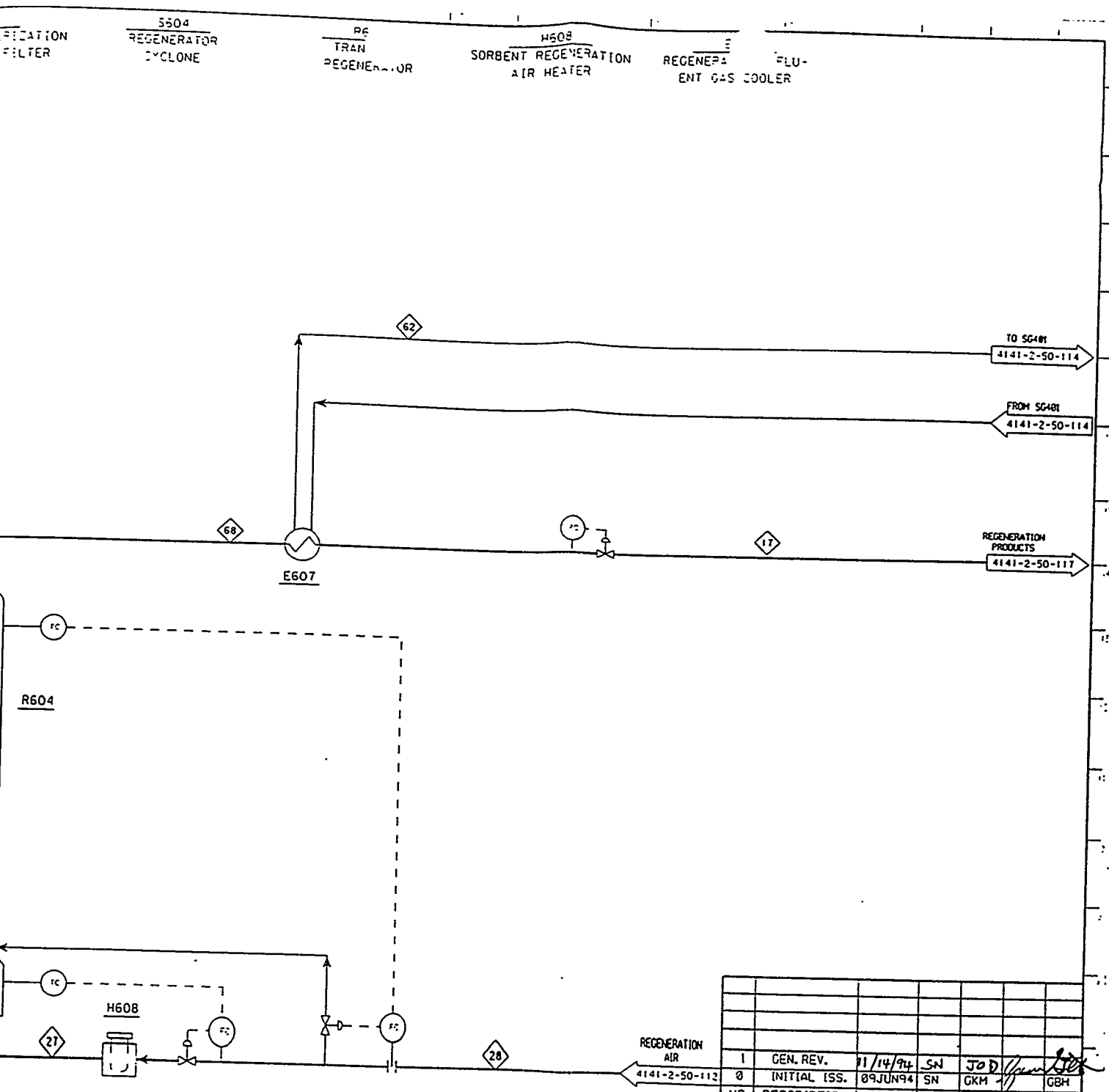
SIERRA PACIFIC POWER COMPANY
TRACY 4 - PIÑON PROJECT, RENO, NV
PROCESS FLOW DIAGRAM

DESULFURIZATION AND WASTE SOLIDS TREATMENT
- SECTION 600

15-4141

7514 4141-2-50-117 5


F602
TRANSPORT
DESULFURIZER
S603
DESULFURIZER
CYCLONE
BN603
T STORAGE
UPPER
BN604
SORBENT FEED
HOPPER
SORBENT PRES
HOPPER VE
FRESH SORBENT
400 PSIG NITROGEN
BN603
VENT TO
F602
F605
BN604
PRODUCT GAS
4141-2-50-114
12
NC
R603
S603
S604
66
69
67
PRODUCT GAS
4141-2-50-114
65
FLUFFING RECYCLE GAS
4141-2-50-114
63
74
70



NO.	DESCRIPTION	DATE	BY	CHK	REV.	APP
1	GEN. REV.	11/14/94	SN	JOD		
0	INITIAL ISS.	09JUN94	SN	GKM		GBH

REVISIONS

ENGINEERED	CHECKED	APPROVED
DRAWN	REVISED	DATED

NOTE: LOW POINT DRAINS TO BE PROVIDED FOR SORBENT REMOVAL AFTER SHUTDOWN AND COOLING

KEY:

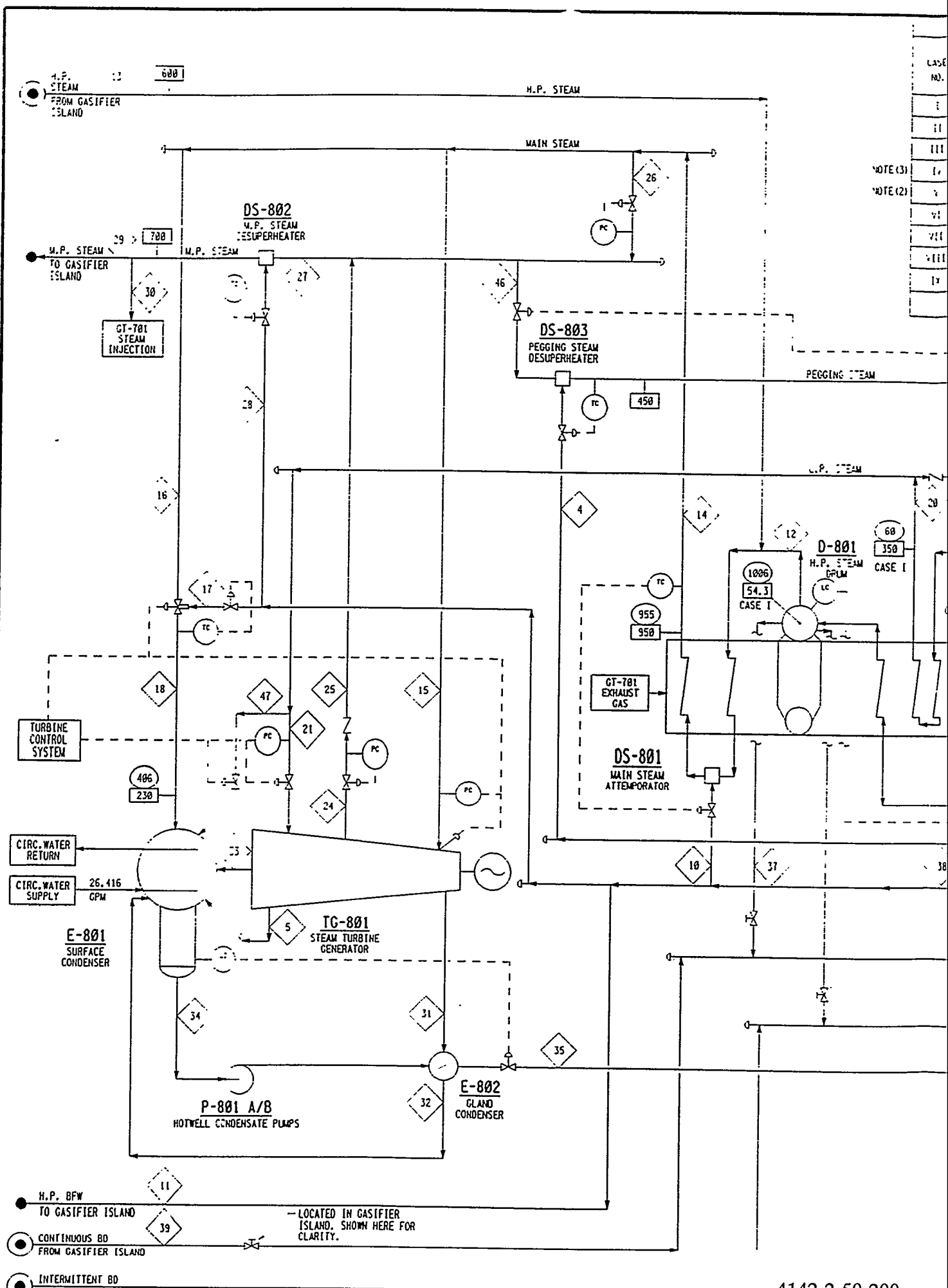
- STREAM ID
- TEMPERATURE, °F
- PRESSURE, psi abs
- DUTY, MMBtu/Hr
- MASS FLOW, Lb/Hr

SIERRA PACIFIC POWER COMPANY
TRACY 4 - PIÑON PROJECT, RENO, NV
PROCESS FLOW DIAGRAM

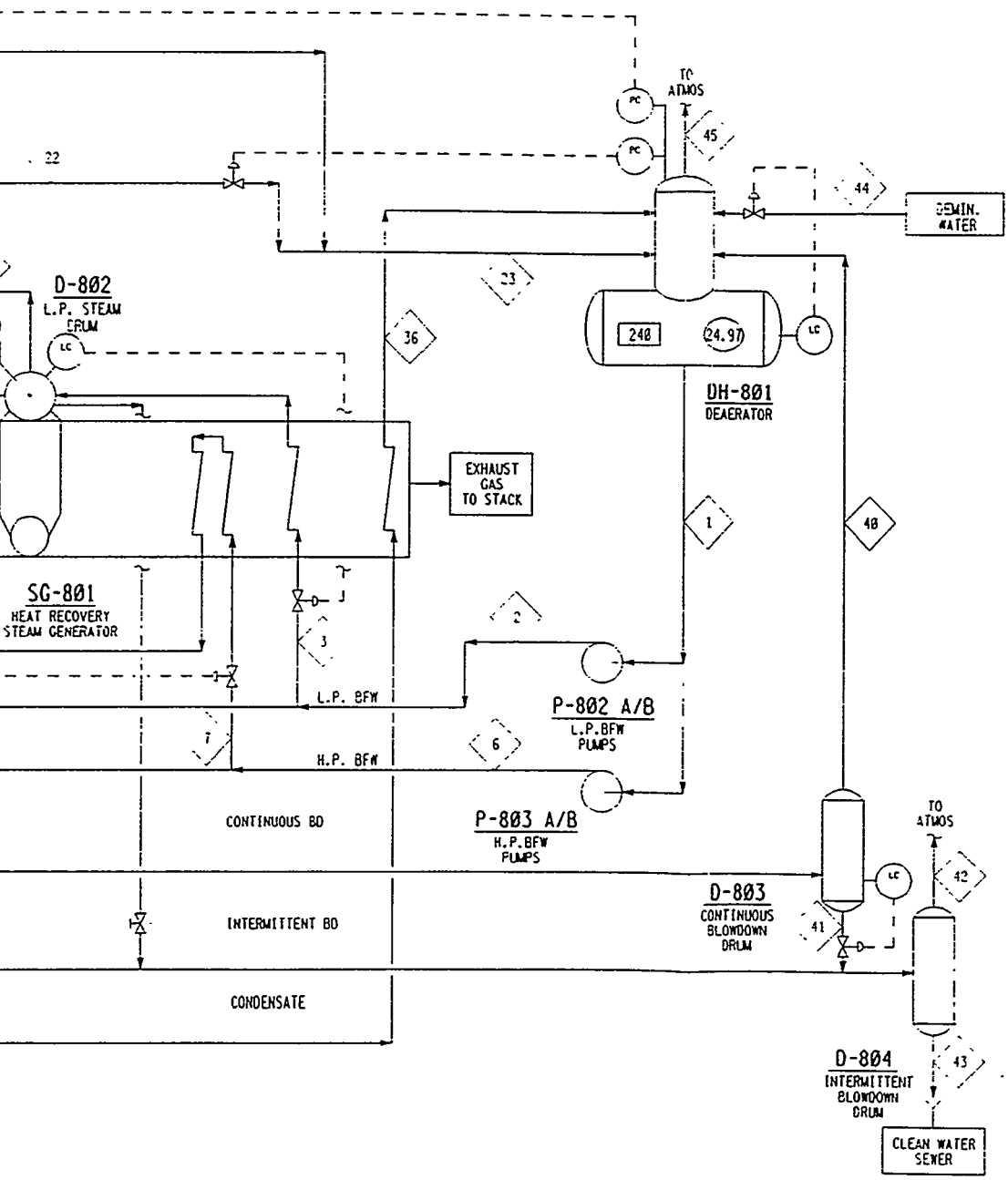
TRANSPORT DESULFURIZER - SECTION 600

15-4141

7514 4141-2-50-113 1


H.P. STEAM FROM GASIFIER ISLAND
600
H.P. STEAM
MAIN STEAM
DS-802
M.P. STEAM DESUPERHEATER
M.P. STEAM TO GASIFIER ISLAND
700
M.P. STEAM
GT-701 STEAM INJECTION
DS-803
PEGGING STEAM DESUPERHEATER
450
PEGGING STEAM
L.P. STEAM
D-801
H.P. STEAM DRUM
CASE I
1006
54.3
CASE I
955
950
GT-701 EXHAUST GAS
DS-801
MAIN STEAM ATTEMPORATOR
TURBINE CONTROL SYSTEM
406
230
CIRC. WATER RETURN
CIRC. WATER SUPPLY
26,416
GPM
E-801
SURFACE CONDENSER
TG-801
STEAM TURBINE GENERATOR
P-801 A/B
HOTWELL CONDENSATE PUMPS
E-802
GLAND CONDENSER
H.P. BFW
TO GASIFIER ISLAND
CONTINUOUS BD
FROM GASIFIER ISLAND
INTERMITTENT BD
FROM GASIFIER ISLAND
LOCATED IN GASIFIER ISLAND. SHOWN HERE FOR CLARITY.
4142-2-50-200
REVISIONS

						INPUT						
EL FIRED	SUB TEMP. °F	CLASSIFIER LOAD CONDITION	GAS T/G LOAD CONDITION	EXHAUST GAS TO STACK °C	STEAM GEN. BLOWDOWN %	COND. PRESSURE IN. Hg	COND. TEMP °F	C.W. SUPPLY TEMP. °F	C.W. RETURN TEMP. °C	GAS T/G OUTPUT kW	STM. T/G OUTPUT kW	GROSS PLANT OUTPUT kW
YNFUEL	58	100	100	250.6	1.0	2.00	101.1	71.0	94	60,990	46,122	107,112
YNFUEL	55	100	100	251.9	1.0	2.59	110.0	80.5	103.4	57,930	44,746	102,676
YNFUEL	5	100	100	246.6	1.0	1.26	86.2	54.8	77.2	60,480	47,210	107,690
YNFUEL	58	60	40		1.0							
NFUEL/NG	5	100	100	250.2	1.0	3.12	92.5	52.9	72.7	60,020	43,510	103,530
AT. GAS	58	0	100	254.0	1.0	1.20	79.1	61.7	74.4	66,340	25,137	92,077
AT. GAS	58	0	80	249.0	1.0	1.00	79.1			54,040	23,650	77,690
AT. GAS	58	0	60	243.2	1.0	1.00	79.1			34,010	20,544	54,554
OPANE	58	0	100	255.3	1.0	1.00	79.1			68,000	22,863	91,863



NOTES

1. REFER TO DWG. NO. 4142-2-50-201 FOR HEAT MATERIAL BALANCE PROCESS DATA.
2. 70% SYNFUEL. 30% NATURAL GAS.
3. LATER

LEGEND

- MATERIAL BALANCE FLOW STREAM NUMBER
- TEMPERATURE. °F
- PRESSURE. PSIA.UNLESS OTHERWISE NOTED
- FLOW STREAM TO BATTERY LIMITS
- FLOW STREAM FROM BATTERY LIMITS

PROCESS FLOW DIAGRAM
SECTIONS 700 AND 800
BFW/STEAM/CONDENSATE HEAT & MATERIAL BALANCE
TRACY POWER STATION - UNIT NO.4
PIÑON PINE POWER PROJECT RENO, NEVADA

STREAM NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
DESCRIPTION	BFW	L.P. BFW	H.P. BFW	L.P. BFW	T/G DRAIN	H.P. BFW	H.P. BFW			H.P. BFW	H.P. BFW EXPORT	H.P. SAT. STEAM	H.P. STEAM IMPORT	MAIN STEAM	THROT. STEAM	MAIN STEAM BYPASS	H.P. BFW	MAIN STEAM LETDOWN	H.P. SAT. STEAM	H.P. STEAM	STEAM TURBINE ADMISSN	L.P. STEAM	D.H. STEAM	STEAM T/G EXTRACT	STEAM T/G EXTRACT
FLUID STATE	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID			LIQUID	LIQUID	VAPOR	VAPOR	VAPOR	VAPOR	VAPOR	LIQUID	VAPOR	VAPOR	VAPOR	VAPOR	VAPOR	VAPOR	VAPOR	VAPOR
CASE I - SYNFUEL FIRED - 50°F. AMB TEMPERATURE, 100% G																									
FLOW, LB/HR	380,719	45,268	45,268	0	4251	335,451	174,427			1500	159,823	172,683	155,985	330,888	330,888	0	0	0	44,815	44,815	13,510	31,305	31,305	11,856	11,856
TEMPERATURE, °F.	240	240	240	----	179.5	240	240			240	240	545.3	600	950	950	----	----	----	381.4	350	350	350	334.5	794.2	730.5
PRESSURE, PSIA	40	168	168	----	7.49	1,378	1,378			1,378	1,378	1,006	1,028	955	950	----	----	----	68.5	60	60	60	25	485.4	440
ENTHALPY, BTU/LB	288.6	288.6	288.6	----	147.5	288.6	288.6			288.6	288.6	1,192.7	1,247	----	1,478.7	----	----	----	1180.1	1287	1287	1287	1287	1418.2	1418.2
CASE II - SYNFUEL FIRED -95°F. AMB TEMPERATURE, 100% G																									
FLOW, LB/HR	376,858	43,571	43,571	0	4318	333,279	178,487			3356	159,823	168,783	155,985	327,965	327,965	0	0	0	43,135	43,135	13,883	29,252	29,252	11,863	11,863
TEMPERATURE, °F.	240	240	240	----	179.6	240	240			240	240	545.3	600	950	950	----	----	----	381.4	350.1	350.1	350.1	334.8	792.6	789.2
PRESSURE, PSIA	40	168	168	----	7.44	1,378	1,378			1,378	1,378	1006	1,028	955	950	----	----	----	68.5	60	60	60	25	481.1	440
ENTHALPY, BTU/LB	288.6	288.6	288.6	----	147.6	288.6	288.6			288.6	288.6	1,192.7	1,247	----	1,478.7	----	----	----	1180.1	1287.1	1287.1	1287.1	1287.1	1409.5	1409.5
CASE III - SYNFUEL FIRED - 5°F. AMB TEMPERATURE, 100% G																									
FLOW, LB/HR	376,117	44,895	44,895	0	4291	332,822	178,060			1903	159,823	168,981	155,985	326,789	326,789	0	0	0	43,654	43,654	9,445	34,209	34,209	11,867	11,867
TEMPERATURE, °F.	240	240	240	----	178.7	240	240			240	240	545.3	600	950	950	----	----	----	381.4	350.1	350.1	350.1	334.8	791.7	789.4
PRESSURE, PSIA	40	168	168	----	7.31	1,378	1,378			1,378	1,378	1006	1,028	955	950	----	----	----	68.5	60	60	60	25	497.7	440
ENTHALPY, BTU/LB	288.6	288.6	288.6	----	146.7	288.6	288.6			288.6	288.6	1,192.7	1,247	----	1,478.7	----	----	----	1180.1	1287.1	1287.1	1287.1	1287.1	1409.1	1409.1
CASE IV - SYNFUEL FIRED - 50°F. AMB TEMPERATURE, 60% GAS																									
FLOW, LB/HR																									
TEMPERATURE, °F.																									
PRESSURE, PSIA																									
ENTHALPY, BTU/LB																									
CASE V - SYNFUEL/NATURAL GAS COFIRED - 5°F. AMB TEMPERA																									
FLOW, LB/HR	364,529	49,689	49,689	0	4,886	314,928	182,628			3,348	123,889	184,343	128,675	308,359	285,858	0	0	0	49,113	49,113	16,145	32,968	32,968	0	0
TEMPERATURE, °F.	240	240	240	----	175.4	240	240			240	240	545.3	600	950	950	----	----	----	381.4	349.3	349.3	349.3	333.7	----	----
PRESSURE, PSIA	40	168	168	----	6.78	1,378	1,378			1,378	1,378	1,006	1,028	955	950	----	----	----	68.5	60	60	60	25	----	----
ENTHALPY, BTU/LB	288.6	288.6	288.6	----	143.4	288.6	288.6			288.6	288.6	1,192.7	1,247	----	1,478.7	----	----	----	1180.1	1286.6	1286.6	1286.6	1286.6	----	----
CASE VI - NATURAL GAS FIRED - 50°F. AMB TEMPERATURE, 0%																									
FLOW, LB/HR	265,550	47,266	47,266	0	2788	218,284	183,747			29,276	0	181,919	0	211,183	159,508	0	0	0	46,793	46,793	23,575	23,218	23,218	0	0
TEMPERATURE, °F.	240	240	240	----	153.2	240	240			240	----	545.3	----	950	950	----	----	----	381.4	348.9	348.9	348.9	333.3	----	----
PRESSURE, PSIA	40	168	168	----	4.82	1,378	1,378			1,378	----	1,006	----	955	950	----	----	----	68.5	60	60	60	25	----	----
ENTHALPY, BTU/LB	288.6	288.6	288.6	----	121.1	288.6	288.6			288.6	----	1,192.7	----	----	1,478.7	----	----	----	1,180.1	1286.4	1286.4	1286.4	1286.4	----	----
CASE VII - NATURAL GAS FIRED - 50°F. AMB TEMPERATURE, 0%																									
FLOW, LB/HR	237,596	36,265	36,265	0	2,689	201,391	160,830			36,265	0	159,222	0	195,425	159,222	0	0	0	37,958	37,958	16,687	21,271	21,271	0	0
TEMPERATURE, °F.	240	240	240	----	149.8	240	240			240	----	545.3	----	950	950	----	----	----	381.4	349.8	349.8	349.8	334.3	----	----
PRESSURE, PSIA	40	168	168	----	3.78	1,378	1,378			1,378	----	1,006	----	955	950	----	----	----	68.5	60	60	60	25	----	----
ENTHALPY, BTU/LB	288.6	288.6	288.6	----	1067.4	288.6	288.6			288.6	----	1,192.7	----	----	1,478.7	----	----	----	1,180.1	1,286.9	1,286.9	1,286.9	1,286.9	----	----
CASE VIII - NATURAL GAS FIRED - 50°F. AMB TEMPERATURE, 0																									
FLOW, LB/HR	197,808	29,749	29,749	0	2,434	168,651	129,858			35,171	0	128,559	0	163,729	134,813	0	0	0	29,451	29,451	12,151	17,300	17,300	0	0
TEMPERATURE, °F.	240	240	240	----	142.8	240	240			240	----	545.3	----	950	950	----	----	----	381.4	351.3	351.3	351.3	336	----	----
PRESSURE, PSIA	40	168	168	----	3.18	1,378	1,378			1,378	----	1,006	----	955	950	----	----	----	68.5	60	60	60	25	----	----
ENTHALPY, BTU/LB	288.6	288.6	288.6	----	111.6	288.6	288.6			288.6	----	1192.7	----	----	1,478.7	----	----	----	1,180.1	1,287.7	1,287.7	1,287.7	1,287.7	----	----
CASE IX - PROPANE GAS FIRED - 50°F. AMB TEMPERATURE, 0%																									
FLOW, LB/HR	269,472	47,936	47,936	0	2,618	221,536	185,984			28,286	0	184,845	0	212,866	146,127	0	0	0	47,456	47,456	23,284	24,172	24,172	0	0
TEMPERATURE, °F.	240	240	240	----	149.9	240	240			240	----	545.3	----	950	950	----	----	----	381.4	348.8	348.8	333.3	333.3	----	----
PRESSURE, PSIA	40	168	168	----	3.71	1,378	1,378			1,378	----	1,006	----	955	950	----	----	----	68.5	60	60	60	25	----	----
ENTHALPY, BTU/LB	288.6	288.6	288.4	----	117.8	288.6	288.6			288.6	----	1,192.7	----	----	1478.	----	----	----	1,180.1	1,286.4	1,286.4	1,286.4	1,286.4	----	----

4142-2-50-201

REVISIONS

27	28	29	30	31	32	33	34	35	37	38	39	40	41	42	43	44	45	46	47
M.P. STEAM	H.P. BFW	M.P. STEAM EXPORT	GAS TURB INJECT. STEAM	GLAND STEAM	GLAND STEAM COND.	STEAM TURBINE EXHAUST	LOWELL COND.	HOTWELL COND.	HOTWELL COND.	BLOW-DOWN	BLOW-DOWN EXPORT	FLASH STEAM	BLOW-DOWN DRAIN	BLOW-DOWN VENT	BLOW-DOWN DRAIN	DEMIN WATER	CW VENT	CW REGEN STEAM	L.P. STEAM BYPASS
VAPOR	LIQUID	VAPOR	VAPOR	VAPOR	LIQUID	WET VAPOR	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	VAPOR	LIQUID	VAPOR	LIQUID	LIQUID	VAPOR	VAPOR	VAPOR

ER LOAD, 100% GAS TURBINE LOAD

1,856	501	12,357	0	278	278	327,142	331,743	331,743	331,743	744	453	3118	1,723	3,592	172	2,420	16,247	388	0	0
798.5	248	788	----	----	----	----	181.1	182.6	151	545.3	381.4	553	258.4	258.4	284.2	284.2	68	248	----	----
448	1,378	425	----	----	----	0.98	0.98	68	50	1,206	68.5	1075	38	38	12.56	12.56	95	24.97	----	----
1478.2	288.6	1361.6	----	----	92.9	996.66	69.1	78.7	118.9	542.6	271.2	553.9	1164.2	219.1	1147.5	172.3	28	1868.5	----	----

ER LOAD, 100% GAS TURBINE LOAD

1,863	493	12,356	0	278	278	325,397	329,985	329,985	329,985	1,724	436	3118	1,709	3,549	170	2,379	16,205	388	0	0
789.2	248	788	----	----	----	----	118	111.4	156.7	545.3	381.4	553	258.4	258.4	284.2	284.2	68	248	----	----
448	1,378	425	----	----	----	1.27	1.27	68	50	1,206	68.5	1075	38	38	12.56	12.56	95	24.97	----	----
1489.5	288.6	1361.6	----	----	92.9	1008.4	77.9	79.5	124.7	542.6	271.2	553.9	1164.2	219.1	1147.5	172.3	28	1868.5	----	----

ER LOAD, 100% GAS TURBINE LOAD

1,867	489	12,356	0	278	278	319,725	324,286	324,286	324,286	1,706	441	3118	1,709	3,556	170	33	16,211	388	0	0
788.4	248	788	----	----	----	----	96.2	87.7	140	545.3	381.4	553	258.4	258.4	284.2	284.2	68	248	----	----
448	1,378	425	----	----	----	0.62	0.62	68	50	1206	68.5	1075	38	38	12.56	12.56	95	24.97	----	----
1489.1	288.6	1361.6	----	----	92.9	976.9	54.2	55.9	107.9	542.6	271.2	553.9	1164.2	219.1	1147.5	172.3	28	1868.5	----	----

R LOAD, 40% GAS TURBINE LOAD NOTE (3)

100% GASIFIER LOAD, 100% GAS TURBINE LOAD NOTE (2)

22,508	2287	9,564	15,231	278	278	297,639	301,995	301,995	301,995	1862	496	2414	1518	3,254	156	3,898	28,348	388	0	0
919.2	248	788	788	----	----	----	82.5	84.1	144.6	545.3	381.4	553	258.4	258.4	284.2	284.2	68	248	----	----
448	1,378	425	425	----	----	0.55	0.55	68	50	1206	68.5	1075	38	38	12.56	12.56	95	24.97	----	----
1478.7	288.6	1,361.6	1,361.6	----	92.9	973.2	50.5	52.2	112.5	543..5	271.2	553.9	1164.2	219.1	1147.5	172.3	28	1868.5	----	----

FIER LOAD, 100% GAS TURBINE LOAD

51,687	5,264	0	56,951	278	278	180,818	183,875	183,875	183,875	1,838	473	0	657	1,654	72	1,582	58,984	388	0	0
919.2	248	----	788	----	----	----	79.1	81.2	178	545.3	381.4	----	258.4	258.4	284.2	284.2	68	248	----	----
448	1,378	----	425	----	----	0.49	0.49	68	50	1206	68.5	----	38	38	12.56	12.56	95	24.97	----	----
1478.7	288.6	----	1361.6	----	92.9	977.9	47.1	49.4	138	1192.7	271.2	----	1164.2	219.1	1147.5	172.3	28	1868.5	----	----

IFIER LOAD, 80% GAS TURBINE LOAD

42,814	4356	0	47,170	278	278	166,348	169,299	169,299	169,299	1,688	384	0	574	1,418	68	1,358	48,889	388	0	0
919.2	248	----	788	----	----	----	79.1	81.6	165.5	545.3	381.4	----	258.4	258.4	284.2	284.2	68	248	----	----
448	1,378	----	425	----	----	0.49	0.49	68	58	1806	68.1	----	38	38	12.56	12.56	78	24.97	----	----
1478.7	288.6	----	1361.6	----	92.9	978.4	47.1	49.7	133.5	1192.7	271.2	----	1164.2	219.1	1147.5	172.3	28	1868.6	----	----

SIFIER LOAD, 50% GAS TURBINE LOAD

29,718	3,822	0	32,748	278	278	143,468	146,164	146,164	146,164	1,299	298	0	468	1,134	54	1,188	34,174	388	0	0
919.2	248	----	788	----	----	----	79.1	81.9	163.3	545.3	381.4	----	258.4	258.4	284.2	284.2	68	248	----	----
448	1,378	----	425	----	----	0.49	0.49	68	58	1806	68.1	----	38	38	12.56	12.56	95	24.97	----	----
1478.7	288.6	----	1361.6	----	92.9	980.3	47.1	50.1	131.2	1192.7	271.2	----	1164.2	219.1	1147.5	172.3	28	1868.5	----	----

IFIER LOAD, 100% GAS TURBINE LOAD

66,744	6,886	0	73,550	278	278	166,531	169,411	169,411	169,411	1,859	479	0	664	1,674	68	1,594	75,524	388	0	0
919.2	248	----	788	----	----	----	79.1	81.6	176.4	545.3	381.4	----	258.4	258.4	284.2	284.2	68	248	----	----
448	1,378	----	425	----	----	0.49	0.49	68	50	1806	68.5	----	38	38	12.56	12.56	95	24.97	----	----
1478.7	288.6	----	1361.6	----	92.9	979.9	47.1	49.7	144.4	542.5	1186.1	----	1164.2	219.1	1147.5	172.3	28	1868.5	----	----

NOTES

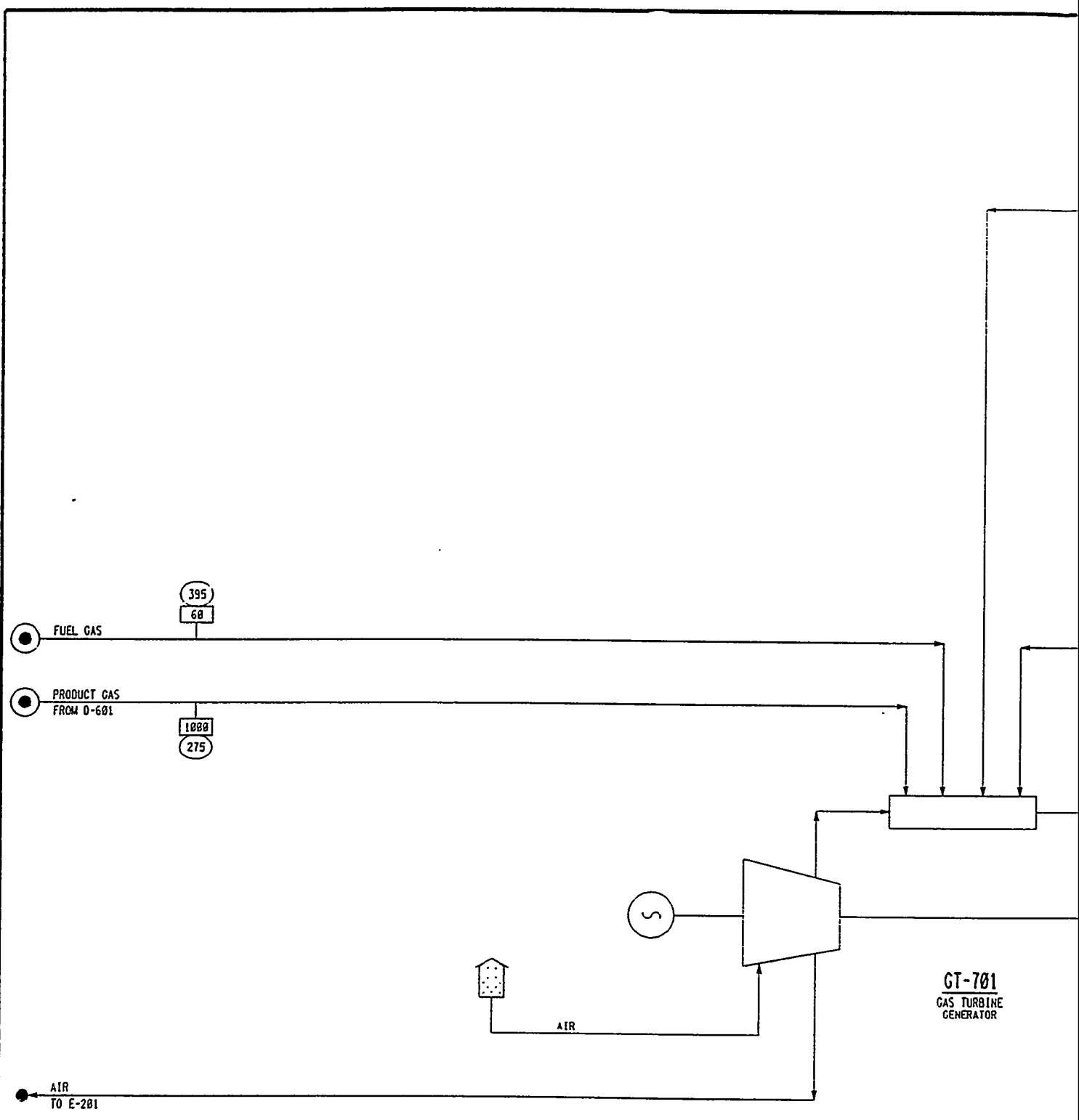
1. REFER TO DWG. NO. 4142-2-50-200 FOR HEAT AND MATERIAL BALANCE DIAGRAM.
2. 70% SYNGAS, 30% NATURAL GAS.
3. LATER

LEGEND

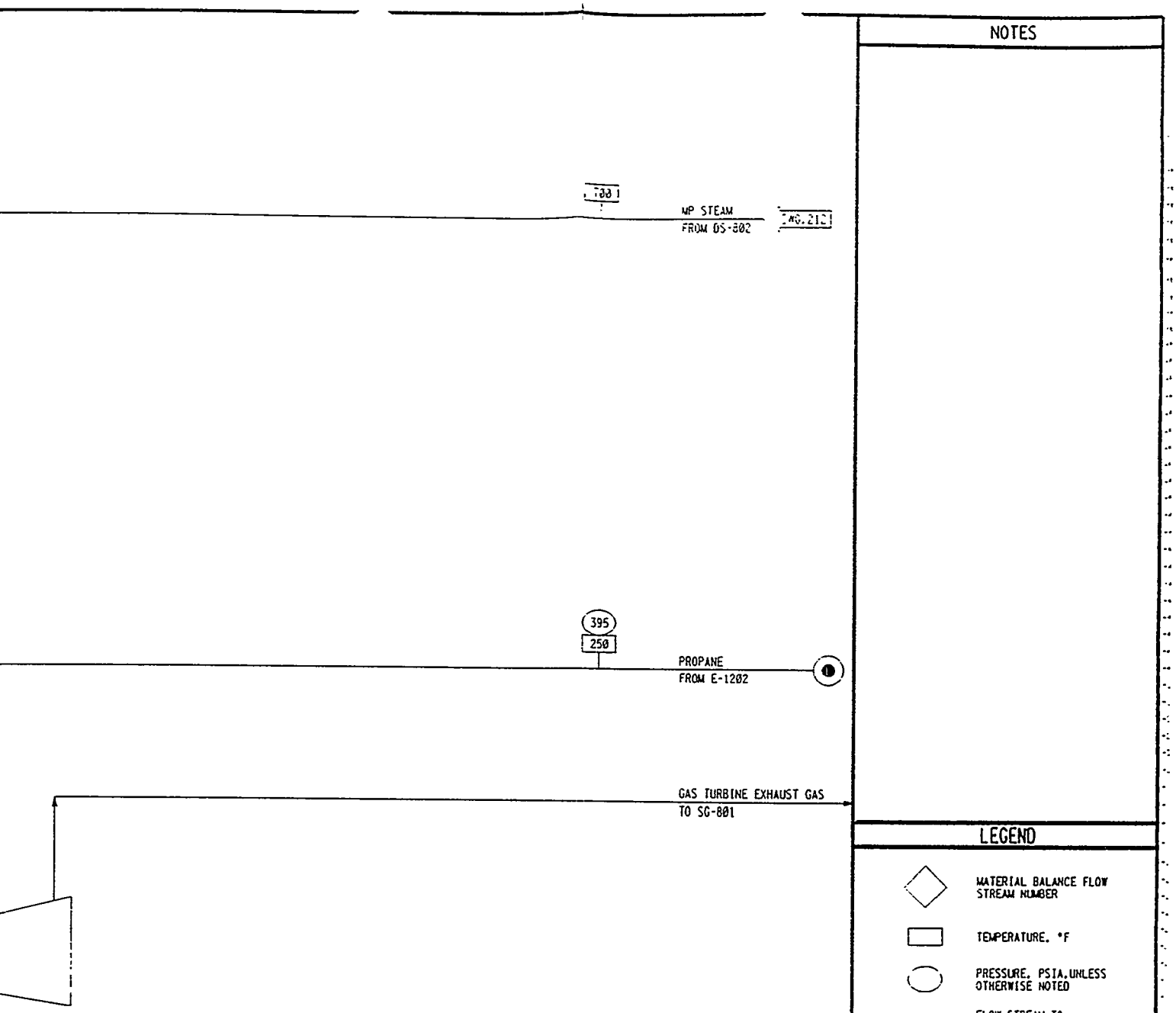
- MATERIAL BALANCE FLOW STREAM NUMBER
- TEMPERATURE, °F
- PRESSURE, PSIA, UNLESS OTHERWISE NOTED
- FLOW STREAM TO BATTERY LIMITS
- FLOW STREAM FROM BATTERY LIMITS

PROCESS FLOW DIAGRAM
SECTIONS 700 AND 800
BFW/STEAM/CONDENSATE HEAT & MATERIAL BALANCE
TRACY POWER STATION - UNIT NO.4
PIÑON PINE POWER PROJECT RENO, NEVADA

DRAWN BY:	C.C	02-FEB-94	SCALE:	NONE	REV


395
60
FUEL GAS
PRODUCT GAS
FROM D-601
1000
275
AIR
AIR
TO E-201
GT-701
GAS TURBINE
GENERATOR

4142-2-50-210



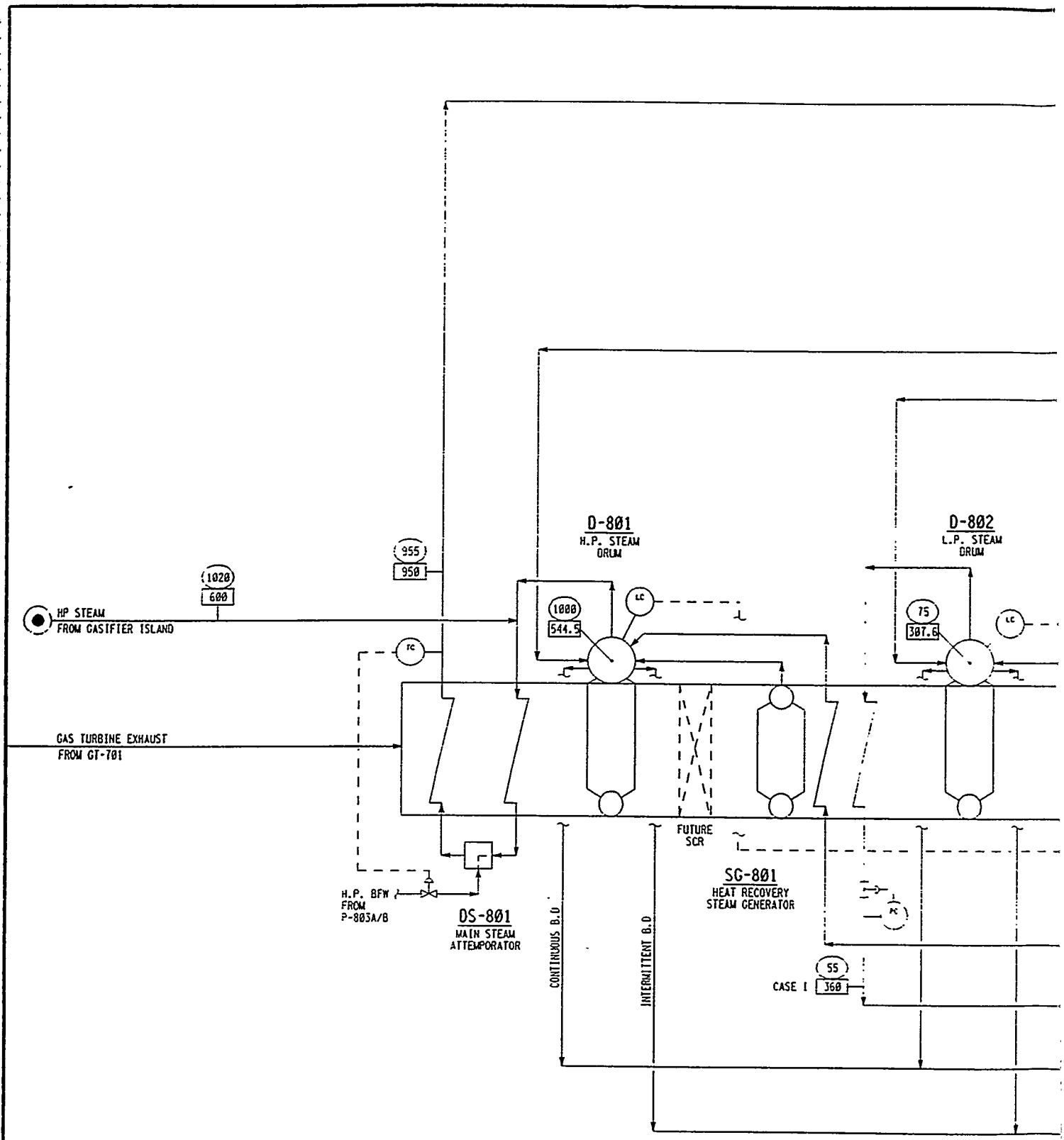
NOTES

LEGEND

- MATERIAL BALANCE FLOW STREAM NUMBER
- TEMPERATURE, °F
- PRESSURE, PSIA, UNLESS OTHERWISE NOTED
- FLOW STREAM TO BATTERY LIMITS
- FLOW STREAM FROM BATTERY LIMITS

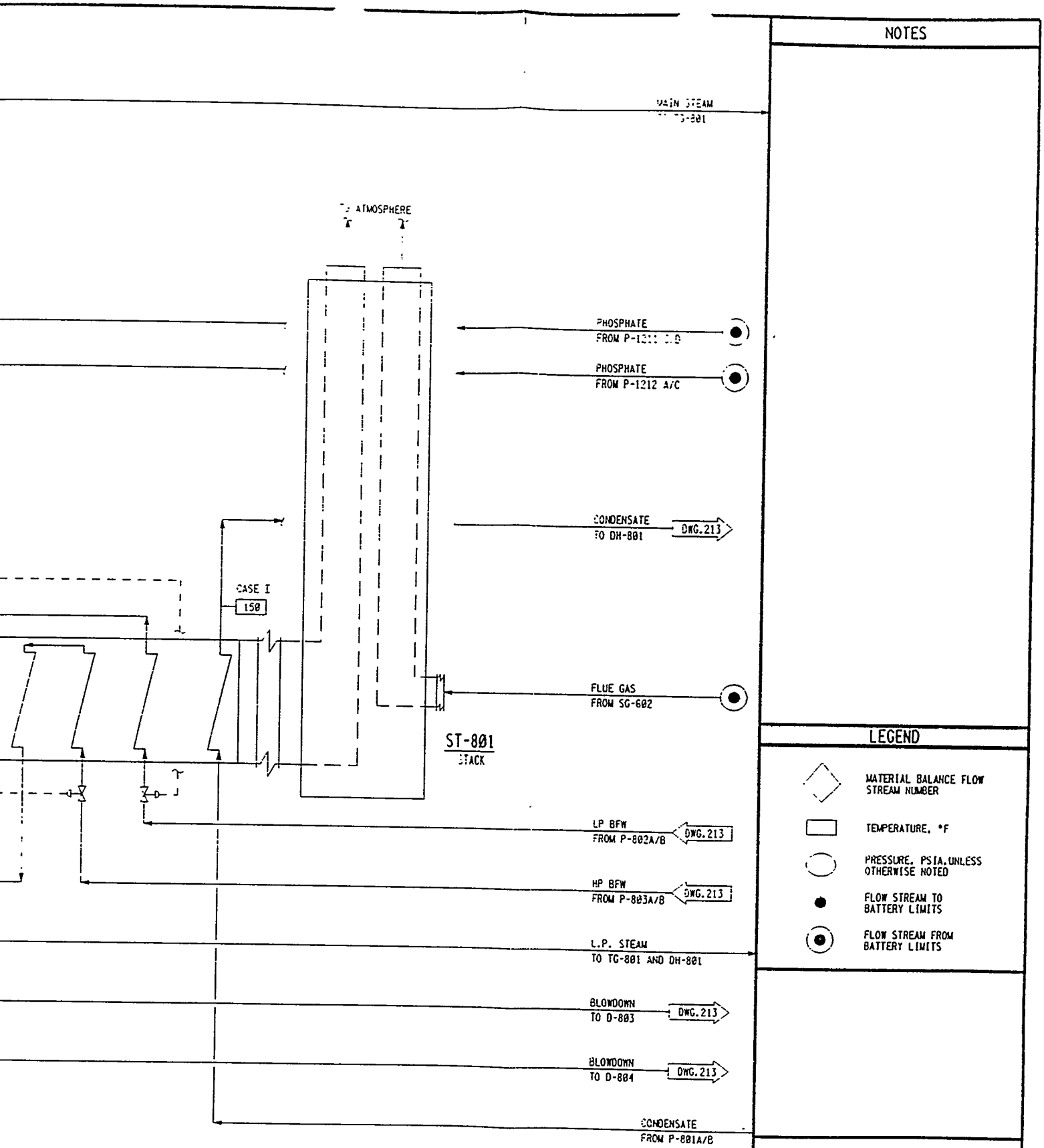
PROCESS FLOW DIAGRAM
SECTION 700
GAS TURBINE GENERATOR

TRACY POWER STATION - UNIT NO. 4
PIÑON PINE POWER PROJECT RENO, NEVADA



4142-2-50-211

REVISIONS

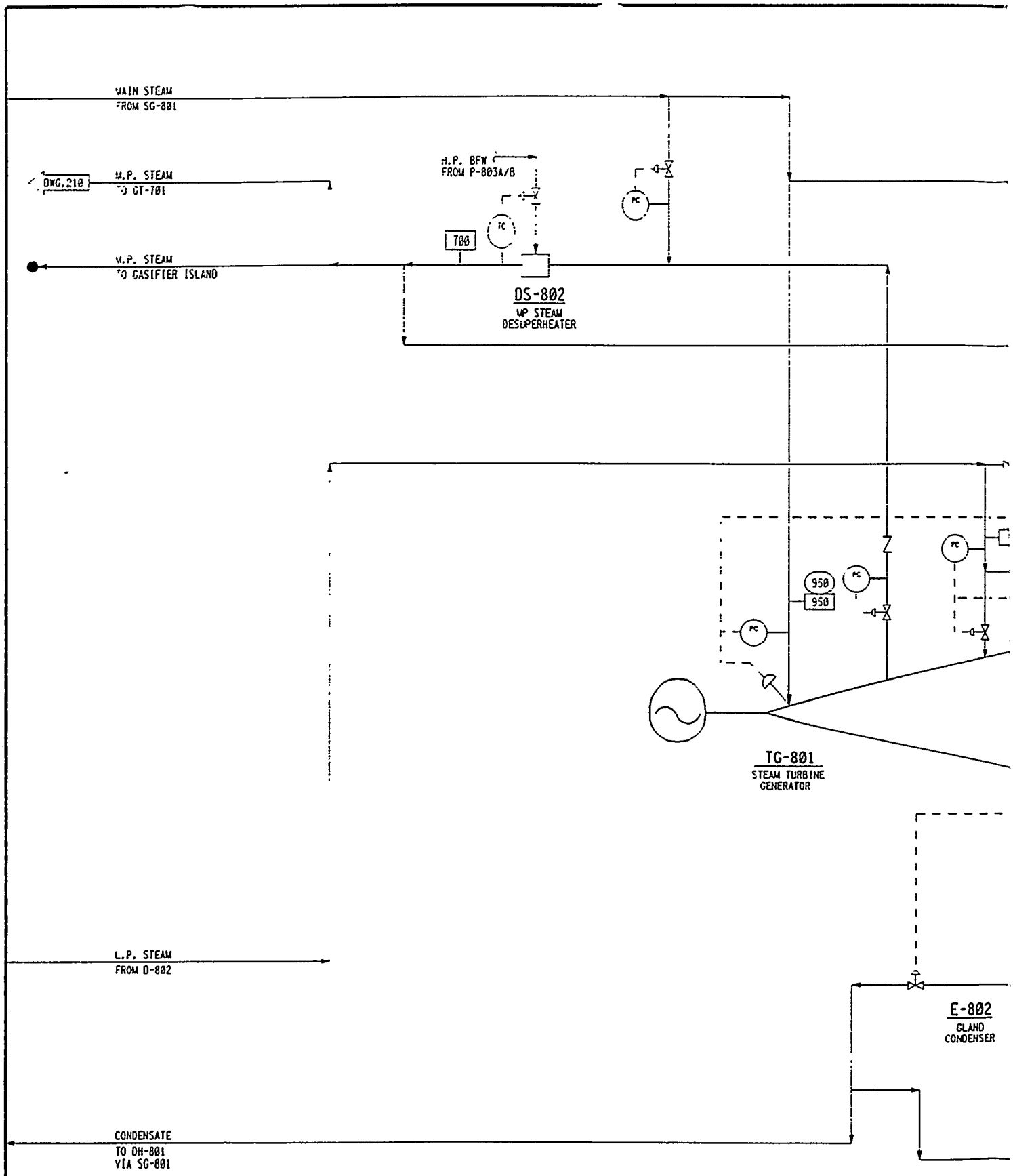


NOTES

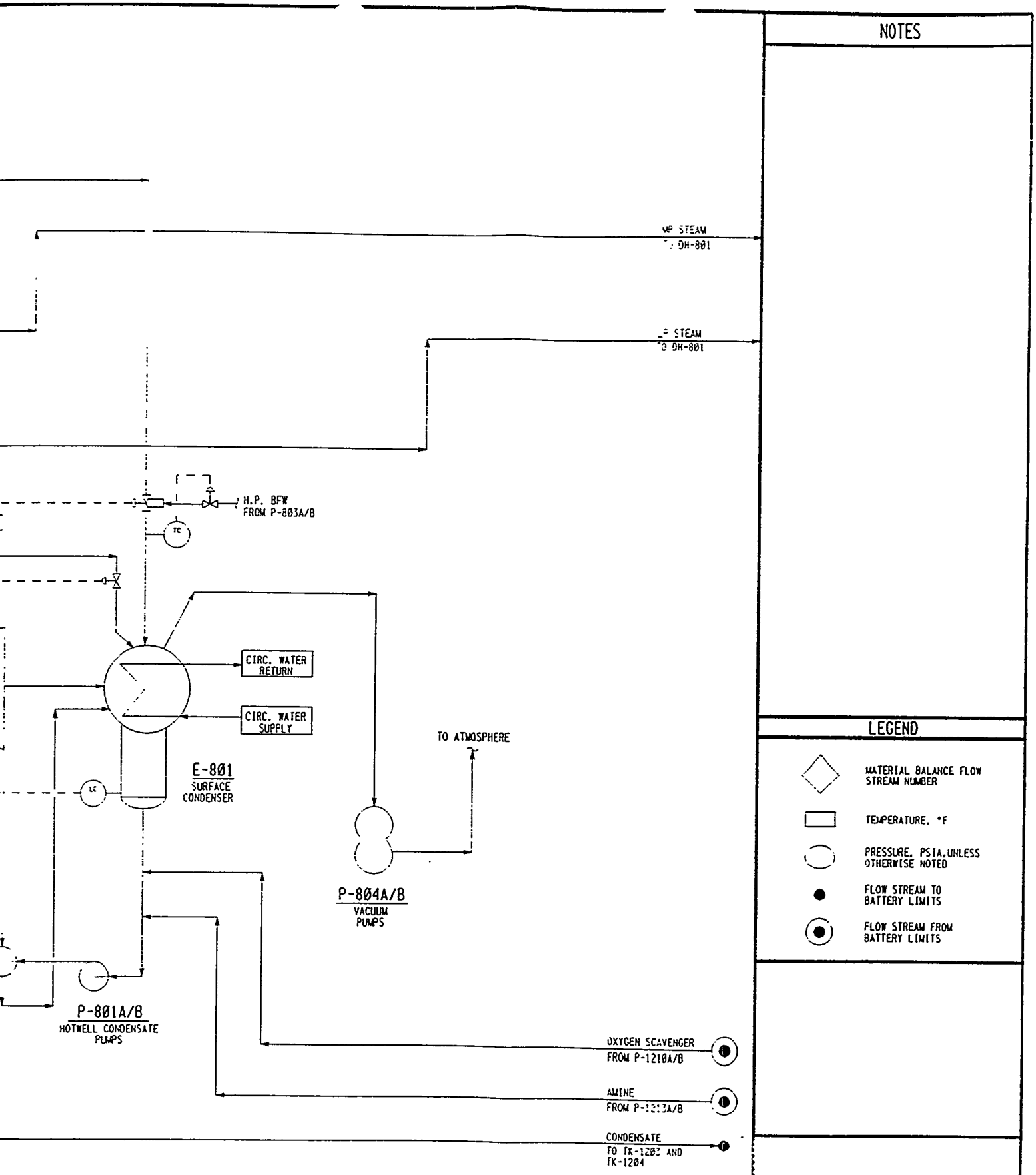
LEGEND

- MATERIAL BALANCE FLOW STREAM NUMBER
- TEMPERATURE, °F
- PRESSURE, PSIA, UNLESS OTHERWISE NOTED
- FLOW STREAM TO BATTERY LIMITS
- FLOW STREAM FROM BATTERY LIMITS

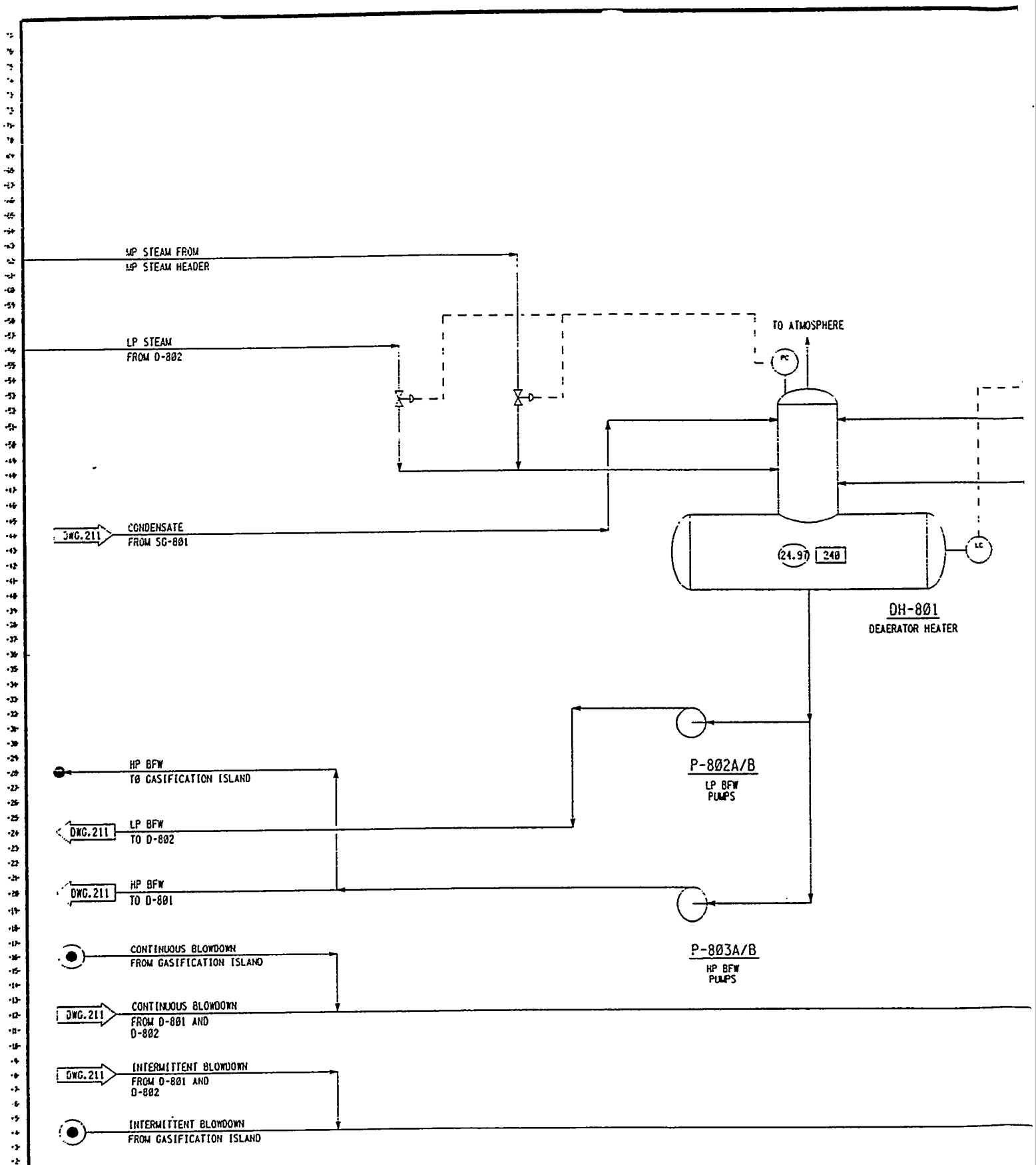
PROCESS FLOW DIAGRAM
SECTION 800
HEAT RECOVERY STEAM GENERATOR
TRACY POWER STATION - UNIT NO. 4
PIÑON PINE POWER PROJECT RENO, NEVADA

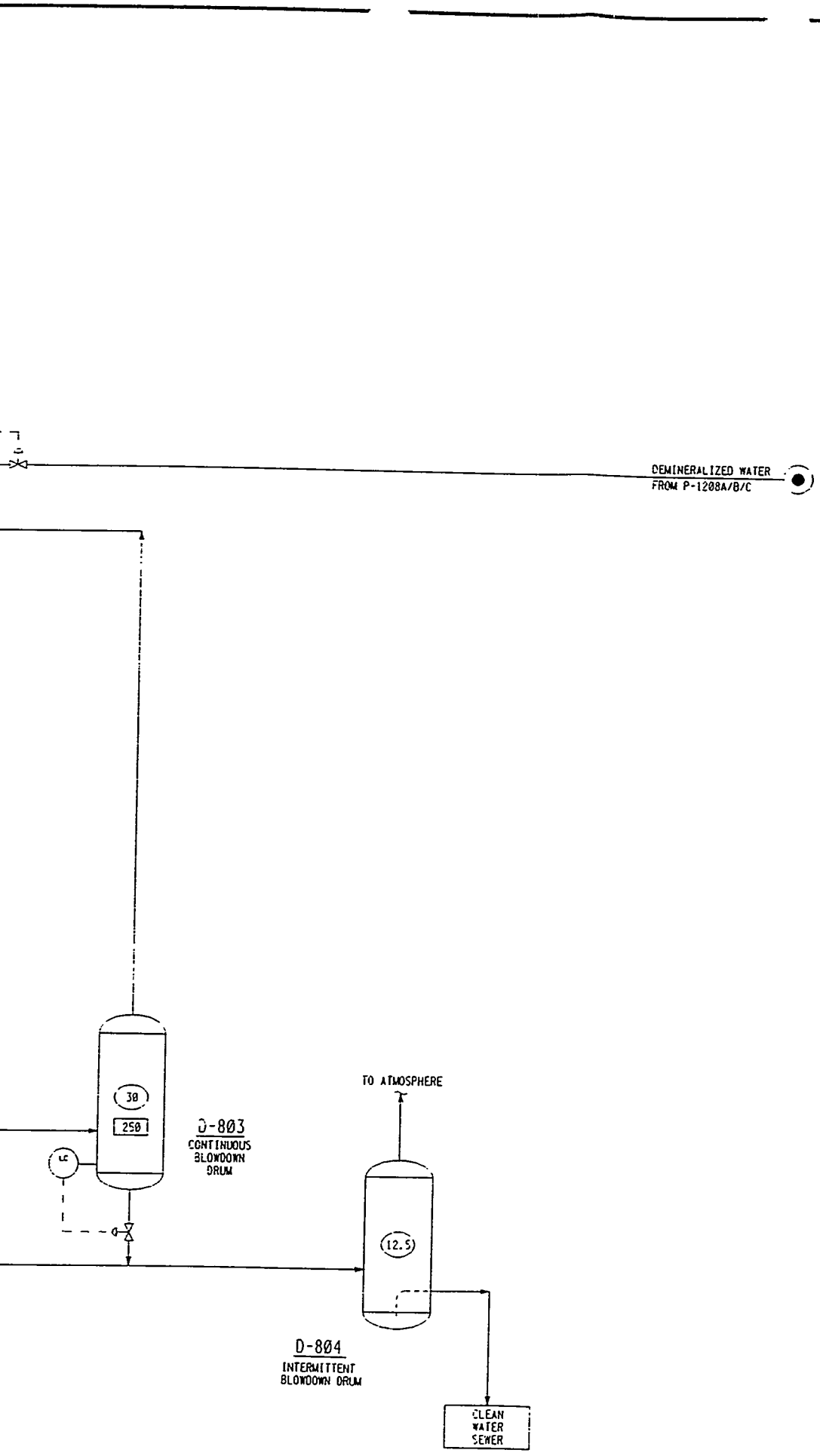

MAIN STEAM
FROM SG-801
DWG.210
M.P. STEAM
TO GT-701
H.P. BFW
FROM P-803A/B
700
M.P. STEAM
TO GASIFIER ISLAND
DS-802
MP STEAM
DESUPERHEATER
950
950
TG-801
STEAM TURBINE
GENERATOR
L.P. STEAM
FROM D-802
E-802
GLAND
CONDENSER
CONDENSATE
TO DH-801
VIA SG-801

4142-2-50-212



PROCESS FLOW DIAGRAM
SECTION 800
STEAM TURBINE GENERATOR
TRACY POWER STATION - UNIT NO. 4
PIÑON PINE POWER PROJECT RENO, NEVADA


MP STEAM FROM
MP STEAM HEADER
LP STEAM
FROM D-802
TO ATMOSPHERE
PC
DWG.211
CONDENSATE
FROM SG-801
LC
24.97
240
DH-801
DEAERATOR HEATER
P-802A/B
LP BFW
PUMPS
HP BFW
TO GASIFICATION ISLAND
DWG.211
LP BFW
TO D-802
DWG.211
HP BFW
TO D-801
P-803A/B
HP BFW
PUMPS
CONTINUOUS BLOWDOWN
FROM GASIFICATION ISLAND
DWG.211
CONTINUOUS BLOWDOWN
FROM D-801 AND
D-802
DWG.211
INTERMITTENT BLOWDOWN
FROM D-801 AND
D-802
INTERMITTENT BLOWDOWN
FROM GASIFICATION ISLAND

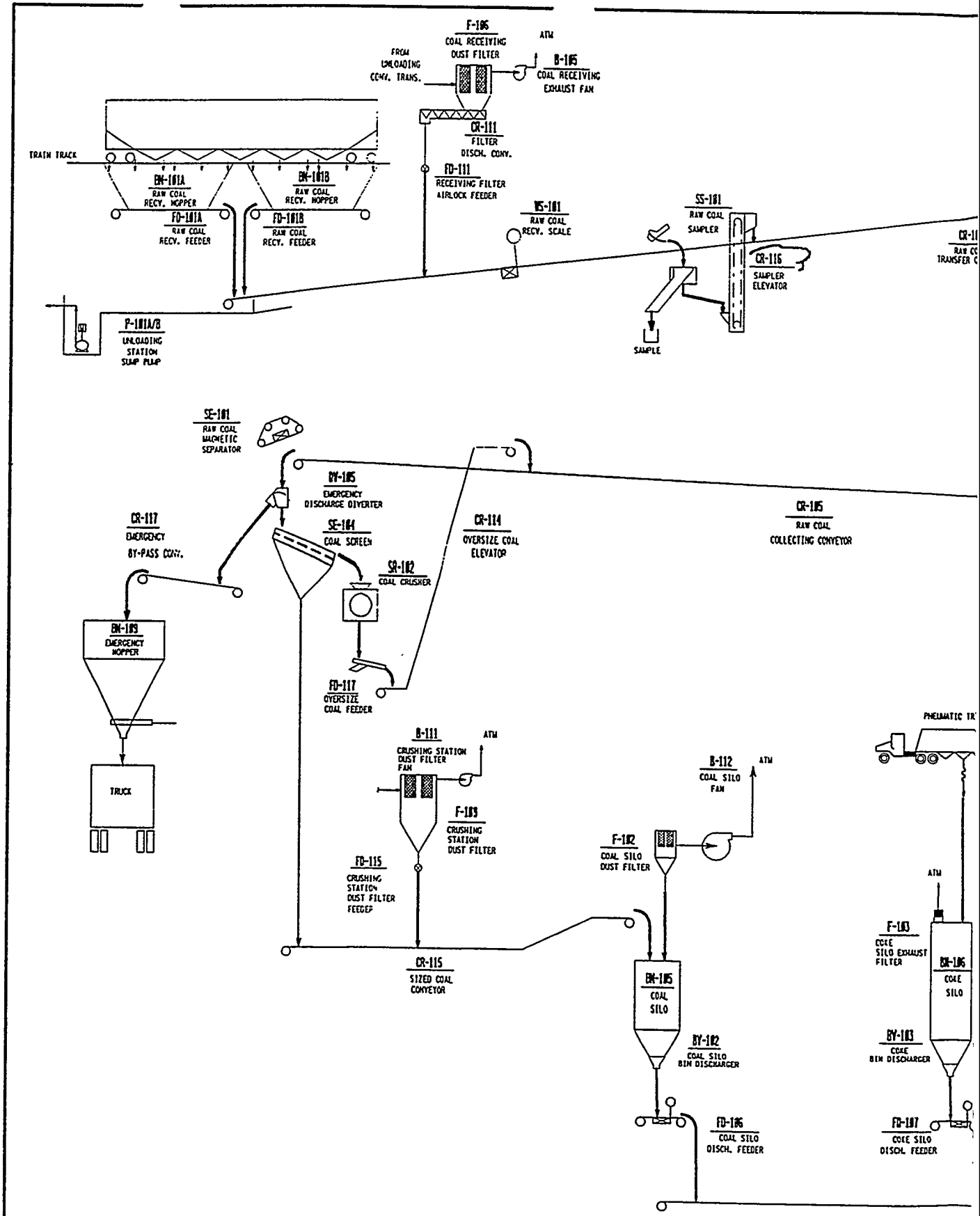


NOTES

LEGEND

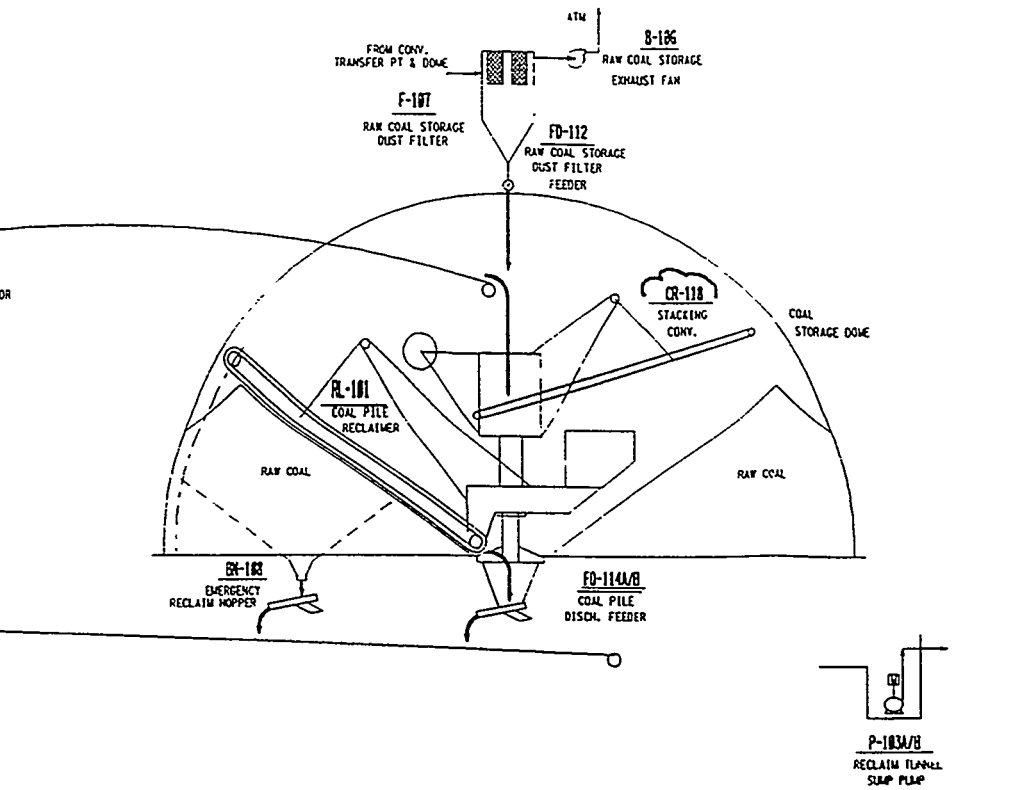
- MATERIAL BALANCE FLOW STREAM NUMBER
- TEMPERATURE, °F
- PRESSURE, PSIA, UNLESS OTHERWISE NOTED
- FLOW STREAM TO BATTERY LIMITS
- FLOW STREAM FROM BATTERY LIMITS

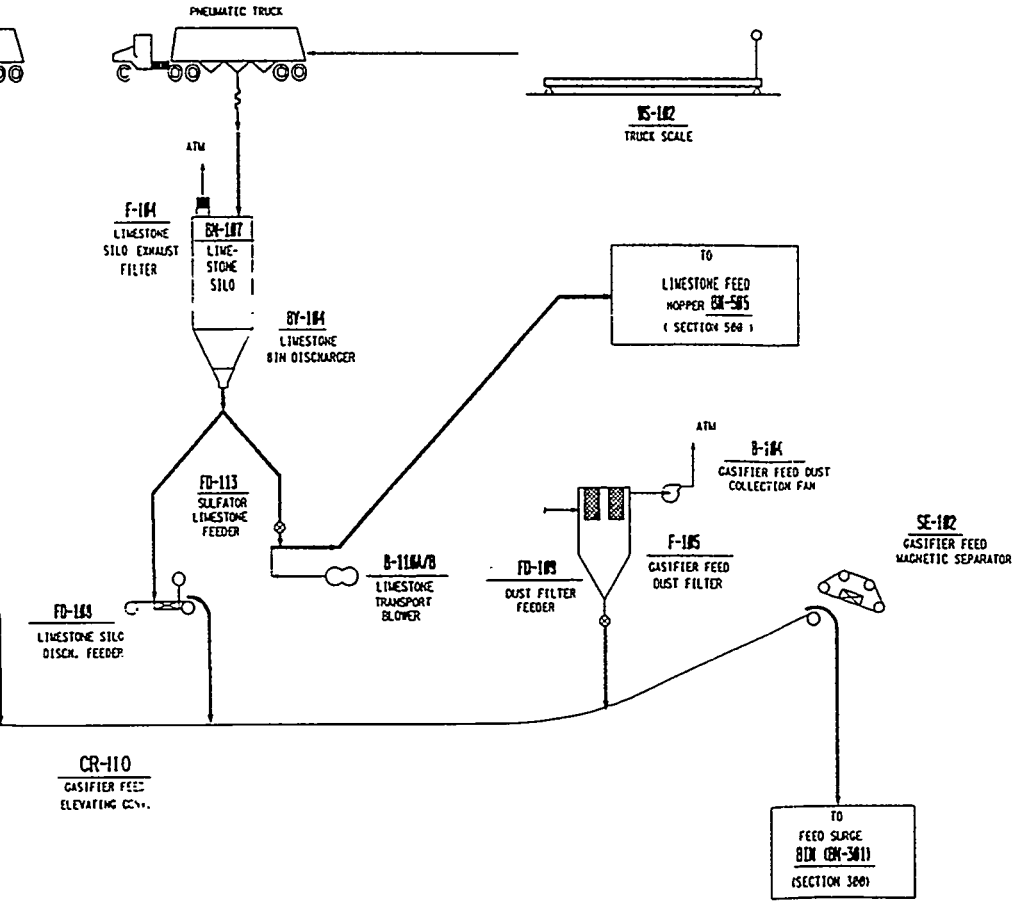
PROCESS FLOW DIAGRAM
SECTION 800
DEAERATOR HEATER & BLOWDOWN DRUMS
TRACY POWER STATION - UNIT NO. 4
PIÑON PINE POWER PROJECT
RENO, NEVADA



4143-2-50-310

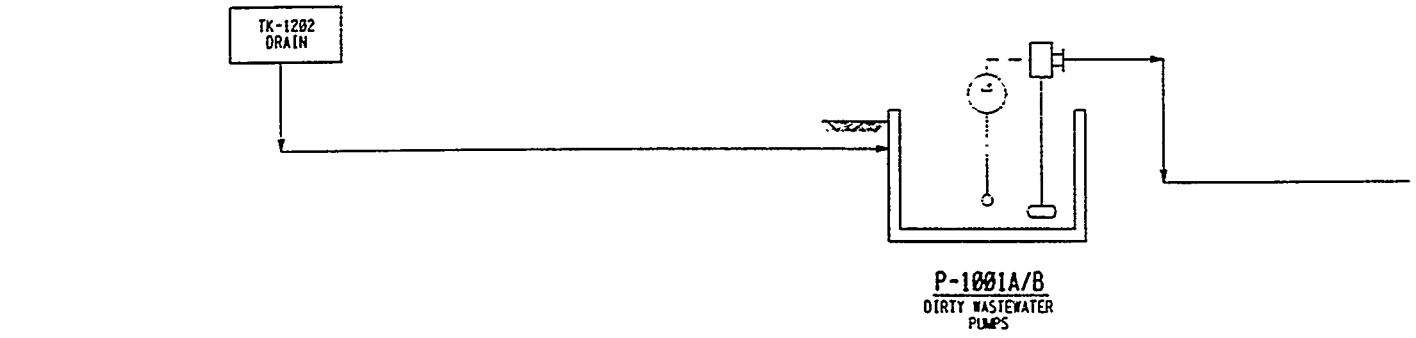
H		REVISIONS	G	5-5-94	VALUE ENG. CL III est.	F	2-25-94	FOR CLIENT REVIEW	E	2-7-94	FOR CLASS III ESTIMATE: D 12-23-93



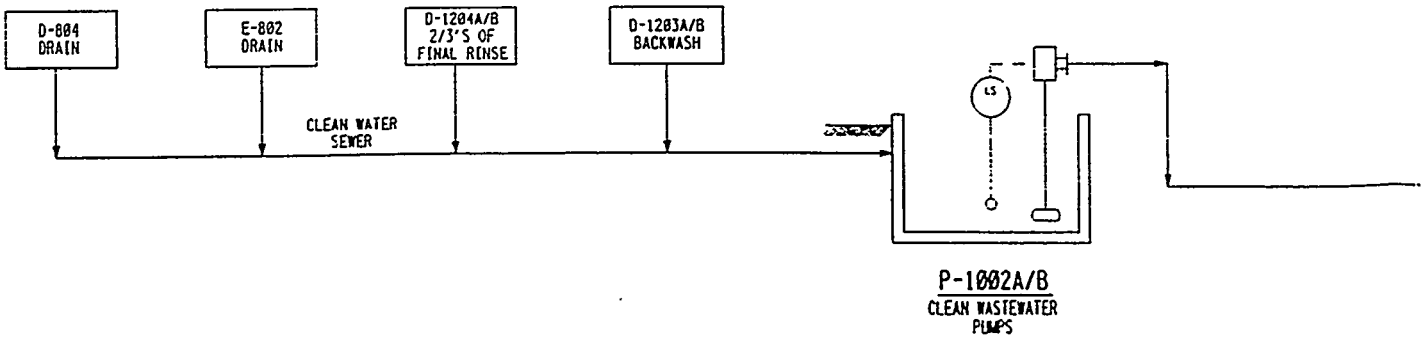


REV H
NOT ISSUED

PROCESS FLOW DIAGRAM
SECTION 180
SOLIDS RECEIVING, STORING & CRUSHING
PINON PINE POWER PROJECT
TRACY POWER STATION RENO, NEVADA
DRAWN BY: SCALE: REV H

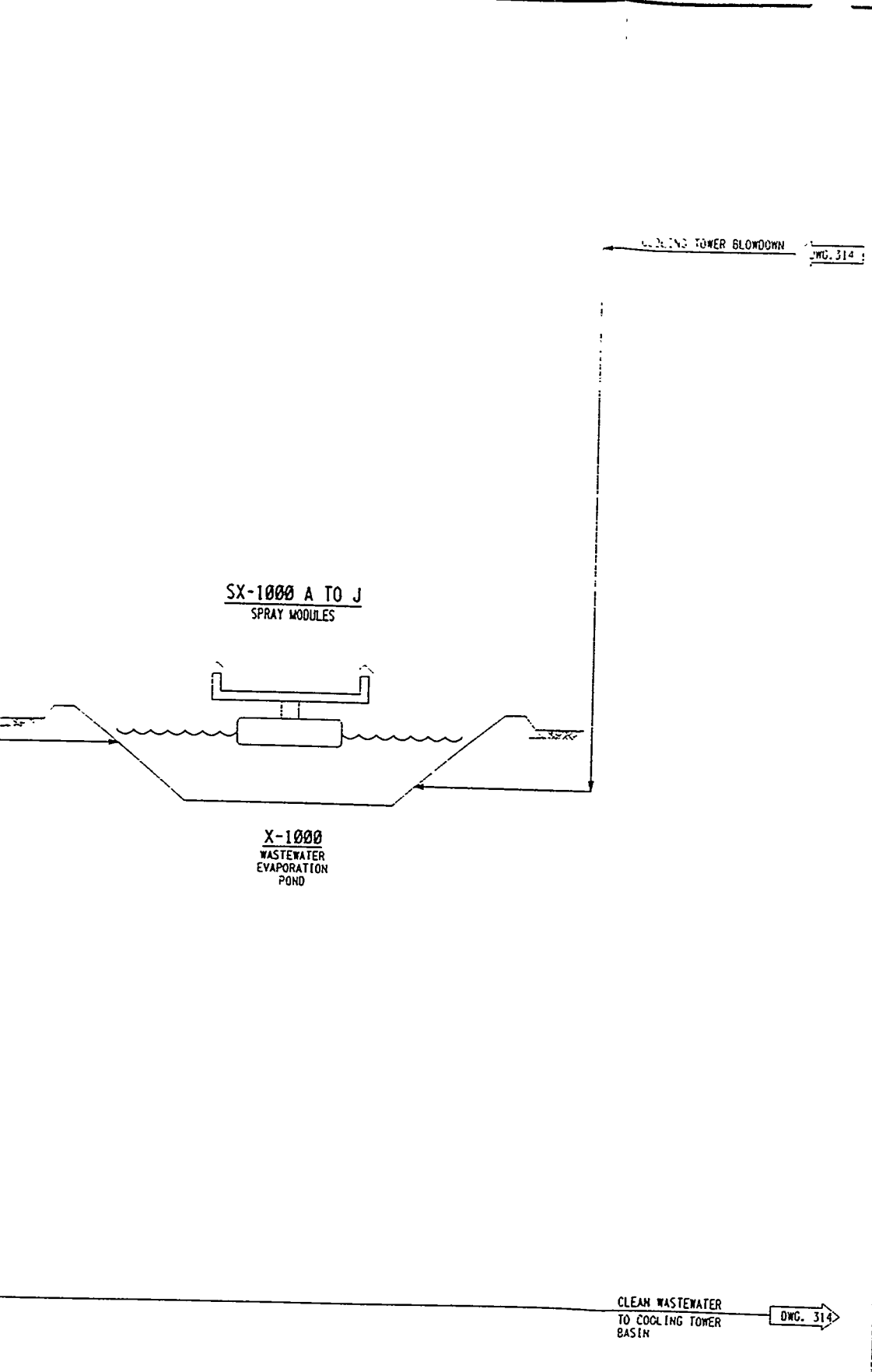


P-1001A/B
DIRTY WASTEWATER
PUMPS



P-1002A/B
CLEAN WASTEWATER
PUMPS

4143-2-50-311

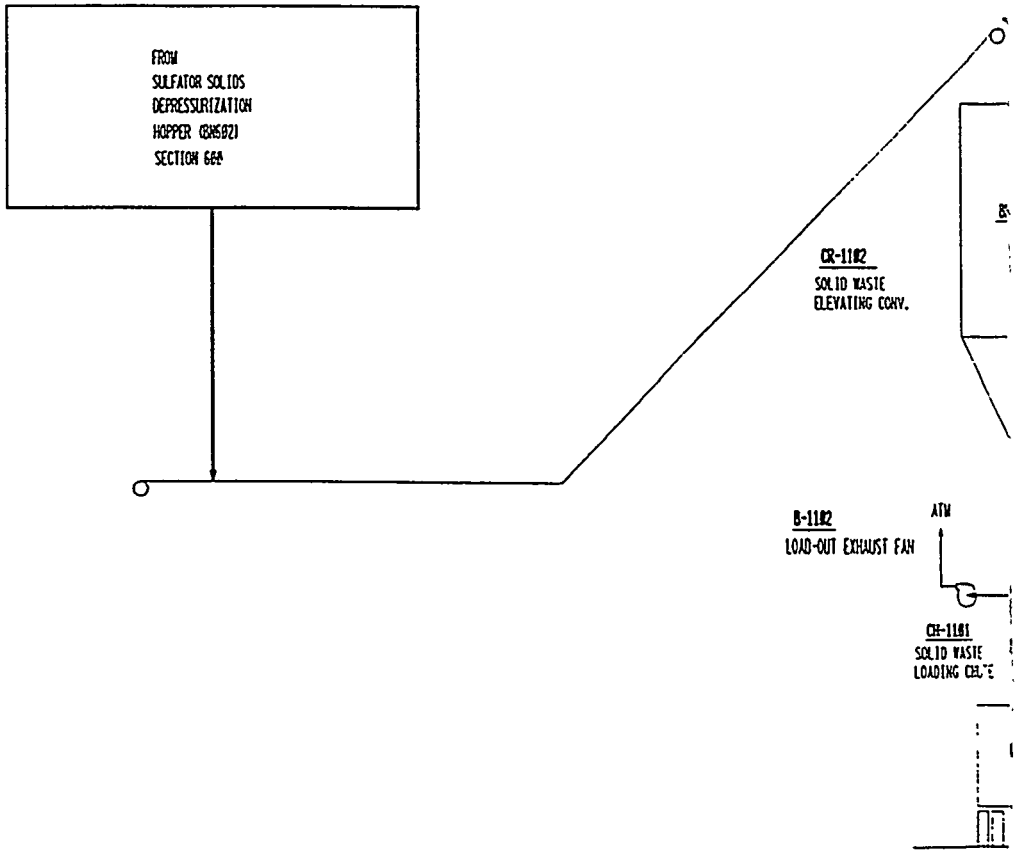


NOTES

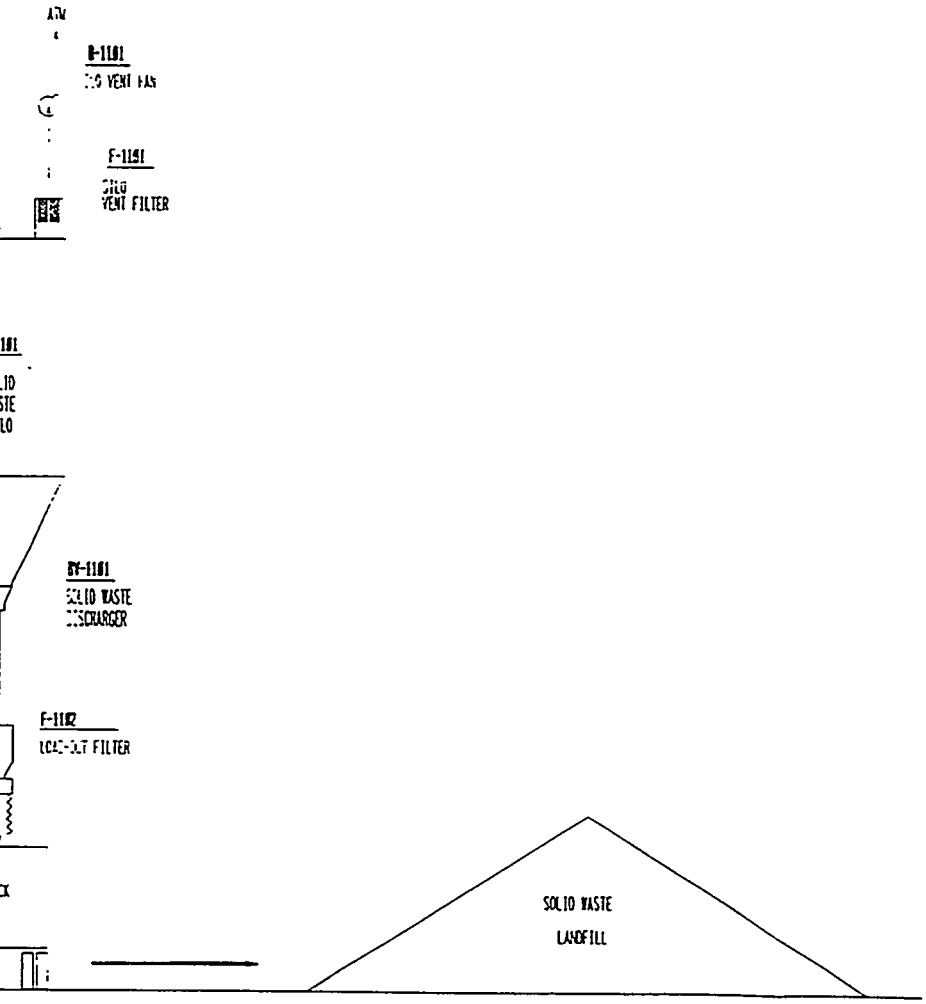
LEGEND

- MATERIAL BALANCE FLOW STREAM NUMBER
- TEMPERATURE, °F
- PRESSURE, PSIA, UNLESS OTHERWISE NOTED
- FLOW STREAM TO BATTERY LIMITS
- FLOW STREAM FROM BATTERY LIMITS

PROCESS FLOW DIAGRAM
SECTION 1000
WASTEWATER TREATMENT
TRACY POWER STATION - UNIT NO.4
PIÑON PINE POWER PROJECT
RENO, NEVADA

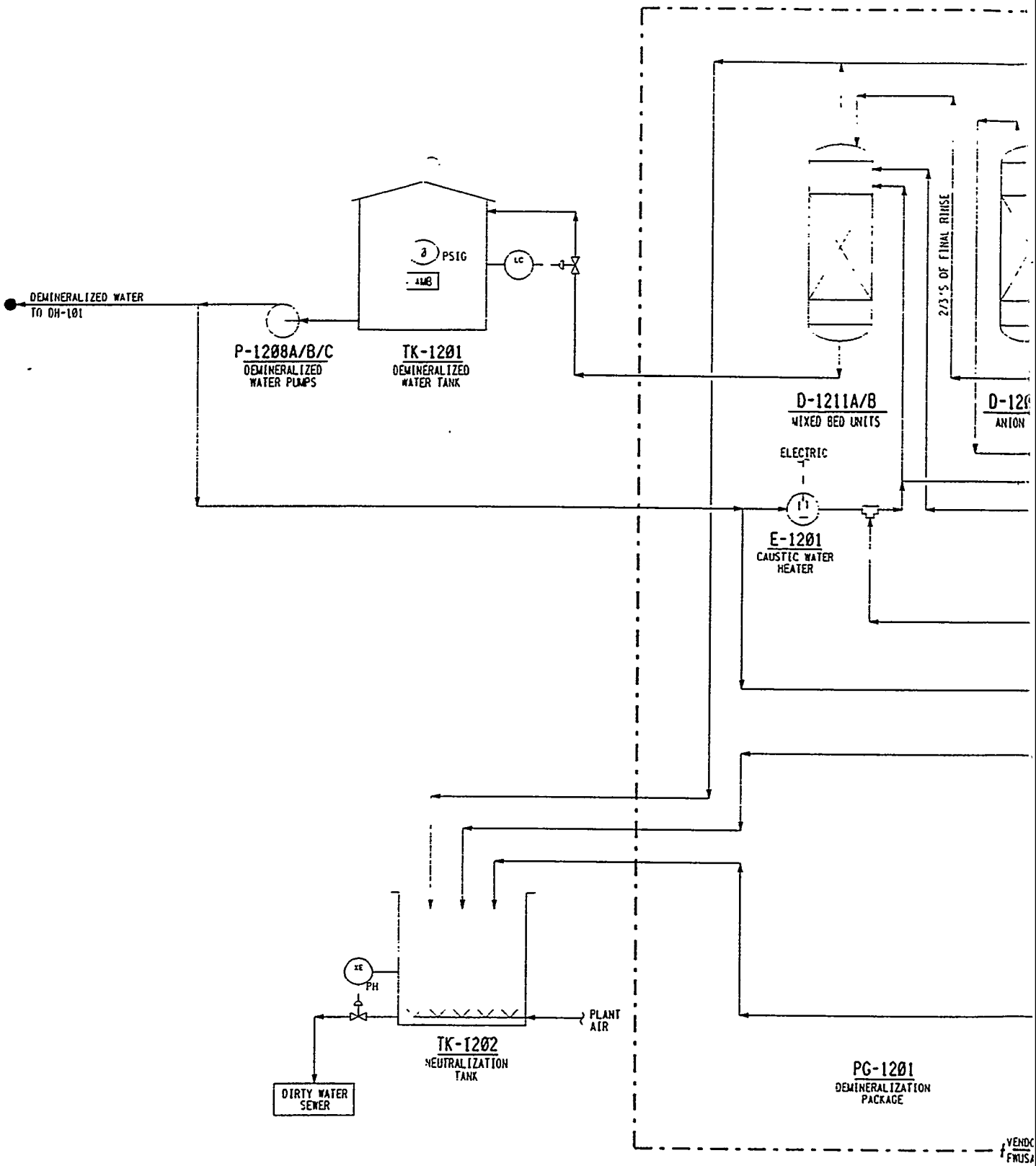

FROM
SULFATOR SOLIDS
DEPRESSURIZATION
HOPPER (SH502)
SECTION 66A
CR-1102
SOLID WASTE
ELEVATING CONV.
B-1102
LOAD-OUT EXHAUST FAN
ATM
CH-1101
SOLID WASTE
LOADING CHUTE

4143-2-50-312



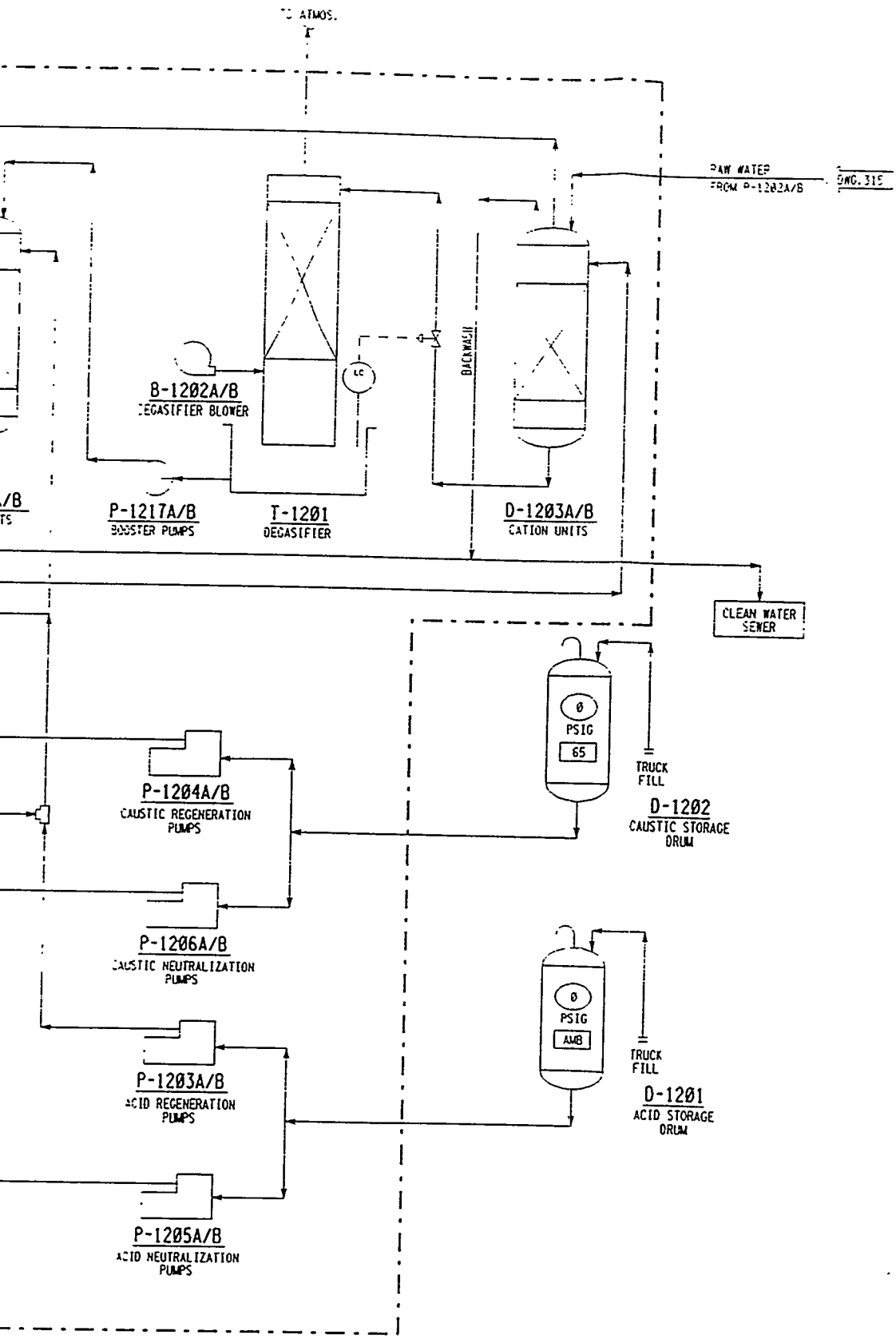
PROCESS FLOW DIAGRAM
SECTION 1100
SOLID WASTE HANDLING SYSTEM

PINON PINE POWER PROJECT



4143-2-50-313

REVISIONS

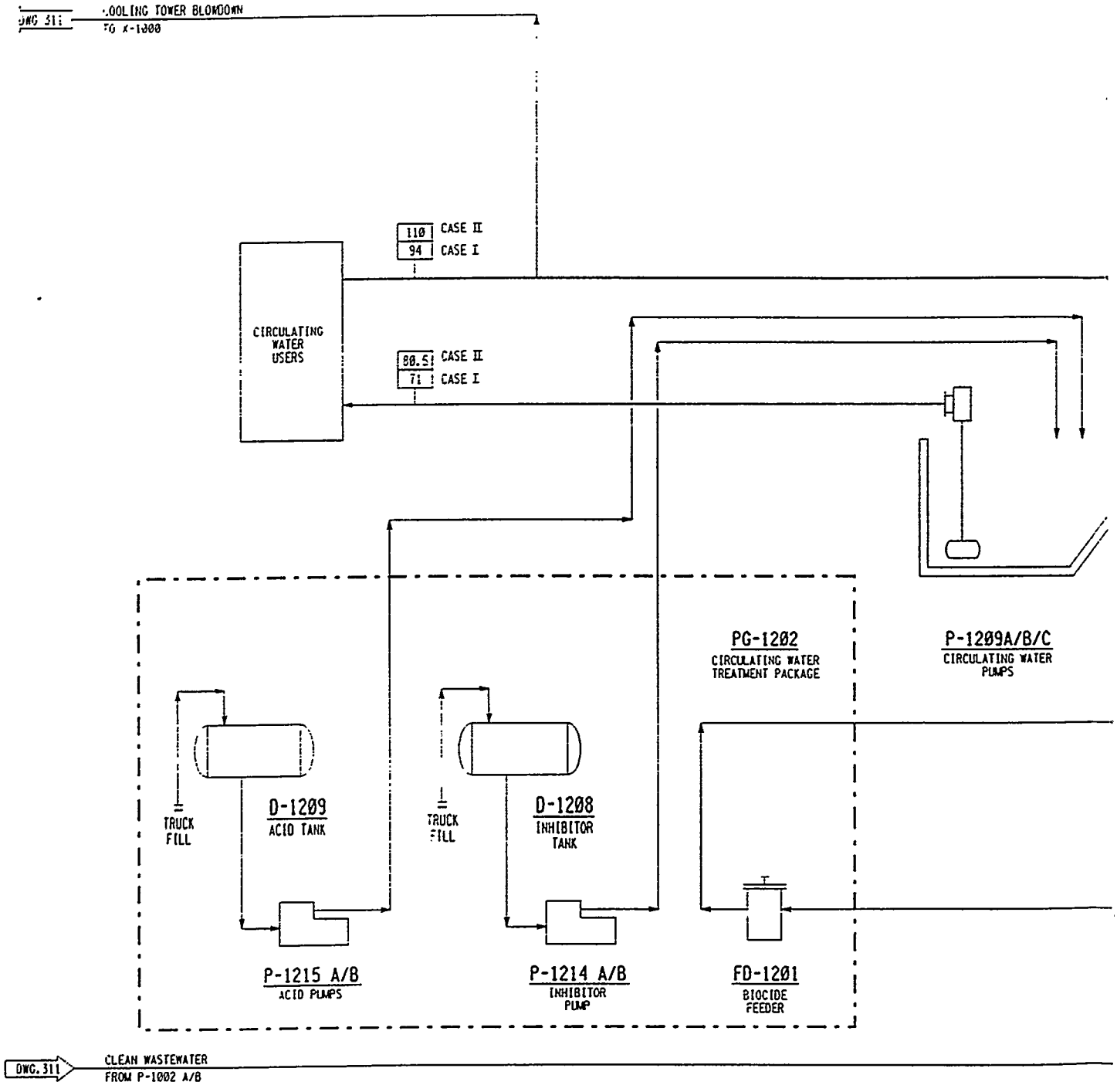


NOTES

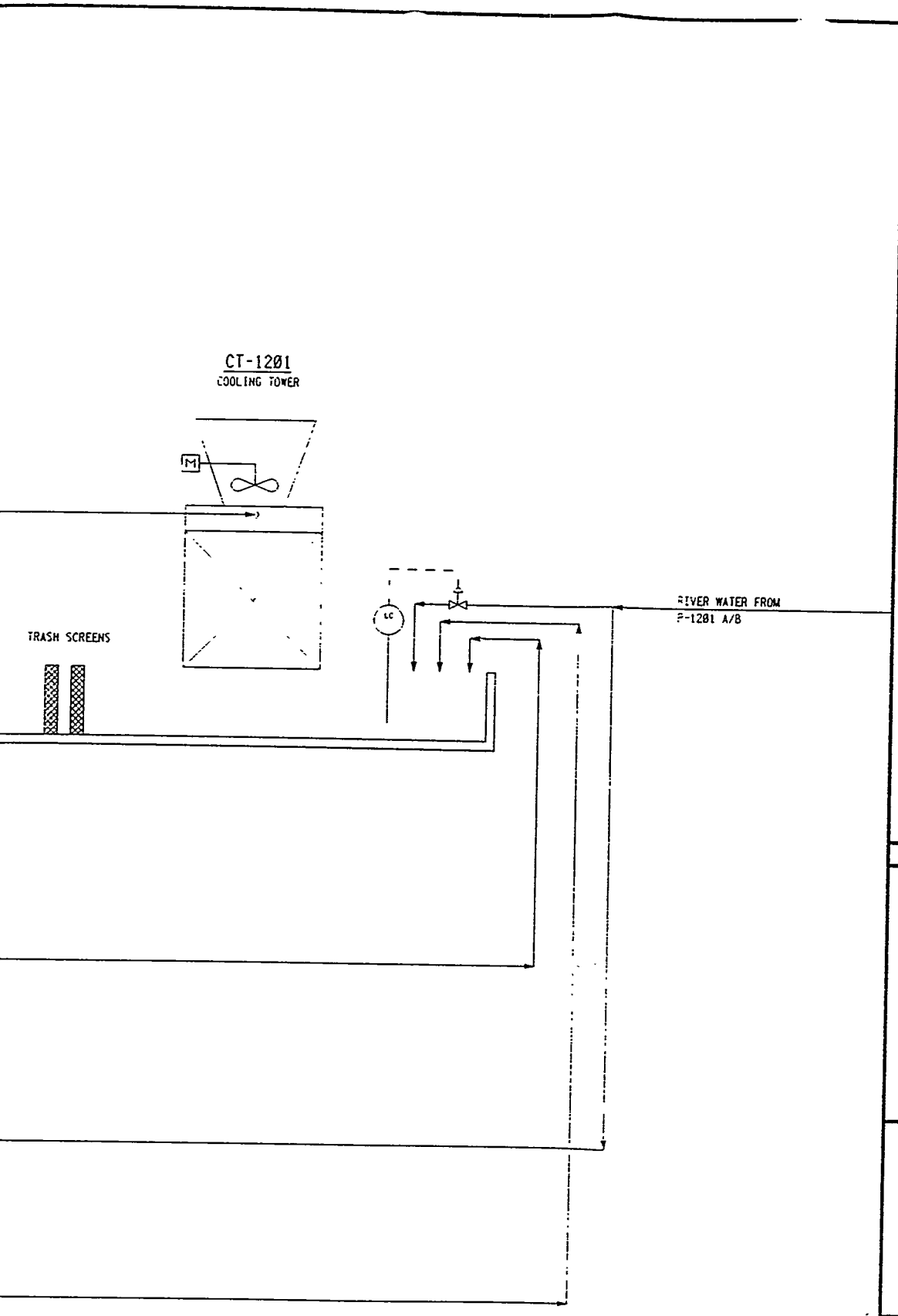
LEGEND

- MATERIAL BALANCE FLOW STREAM NUMBER
- TEMPERATURE, °F
- PRESSURE, PSIA, UNLESS OTHERWISE NOTED
- FLOW STREAM TO BATTERY LIMITS
- FLOW STREAM FROM BATTERY LIMITS

PROCESS FLOW DIAGRAM
SECTION 1200
BOILER FEEDWATER TREATMENT
TRACY POWER STATION - UNIT NO. 4
PIÑON PINE POWER PROJECT RENO, NEVADA


DWG 311
COOLING TOWER BLOWDOWN
TO X-1000
110 CASE II
94 CASE I
CIRCULATING WATER USERS
80.5 CASE II
71 CASE I
PG-1202
CIRCULATING WATER TREATMENT PACKAGE
P-1209A/B/C
CIRCULATING WATER PUMPS
TRUCK FILL
D-1209
ACID TANK
TRUCK FILL
D-1208
INHIBITOR TANK
P-1215 A/B
ACID PUMPS
P-1214 A/B
INHIBITOR PUMP
FD-1201
BIOCIDE FEEDER
DWG. 311
CLEAN WASTEWATER
FROM P-1002 A/B

4143-2-50-314



NOTES

LEGEND

MATERIAL BALANCE FLOW STREAM NUMBER

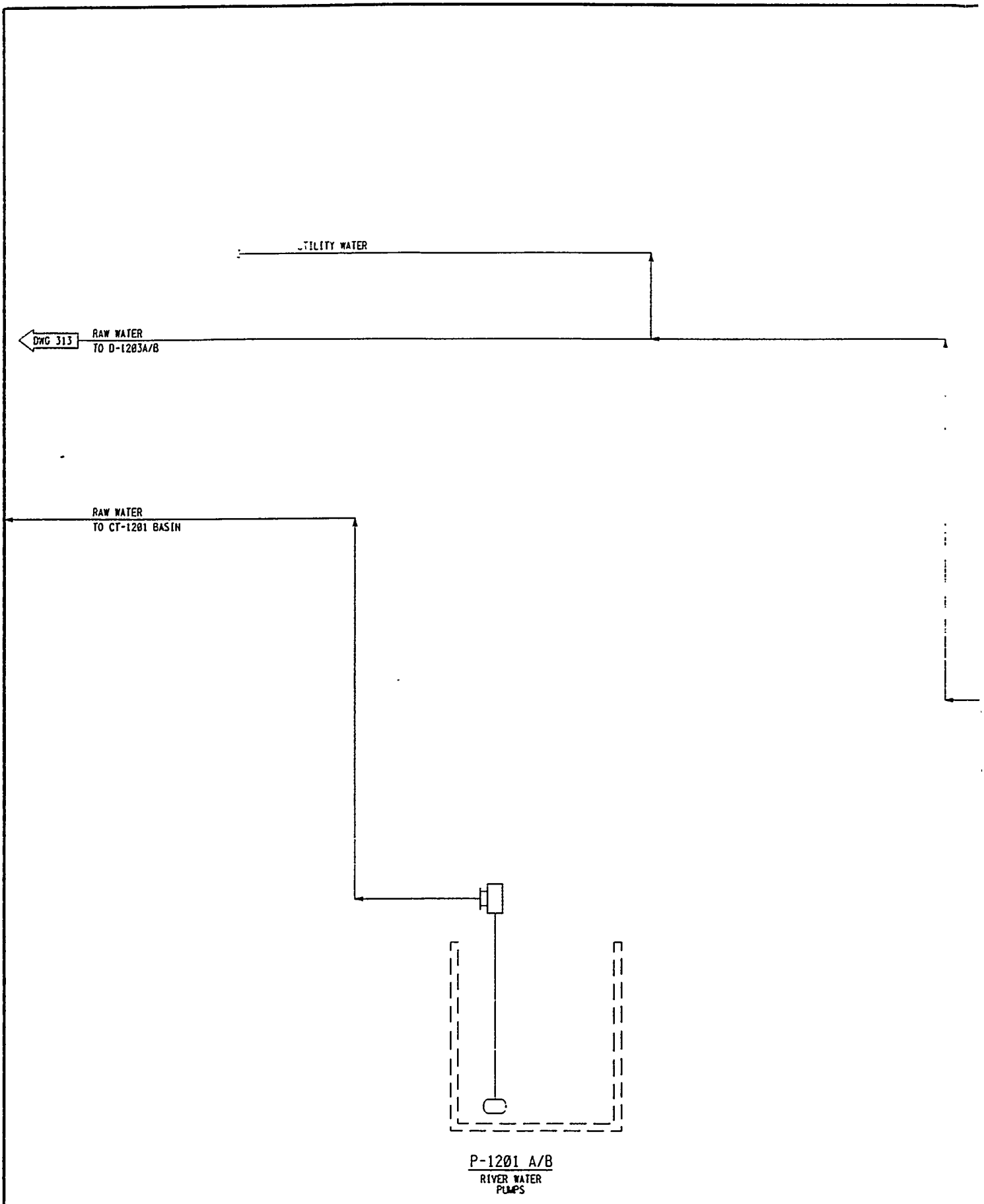
TEMPERATURE, °F

PRESSURE, PSIA. UNLESS OTHERWISE NOTED

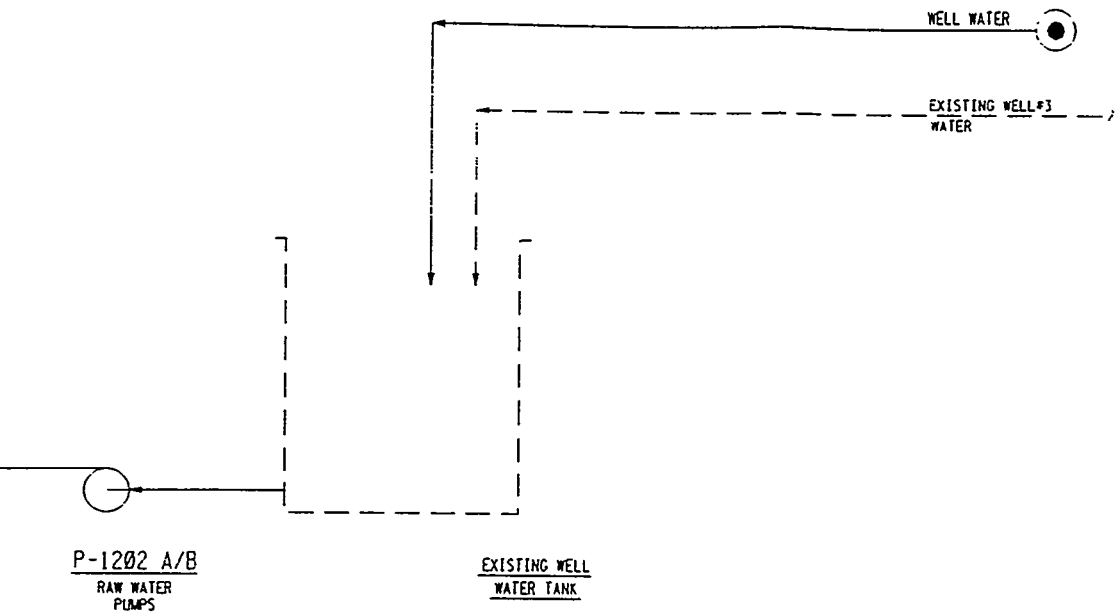
FLOW STREAM TO BATTERY LIMITS

FLOW STREAM FROM BATTERY LIMITS

PROCESS FLOW DIAGRAM
SECTION 1200
COOLING WATER SYSTEM
TRACY POWER STATION - UNIT NO. 4
PIÑON PINE POWER PROJECT RENO, NEVADA


UTILITY WATER
DWG 313
RAW WATER
TO D-1203A/B
RAW WATER
TO CT-1201 BASIN
P-1201 A/B
RIVER WATER
PUMPS

4143-2-50-315

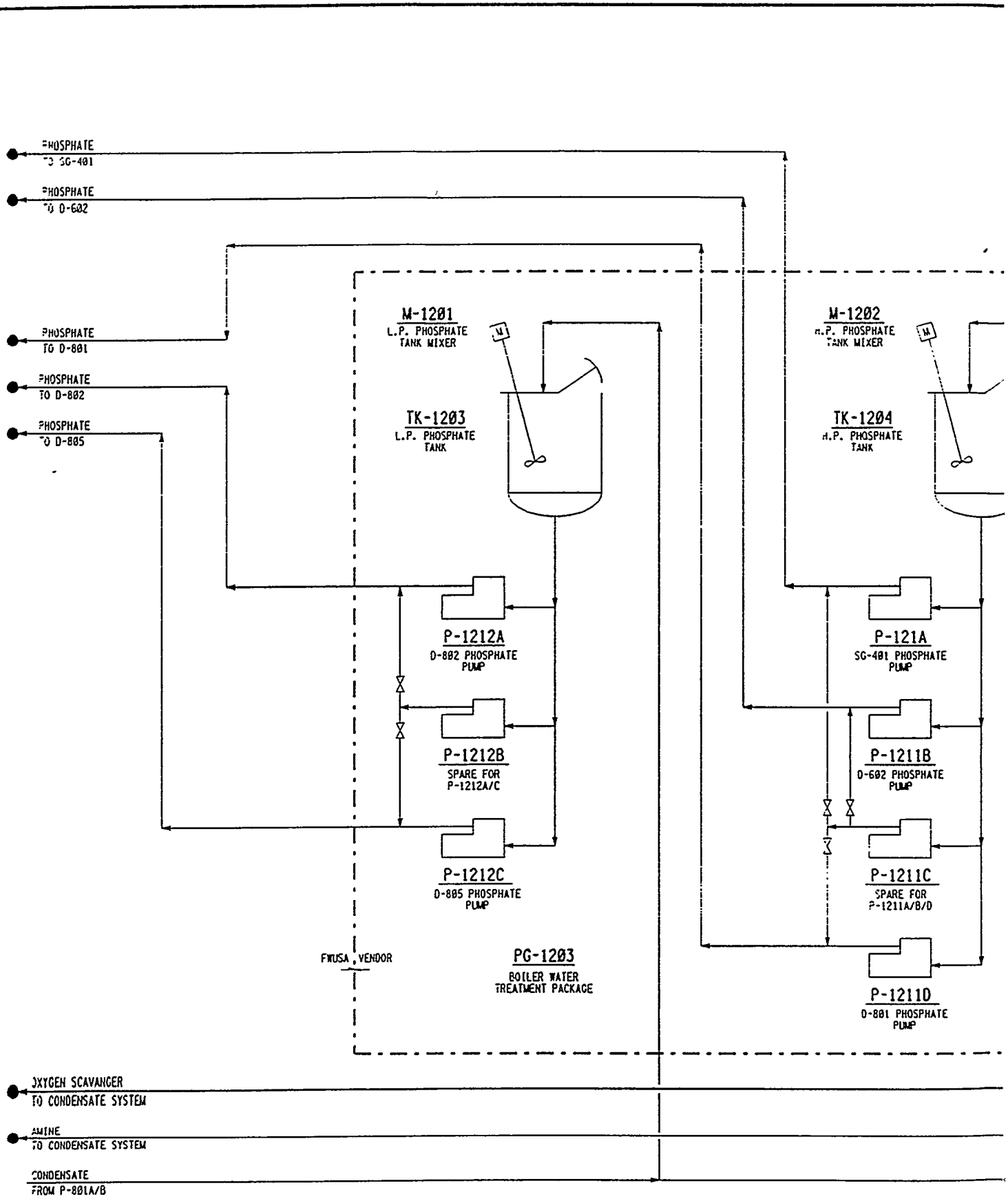


NOTES

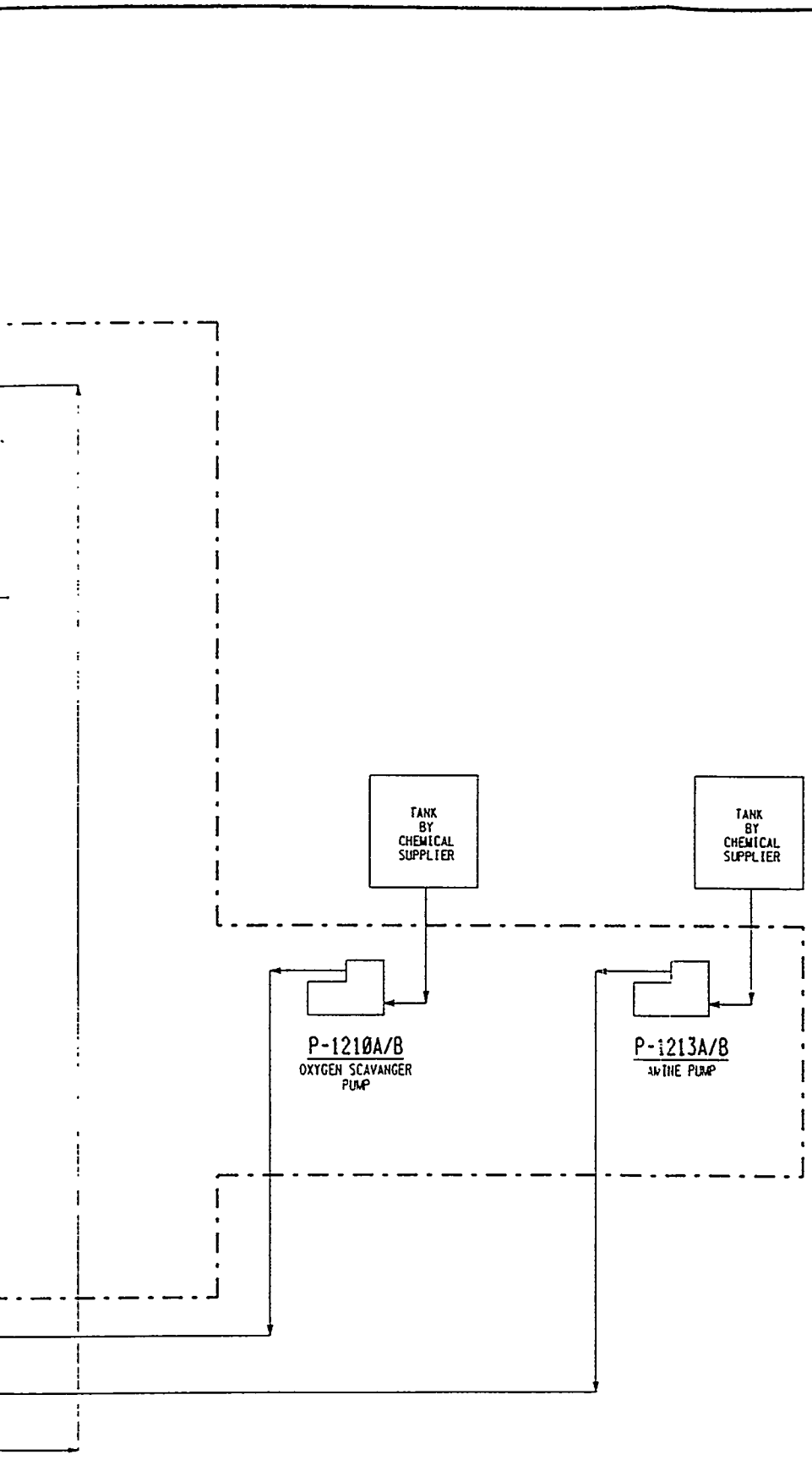
LEGEND

- MATERIAL BALANCE FLOW STREAM NUMBER
- TEMPERATURE, °F
- PRESSURE, PSIA, UNLESS OTHERWISE NOTED
- FLOW STREAM TO BATTERY LIMITS
- FLOW STREAM FROM BATTERY LIMITS

PROCESS FLOW DIAGRAM
SECTION 1200
RIVER & RAW WATER SYSTEMS
TRACY POWER STATION - UNIT NO. 4
PIÑON PINE POWER PROJECT RENO, NEVADA
DRAWN BY: ABS 7/02/97 SCALE: REV


PHOSPHATE
TO SG-401
PHOSPHATE
TO D-602
PHOSPHATE
TO D-801
PHOSPHATE
TO D-802
PHOSPHATE
TO D-805
M-1201
L.P. PHOSPHATE
TANK MIXER
TK-1203
L.P. PHOSPHATE
TANK
M-1202
H.P. PHOSPHATE
TANK MIXER
TK-1204
H.P. PHOSPHATE
TANK
P-1212A
D-802 PHOSPHATE
PUMP
P-1212B
SPARE FOR
P-1212A/C
P-1212C
D-805 PHOSPHATE
PUMP
P-121A
SG-401 PHOSPHATE
PUMP
P-1211B
D-602 PHOSPHATE
PUMP
P-1211C
SPARE FOR
P-1211A/B/D
P-1211D
D-801 PHOSPHATE
PUMP
FMUSA VENDOR
PG-1203
BOILER WATER
TREATMENT PACKAGE
OXYGEN SCAVANGER
TO CONDENSATE SYSTEM
AMINE
TO CONDENSATE SYSTEM
CONDENSATE
FROM P-801A/B

4143-2-50-316



NOTES

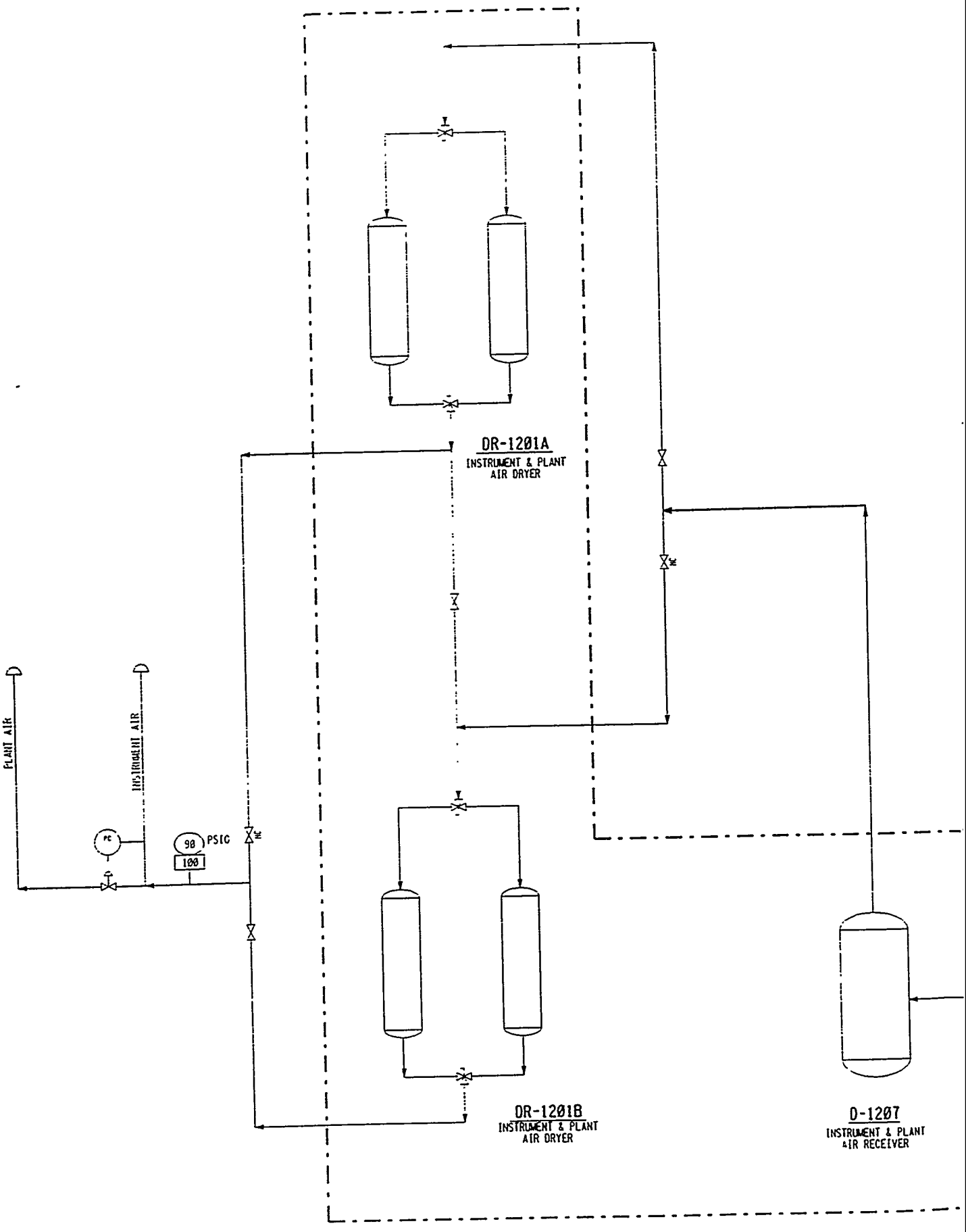
LEGEND

- MATERIAL BALANCE FLOW STREAM NUMBER
- TEMPERATURE, °F
- PRESSURE, PSIA, UNLESS OTHERWISE NOTED
- FLOW STREAM TO BATTERY LIMITS
- FLOW STREAM FROM BATTERY LIMITS

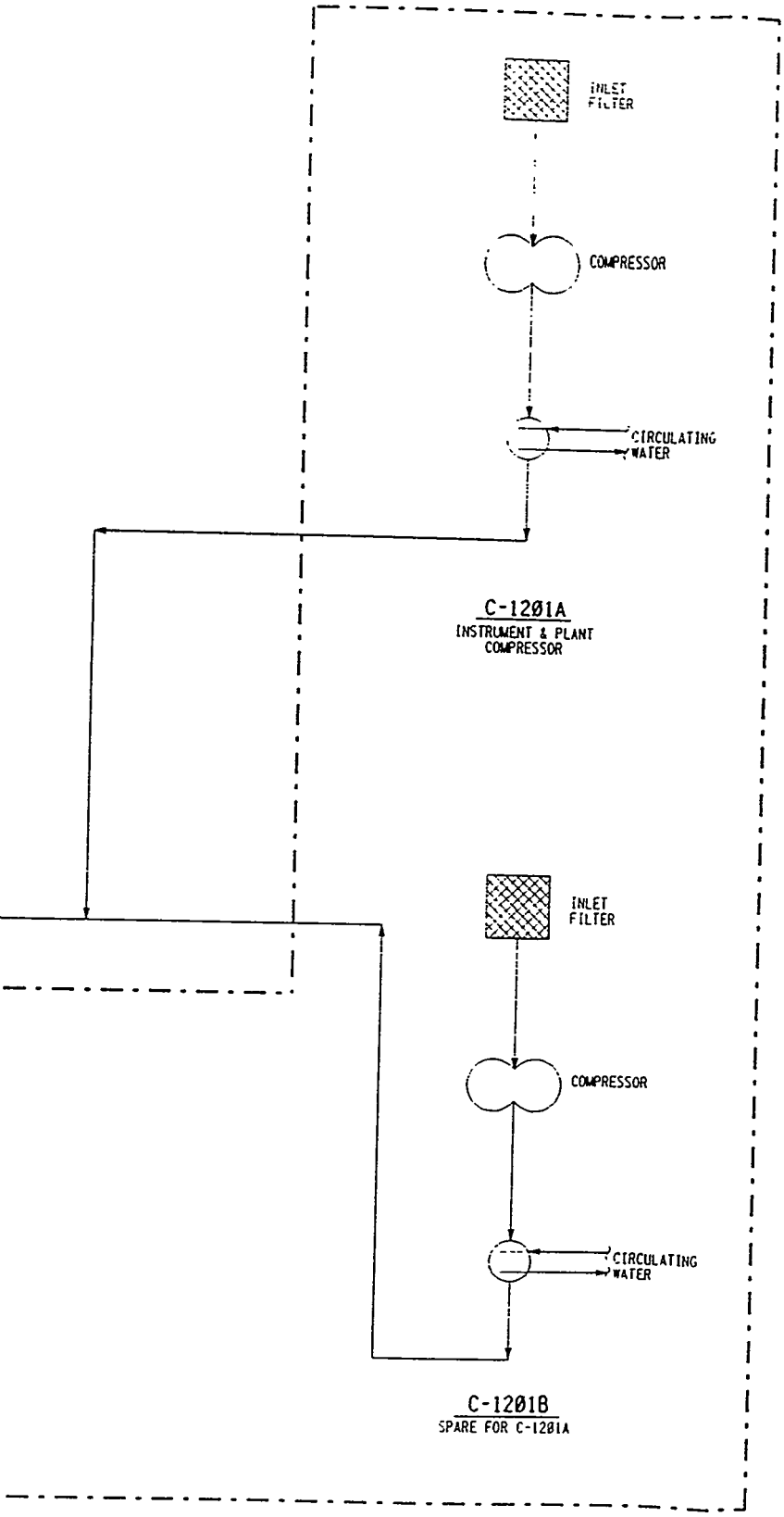
PROCESS FLOW DIAGRAM
SECTION 1200
BOILER WATER TREATMENT

TRACY POWER STATION - UNIT NO. 4
PIÑON PINE POWER PROJECT RENO, NEVADA

DRAWN BY: C.G. | SCALE: NONE | REV.


DR-1201A
INSTRUMENT & PLANT
AIR DRYER
PLANT AIR
INSTRUMENT AIR
PC
90
PSIG
100
NC
DR-1201B
INSTRUMENT & PLANT
AIR DRYER
D-1207
INSTRUMENT & PLANT
AIR RECEIVER

4143-2-50-317



NOTES

LEGEND

MATERIAL BALANCE FLOW STREAM NUMBER

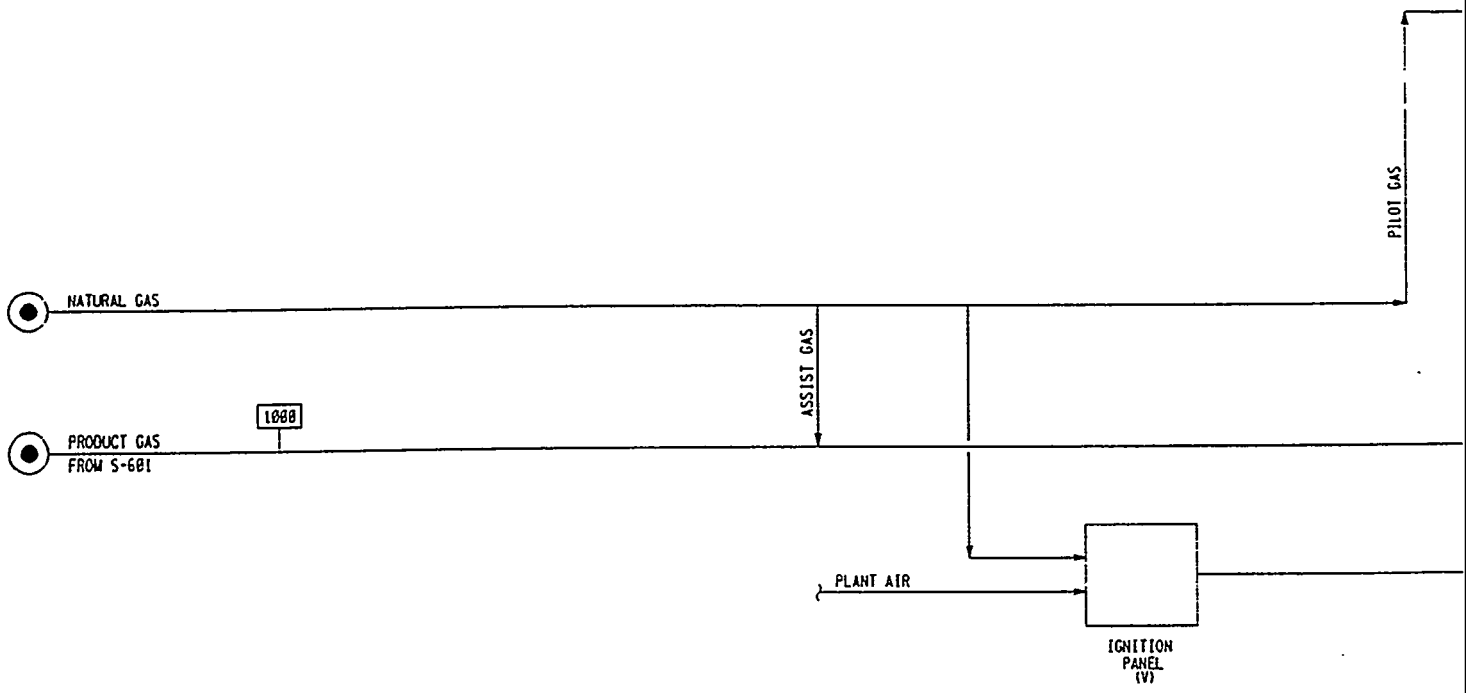
TEMPERATURE, °F

PRESSURE, PSIA, UNLESS OTHERWISE NOTED

FLOW STREAM TO BATTERY LIMITS

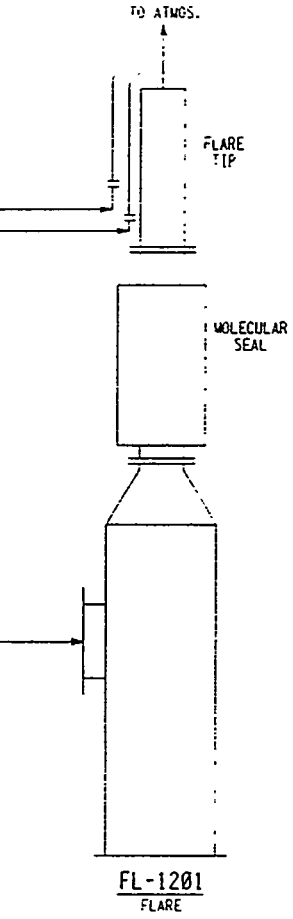
FLOW STREAM FROM BATTERY LIMITS

PROCESS FLOW DIAGRAM
SECTION 1200
INSTRUMENT & PLANT AIR SYSTEM
TRACY POWER STATION - UNIT NO.4
PINON PINE POWER PROJECT



4143-2-50-318

REVISIONS



NOTES

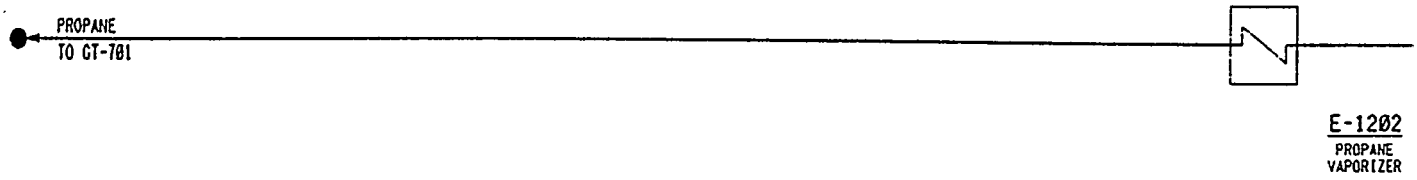
LEGEND

- MATERIAL BALANCE FLOW STREAM NUMBER
- TEMPERATURE, °F
- PRESSURE, PSIA, UNLESS OTHERWISE NOTED
- FLOW STREAM TO BATTERY LIMITS
- FLOW STREAM FROM BATTERY LIMITS

PROCESS FLOW DIAGRAM
SECTION 1200
FLARE SYSTEM

TRACY POWER STATION - UNIT NO.4
PIÑON PINE POWER PROJECT RENO, NEVADA

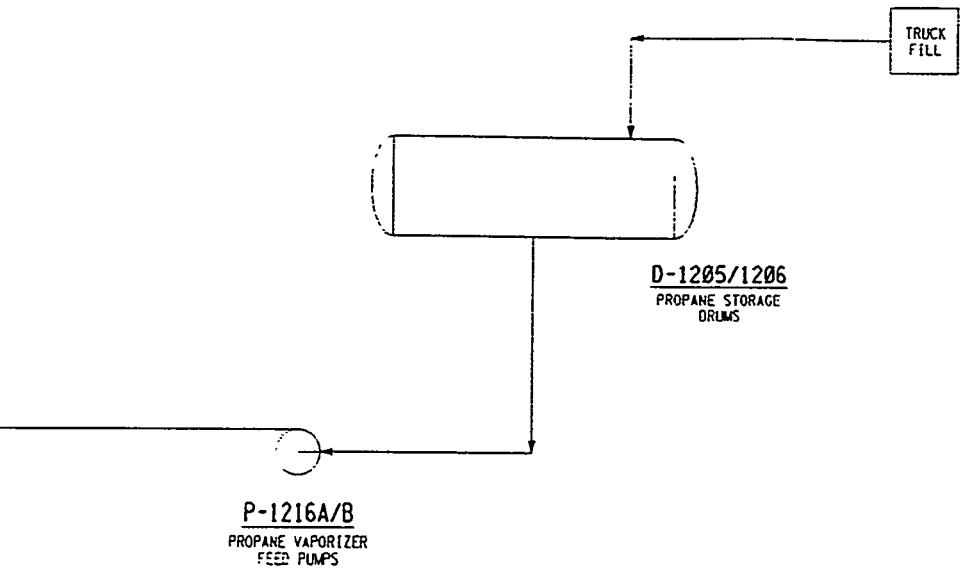
DRAWN BY:	C.C		SCALE: NONE	REV



E-1202
PROPANE
VAPORIZER

4143-2-50-319

REVISIONS



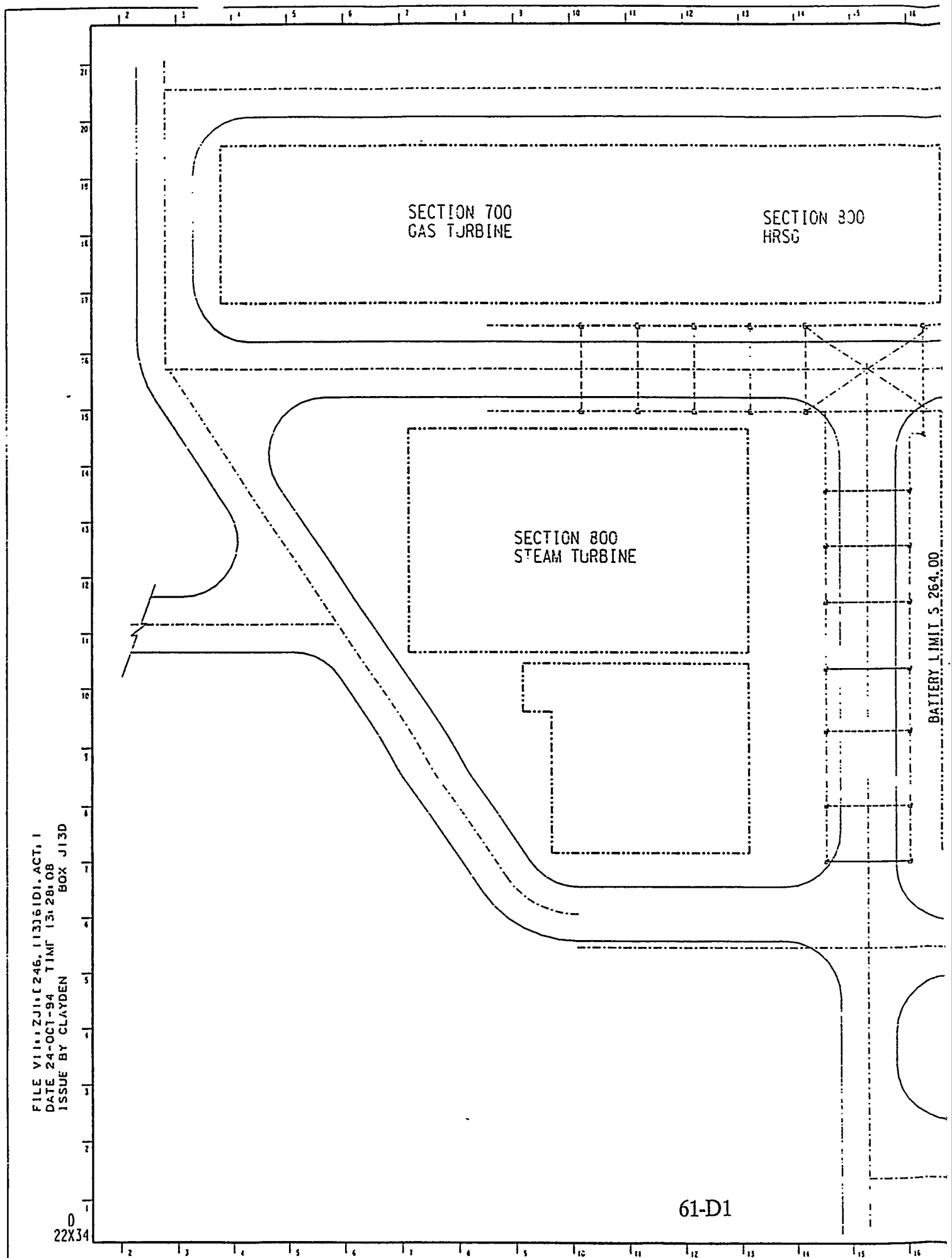
NOTES

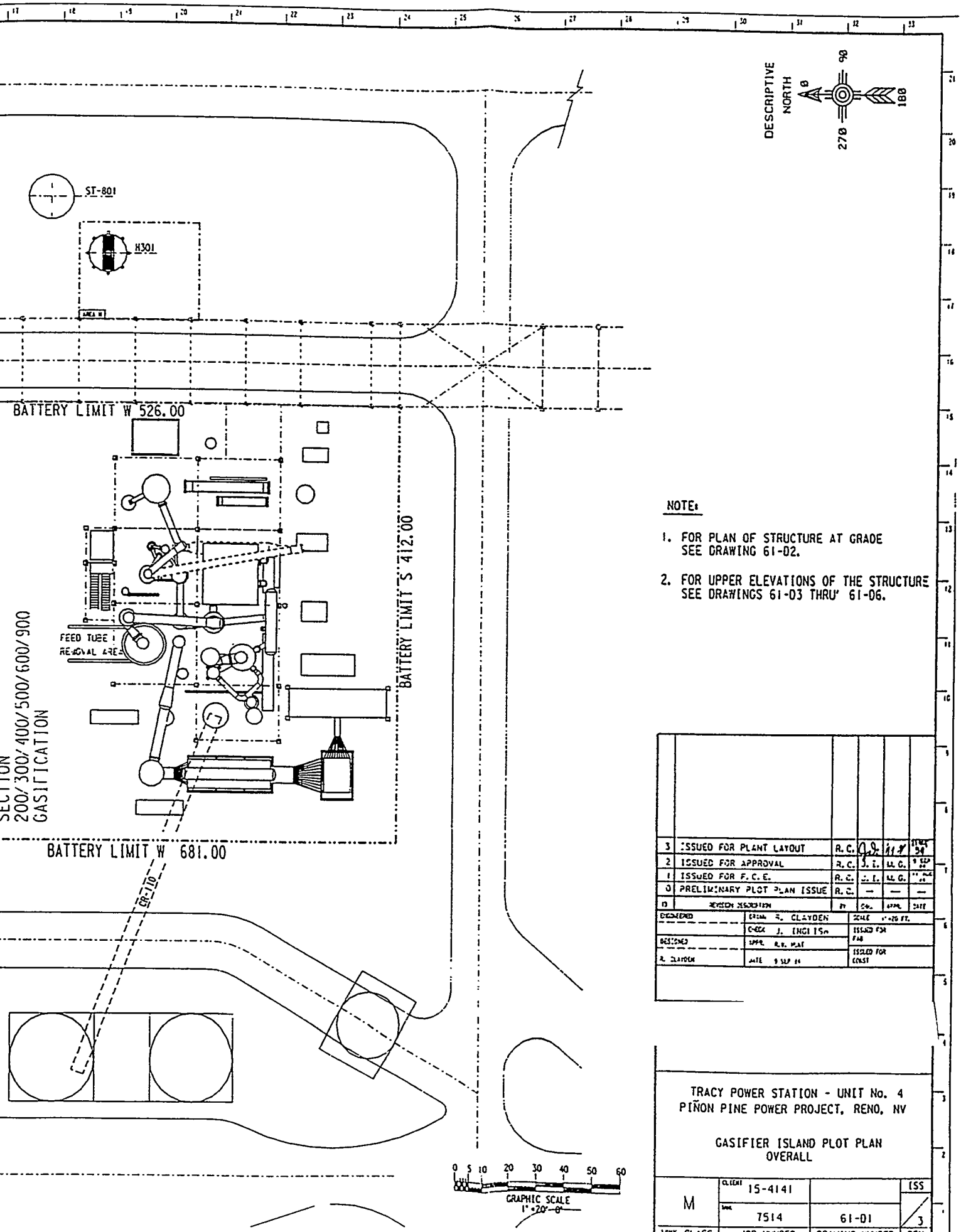
LEGEND

- MATERIAL BALANCE FLOW STREAM NUMBER
- TEMPERATURE, °F
- PRESSURE, PSIA, UNLESS OTHERWISE NOTED
- FLOW STREAM TO BATTERY LIMITS
- FLOW STREAM FROM BATTERY LIMITS

PROCESS FLOW DIAGRAM
SECTION 1200
PROPANE SYSTEM

TRACY POWER STATION - UNIT NO. 4
PIÑON PINE POWER PROJECT RENO, NEVADA


SECTION 700
GAS TURBINE
SECTION 300
HRSG
SECTION 800
STEAM TURBINE
BATTERY LIMIT 5 264.00
FILE V11::ZJ1:[246.11316101.ACT;1
DATE 24-OCT-94 TIME 13:28:08
ISSUE BY CLAYDEN BOX J13D
0
22X34
61-D1



NOTES:

1. FOR PLAN OF STRUCTURE AT GRADE SEE DRAWING 61-02.
2. FOR UPPER ELEVATIONS OF THE STRUCTURE SEE DRAWINGS 61-03 THRU' 61-06.

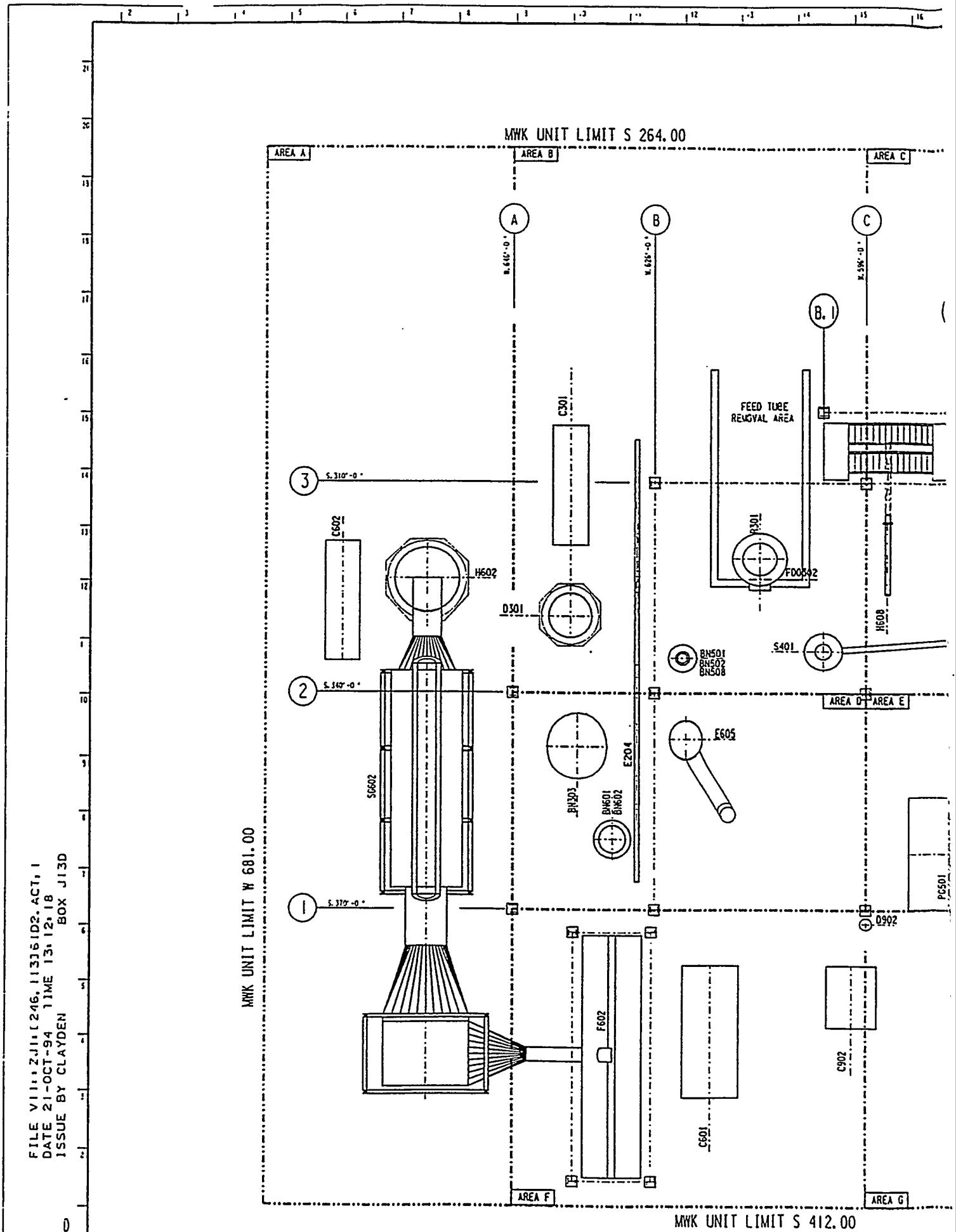
3	ISSUED FOR PLANT LAYOUT	R.C.			
2	ISSUED FOR APPROVAL	R.C.	J.I.	M.G.	
1	ISSUED FOR F.C.E.	R.C.	J.I.	M.G.	
0	PRELIMINARY PLOT PLAN ISSUE	R.C.	—	—	—
NO.	REVISION DESCRIPTION	BY	CHK.	APPD.	DATE

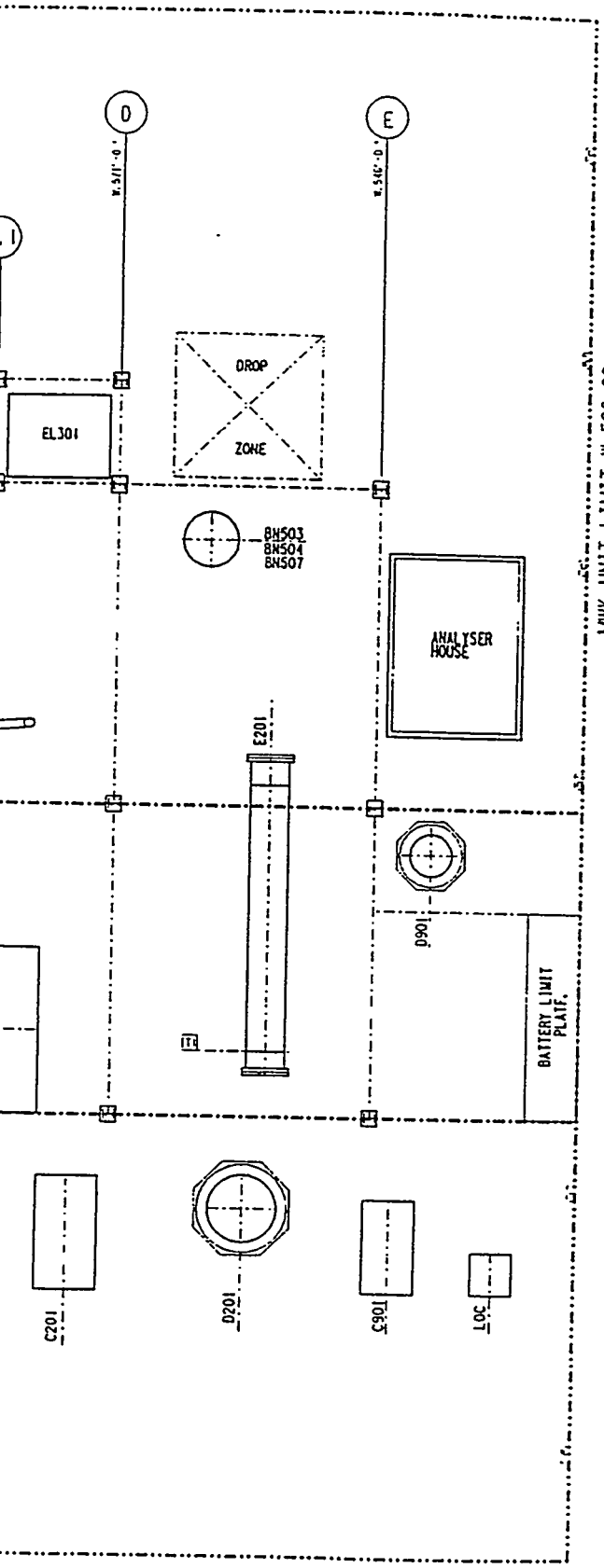
DESIGNED	DRAWN R. CLAYDEN	SCALE 1"=20 FT.
	CHECK J. INGLIS	ISSUED FOR FAB
DESIGNED	APPD. R.W. MAY	ISSUED FOR CONST
R. CLAYDEN	DATE 9 SEP 91	

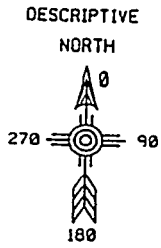
TRACY POWER STATION - UNIT No. 4
PIÑON PINE POWER PROJECT, RENO, NV

GASIFIER ISLAND PLOT PLAN OVERALL

M	CLIENT 15-4141		ISS
	7514	61-01	3


MWK UNIT LIMIT S 264.00
AREA A
AREA B
AREA C
AREA D
AREA E
AREA F
AREA G
MWK UNIT LIMIT W 681.00
MWK UNIT LIMIT S 412.00
A
B
C
B.1
1
2
3
C301
C602
H602
D301
S602
E204
E605
F602
C601
C902
D902
PC501
R301
FDC342
H608
S401
BN501
BN502
BN508
BN303
BN601
BN602
FEED TUBE
REMOVAL AREA
FILE V11::ZJ1:(246.11336102.ACT,1
DATE 21-OCT-94 TIME 13:12:18
ISSUE BY CLAYDEN
BOX J13D
D
22X34





NOTE:

1. FOR UPPER ELEVATIONS OF THE STRUCTURE SEE DRAWINGS 61-03 THRU 61-06

THE FOLLOWING EQUIPMENT IS NOT SHOWN-:

F301 F0301
F302
F502
F503
F504

NO	REVISION DESCRIPTION	BY	CHK.	APPR.	DATE
3	ISSUED FOR PLANT LAYOUT	R.C.			21 NOV 94
2	ISSUED FOR APPROVAL	R.C.	J.I.	M.G.	9 SEP 94
1	ISSUED FOR F.C.E.	A.C.	J.I.	M.G.	11 AUG 94
0	PRELIMINARY PLOT PLAN ISSUE	R.C.	—	—	—

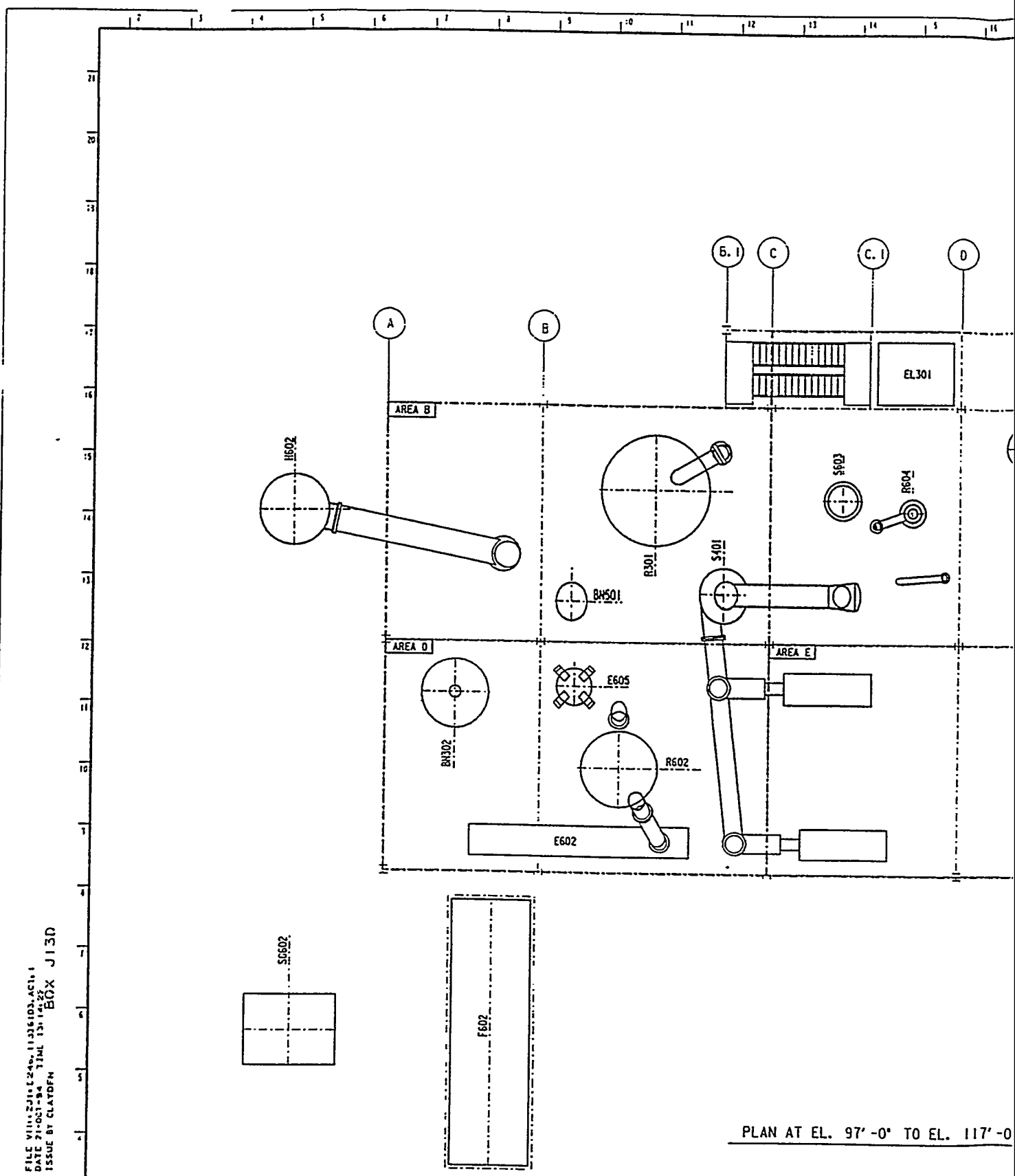
ENGINEERED	DRAFT R. CLAYDEN	SCALE 1/8"=1'-0"
	CHECK J. INGLEISH	ISSUED FOR P&B
DESIGNED	APPR. R.W. HUNT	ISSUED FOR CONST
R. CLAYDEN	DATE 9 SEP 94	

TRACY POWER STATION - UNIT No. 4
PIÑON PINE POWER PROJECT, RENO, NV

GASIFIER ISLAND PLOT PLAN
PLAN AT GRADE

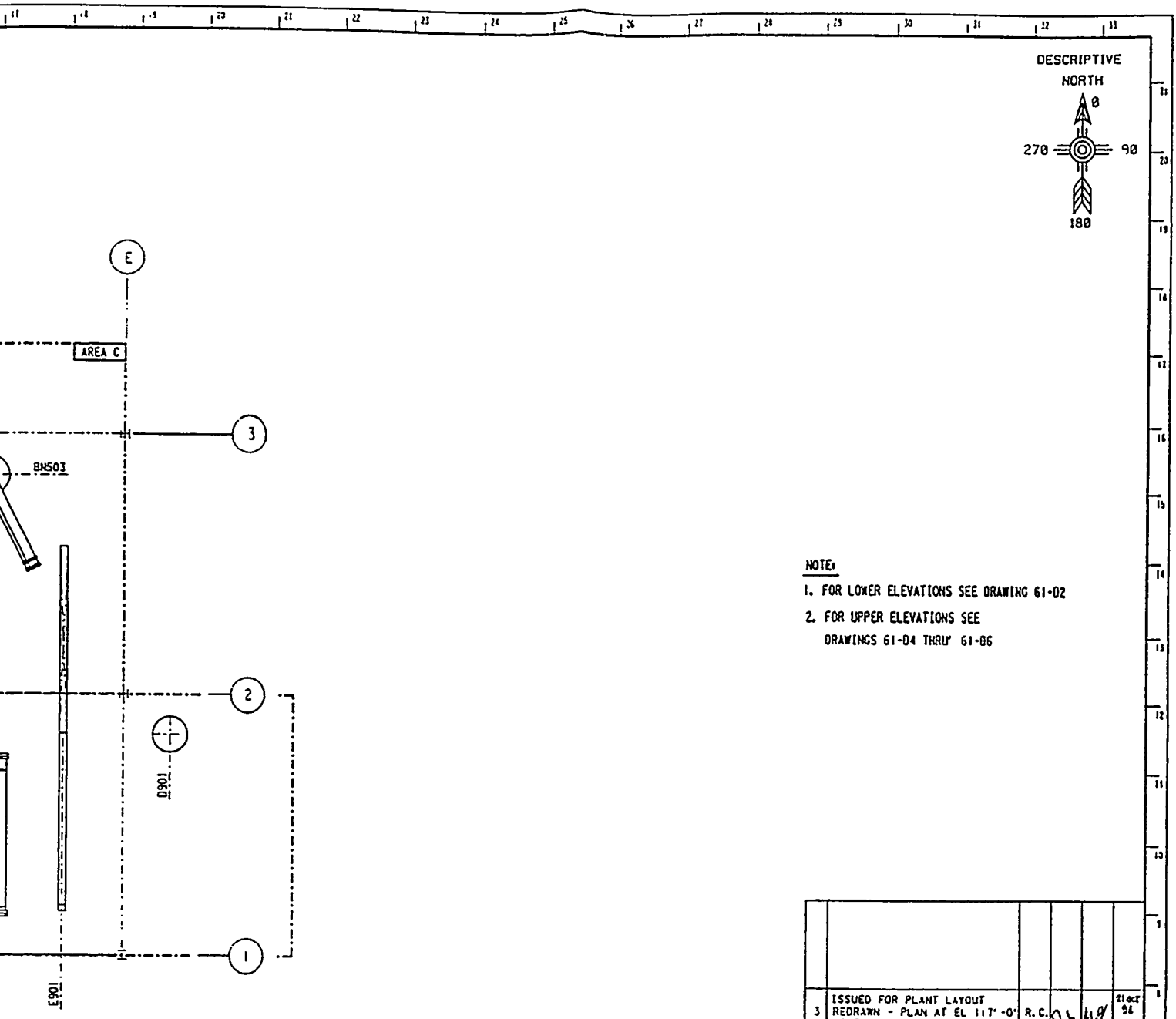
M	CLIENT 15-4141		ISS
	7514	61-02	3

GRAPHIC SCALE
1/8" = 1'-0"
0 5 10 15 20 25 30



PLAN AT EL. 97'-0" TO EL. 117'-0

FILE V11:[ZJ1.F24]...1135103.ACT;1
DATE 21-OCT-94 TIME 13:14:22
ISSUE BY CLAYDEN BOX J13D



NOTE:

1. FOR LOWER ELEVATIONS SEE DRAWING 61-02
2. FOR UPPER ELEVATIONS SEE DRAWINGS 61-04 THRU 61-06

NO	REVISION DESCRIPTION	BY	CHK.	APPR.	DATE
3	ISSUED FOR PLANT LAYOUT REDRAWN - PLAN AT EL 117'-0" MOVED TO DWG. 61-04	R. C.	J. I.	M. G.	21 OCT 94
2	ISSUED FOR APPROVAL	R. C.	J. I.	M. G.	9 SEP 94
1	ISSUED FOR F. C. E.	R. C.	J. I.	M. G.	11 AUG 94
0	PRELIMINARY PLOT PLAN ISSUE	R. C.	—	—	—

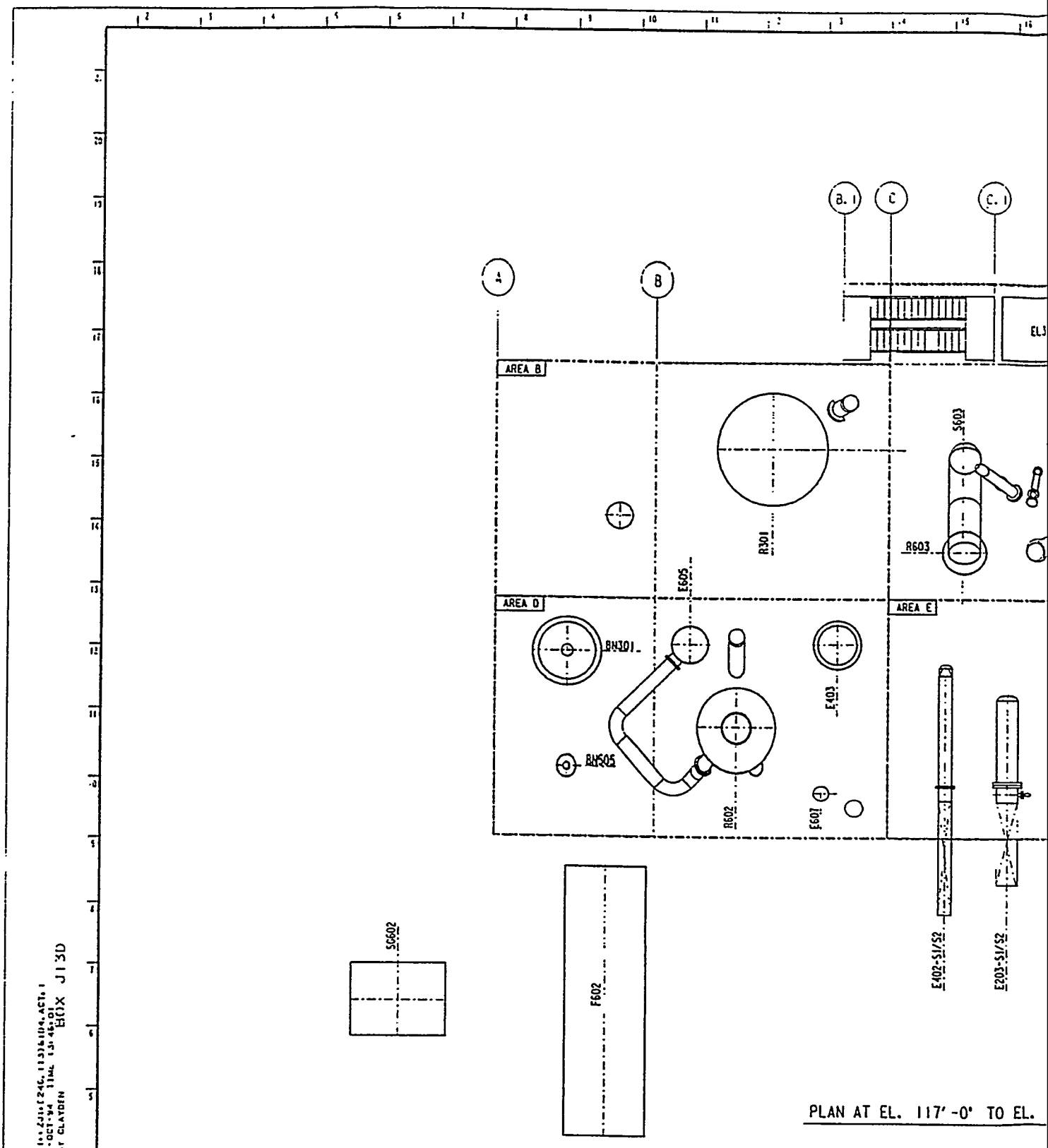
ENGINEERED	DRAWN R. CLAYDEN	SCALE
	CHECK J. INGLISH	ISSUED FOR FAB
DESIGNED	APPR. R. W. MUNT	
R. CLAYDEN	DATE 9 SEP 94	ISSUED FOR CONST

TRACY POWER STATION - UNIT No. 4
PIÑON PINE POWER PROJECT, RENO, NV

GASIFIER ISLAND PLOT PLAN
PLAN AT EL. 97'-0" TO EL. 117'-0"

CLIENT 15-4141 ISS

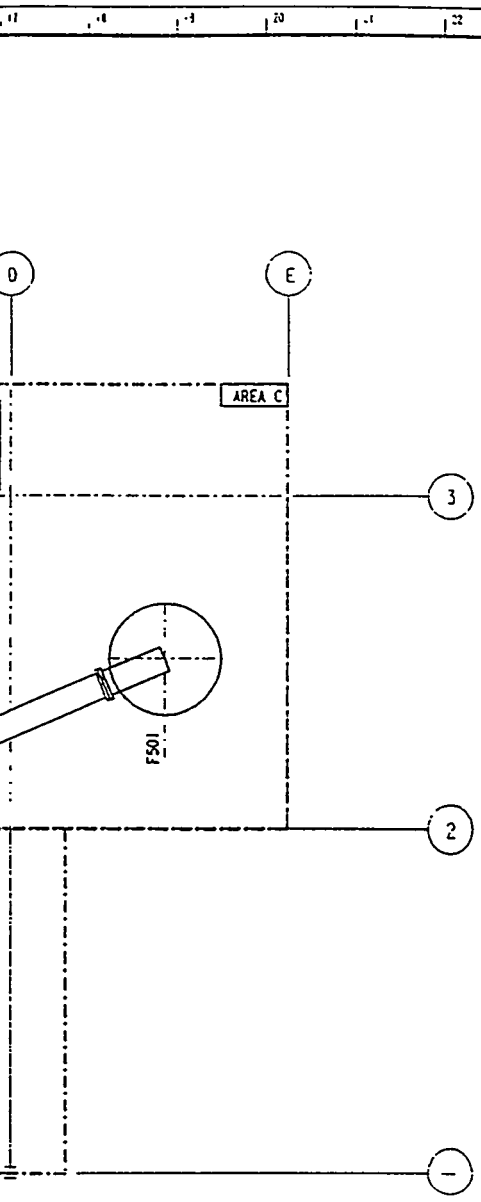
0 5 10 15 20 25 30
GRAPHIC SCALE



PLAN AT EL. 117'-0" TO EL.

FILE V11...
DATE 21-OCT-94 11HL 13:46:01
ISSUE BY CLAYDEN
BOX J13D

D
22X34



-0'

DESCRIPTIVE
NORTH
0
270
90
180

NOTE:

1. FOR LOWER ELEVATIONS SEE DRAWINGS 61-02 & 61-03
2. FOR UPPER ELEVATIONS SEE DRAWINGS 61-04 & 61-05

NO	REVISION DESCRIPTION	BY	CHK.	APPR.	DATE
3	ISSUED FOR PLANT LAYOUT REDRAWN - PLAN AT EL. 117'-0" ORIGINALLY SHOWN ON 61-03	R. C.			SEPT 94
2	ISSUED FOR APPROVAL	R. C.	J. I.	M. G.	9 SEP 94
1	ISSUED FOR F. C. E.	R. C.	J. I.	M. G.	1 JUL 94
0	PRELIMINARY PLOT PLAN ISSUE	R. C.	—	—	—

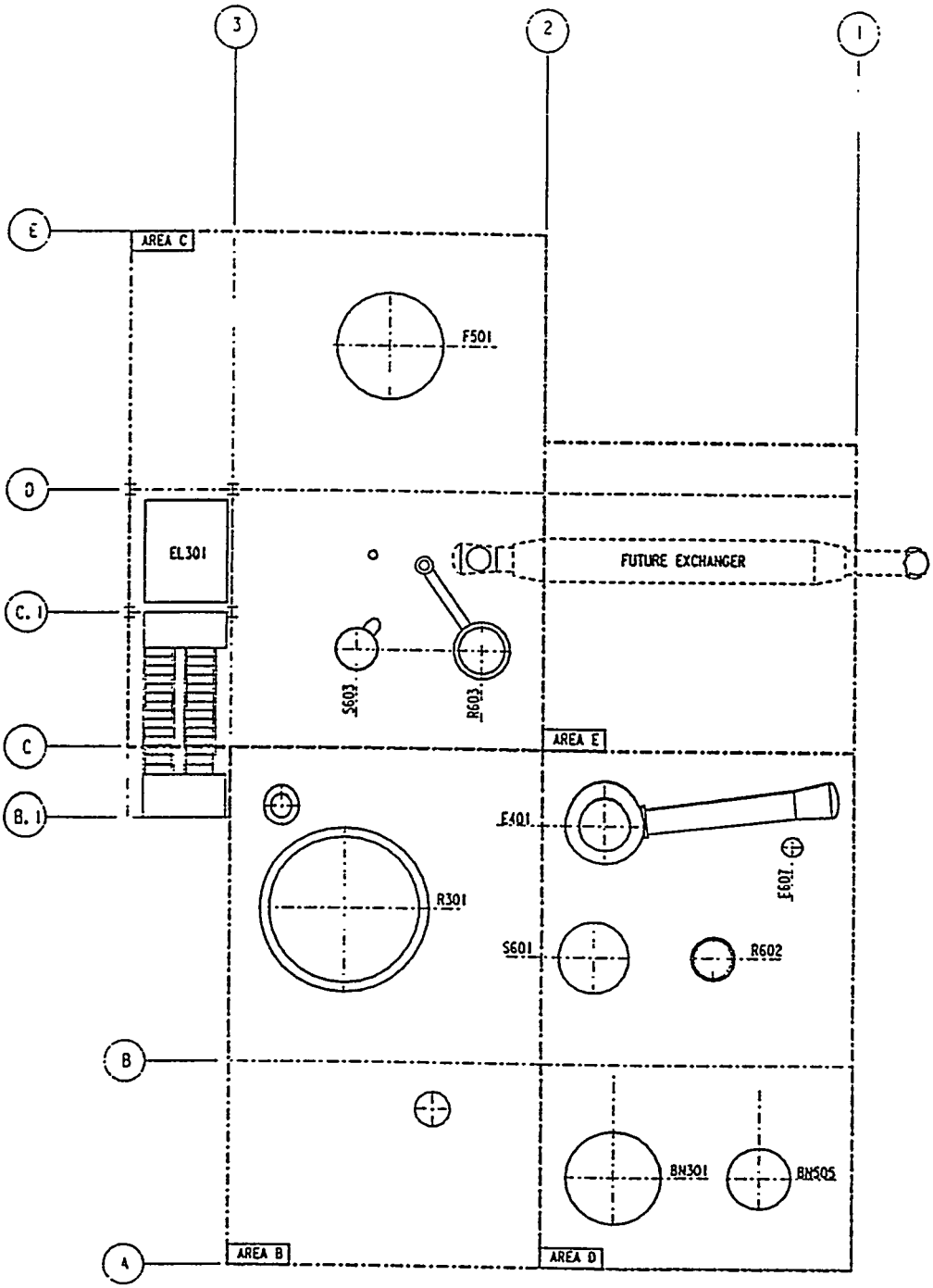
ENGINEERS	DRAWN R. CLAYDEN	SCALE 1/8" = 1'-0"
	CHECK	ISSUED FOR F&B
DESIGNED	APPR.	ISSUED FOR CONST
R. CLAYDEN	DATE	

TRACY POWER STATION - UNIT No. 4
PIÑON PINE POWER PROJECT, RENO, NV

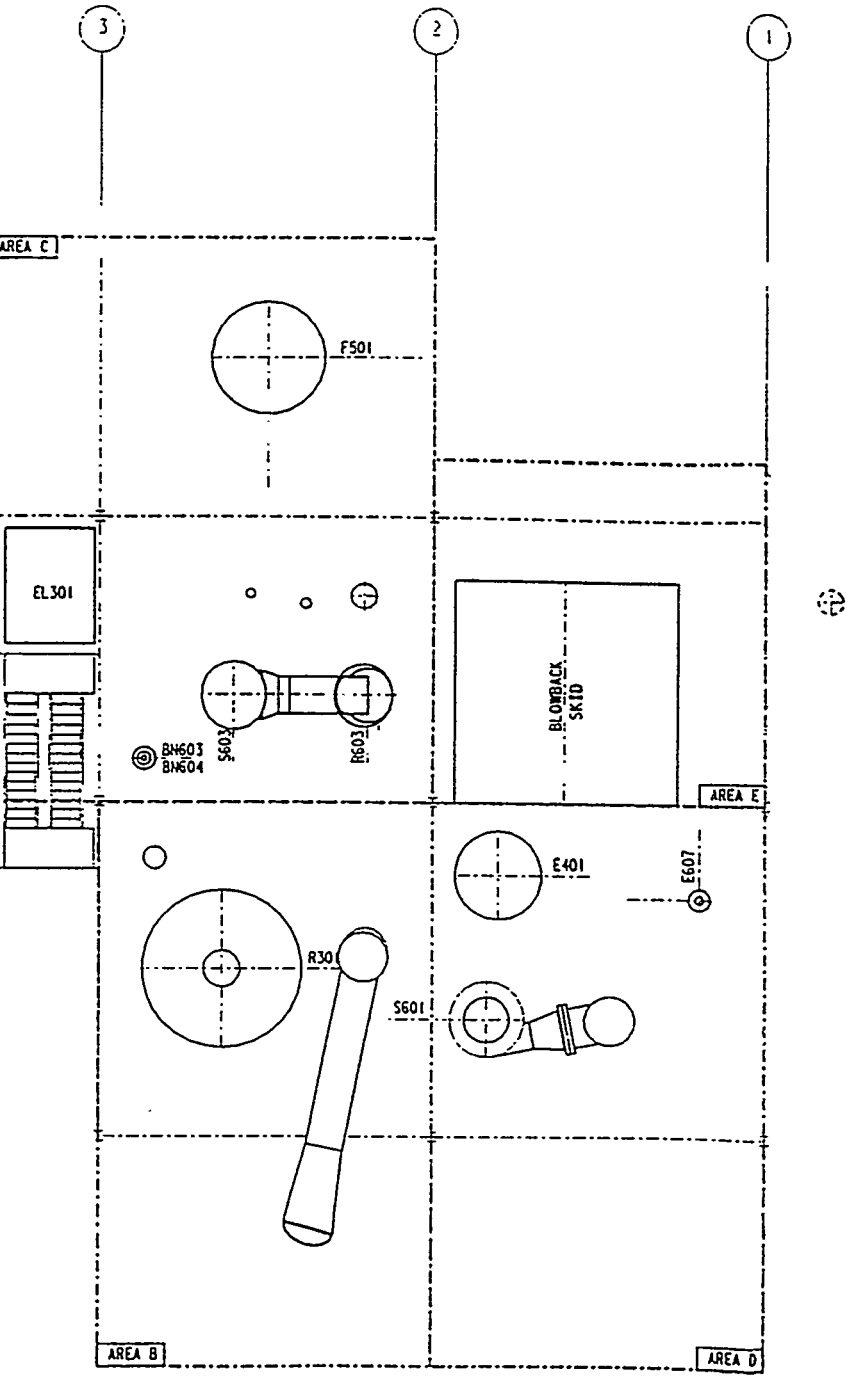
GASIFIER ISLAND PLOT PLAN
PLAN AT EL. 117'-0" TO EL. 137'-0"

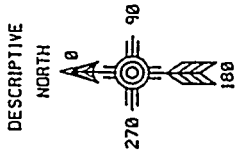
M	CLIENT 15-4141		ISS
	7514	61-04	3

0 5 10 15 20 25 30
GRAPHIC SCALE
1/8" = 1'-0"



PLAN AT EL. 137'-0" TO EL. 157'-0"





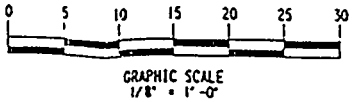
NOTE:

1. FOR LOWER ELEVATIONS SEE DRAWINGS 61-02 THRU 61-04.
2. FOR UPPER ELEVATIONS SEE DRAWING 61-06.

3	ISSUED FOR PLANT LAYOUT REDRAWN - PLANS ORIGINALLY SHOWN ON DWG. 61-04	R. C.			21 OCT 94
2	ISSUED FOR APPROVAL	R. C.	J. I.	M. G.	9 SEP 94
1	ISSUED FOR F. C. E.	R. C.	J. I.	M. G.	10 AUG 94
0	PRELIMINARY PLOT PLAN ISSUE	R. C.	—	—	—
NO	REVISION DESCRIPTION	BY	CHK.	APPR.	DATE

ENGINEERED	JOHN R. CLAYDEN	SCALE 1/8"=1'-0"
	CHECK J. ENGLISH	ISSUED FOR P&B
DESIGNED	APPR. R.W. HUNT	ISSUED FOR CONST
R. CLAYDEN	DATE 9 SEP 94	

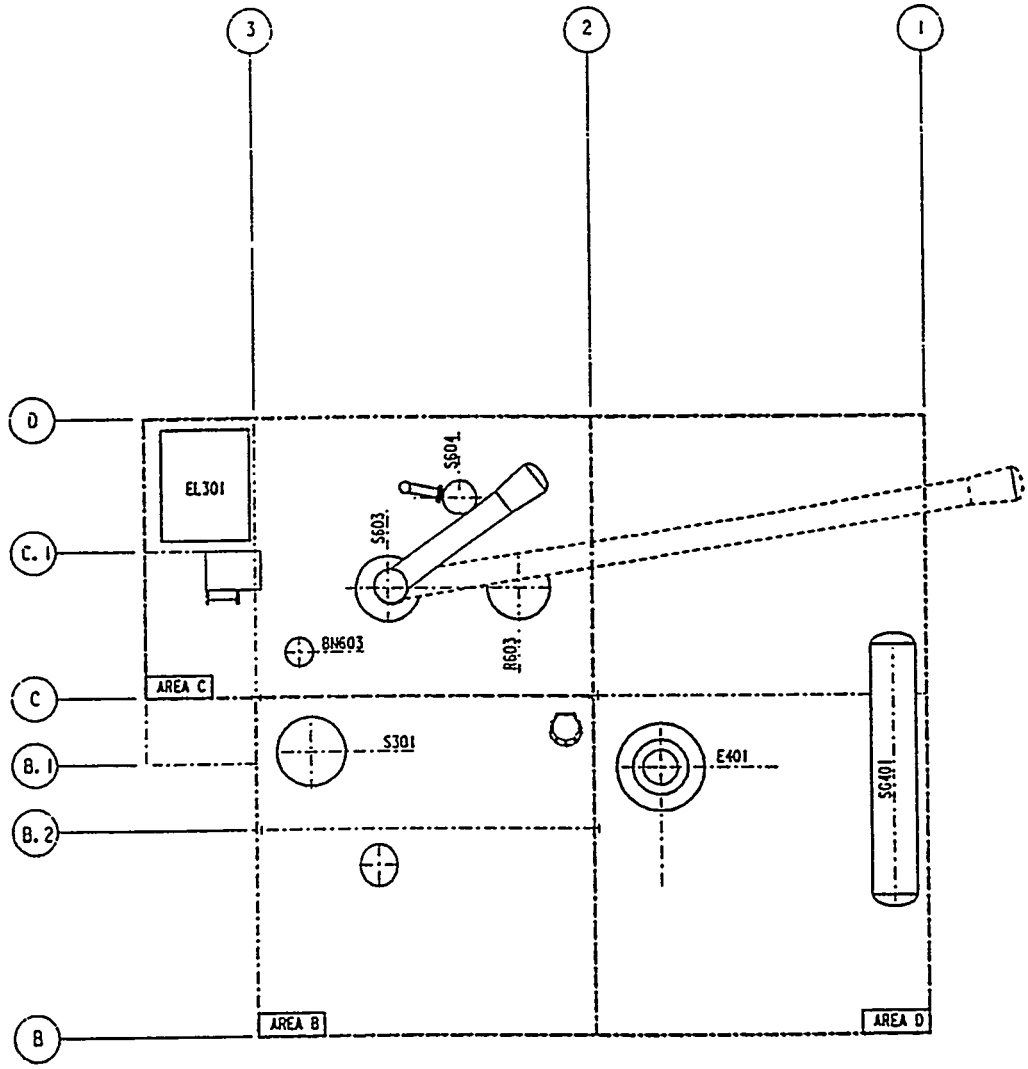
PLAN AT EL. 157'-0" TO EL. 177'-0"



TRACY POWER STATION - UNIT No. 4
PIÑON PINE POWER PROJECT, RENO, NV

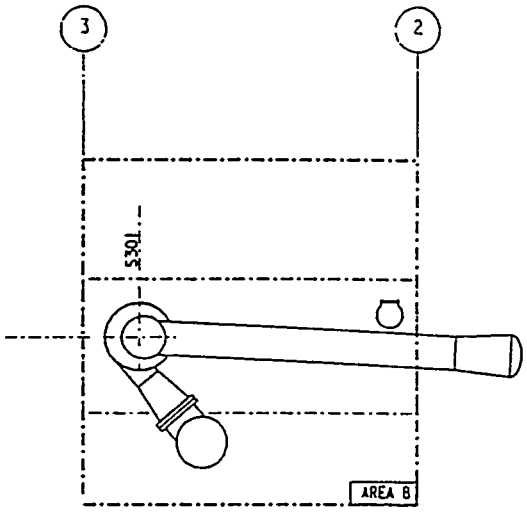
GASIFIER ISLAND PLOT PLAN
PLAN AT EL. 137'-0" TO EL. 177'-0"

M	CLIENT 15-4141		ISS
	7514	61-05	3



PLAN AT EL. 177'-0" TO EL. 197'-0"

0
22X34



PLAN AT EL. 197'-0" AND ABOVE

DESCRIPTIVE NORTH

0 90 180 270

NOTE:

1. FOR LOWER ELEVATIONS SEE DRAWINGS 61-02 THRU 61-05.

NO	REVISION DESCRIPTION	BY	CHK.	APPR.	DATE
3	ISSUED FOR PLANT LAYOUT REDRAWN - PLANS ORIGINALLY SHOWN ON DWG. 61-05	R.C.	JL	MG	11 SEP 96
2	ISSUED FOR APPROVAL	R.C.	J.I.	M.G.	9 SEP 96
1	ISSUED FOR F.C.E.	R.C.	J.I.	M.G.	11 JUL 96
0	PRELIMINARY PLOT PLAN ISSUE	R.C.	—	—	—

ENGINEERED	DRAWN R. CLAYDEN	SCALE 1/8"=1'-0"
	CHECK J. ENGLISH	ISSUED FOR FAB
DESIGNED	APPR. R.A. GAT	
R. CLAYDEN	DATE 9 SEP 96	ISSUED FOR CONST

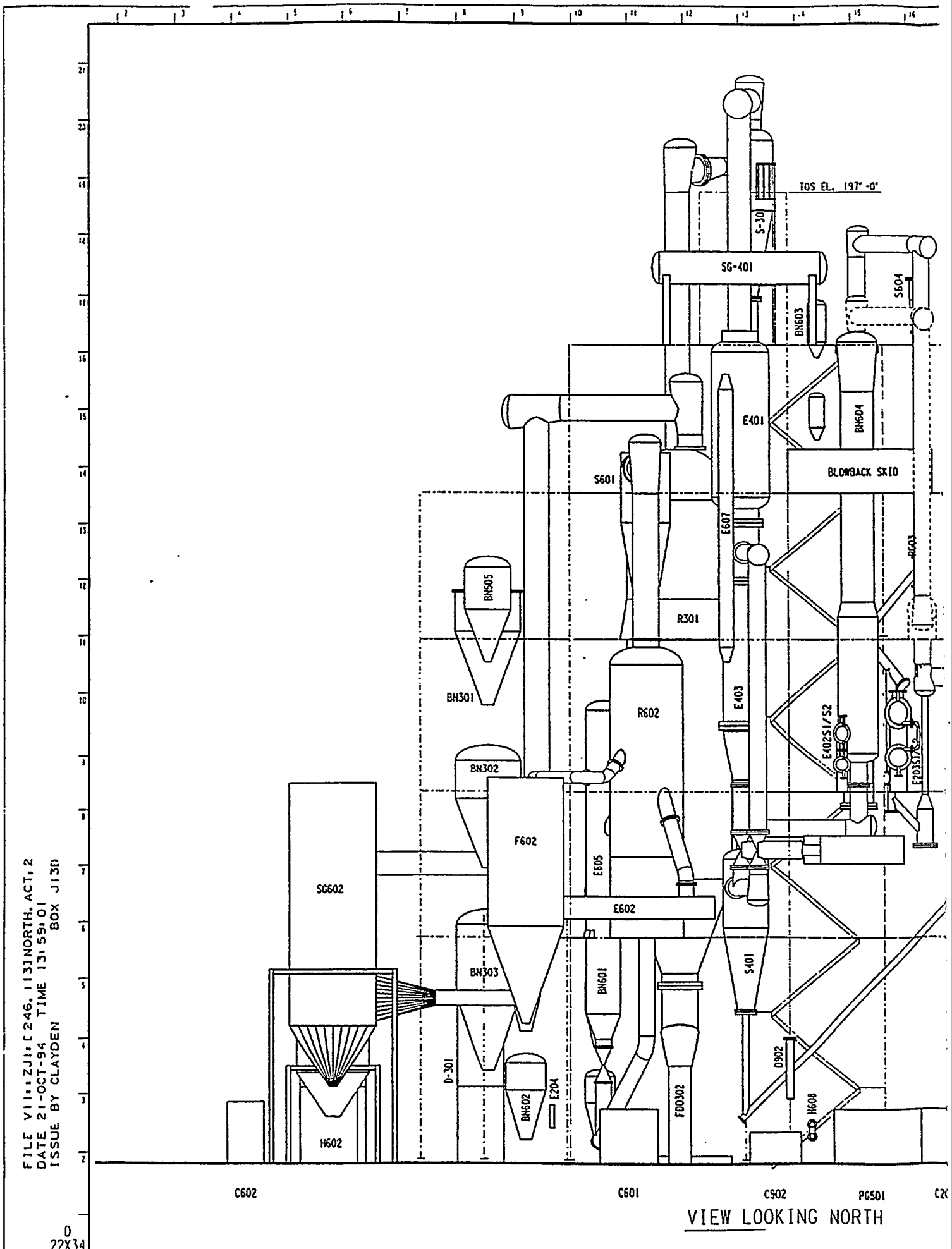
TRACY POWER STATION - UNIT No. 4
PIÑON PINE POWER PROJECT, RENO, NV

GASIFIER ISLAND PLOT PLAN
PLAN AT EL. 177'-0" AND ABOVE

M	CLIENT 15-4141		ISS
	JOB 7514	61-06	3
LINK CLASS	JOB NUMBER	DRAWING NUMBER	REV

0 5 10 15 20 25 30

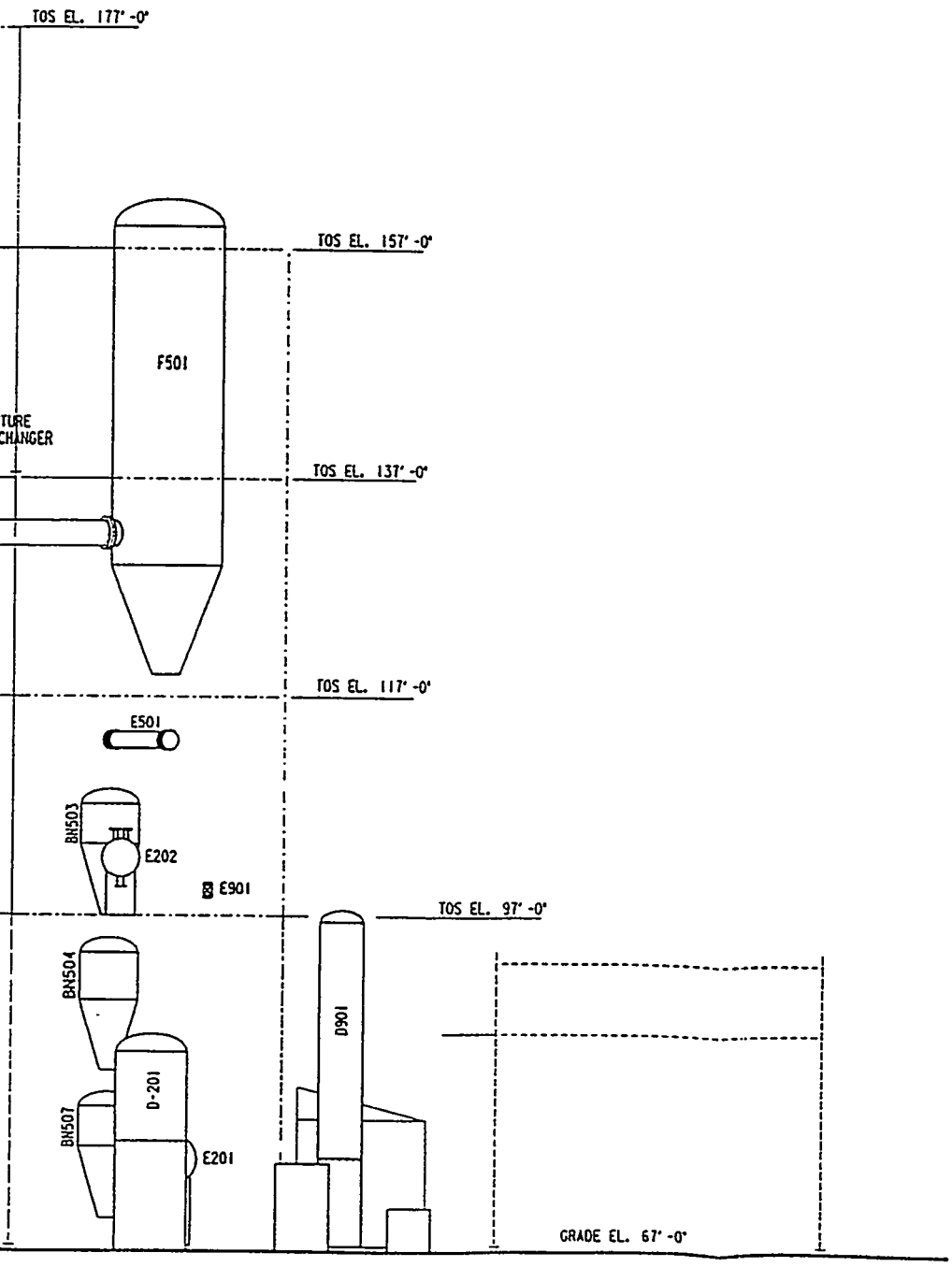
GRAPHIC SCALE
1/8" = 1'-0"



VIEW LOOKING NORTH

FILE VII:ZJI:E246.1133)NORTH.ACT;2
DATE 21-OCT-94 TIME 13:59:01
ISSUE BY CLAYDEN BOX J13D

0
22X34



NO	REVISION DESCRIPTION	BY	CHK.	APPR.	DATE
3	ISSUED FOR PLANT LAYOUT	R. C.			6 NOV 96
2	ISSUED FOR APPROVAL	R. C.	J. I.	W. G.	9 SEP 96
1	ISSUED FOR F. C. E.	R. C.	J. I.	W. G.	11 AUG 96
0	PRELIMINARY PLOT PLAN ISSUE	R. C.	—	—	—

ENGINEERED

DESIGNED
A. CLAYDEN

DRAWN R. CLAYDEN
CHECK J. INGLISH
APPR. R. E. SMITH
DATE 9 SEP 96

SCALE 1/16"
ISSUED FOR FAB
ISSUED FOR COST

TRACY POWER STATION - UNIT No. 4
PIÑON PINE POWER PROJECT, RENO, NV

GASIFIER ISLAND PLOT PLAN
SOUTH ELEVATION

M

CLIENT 15-4141

7514

61-07

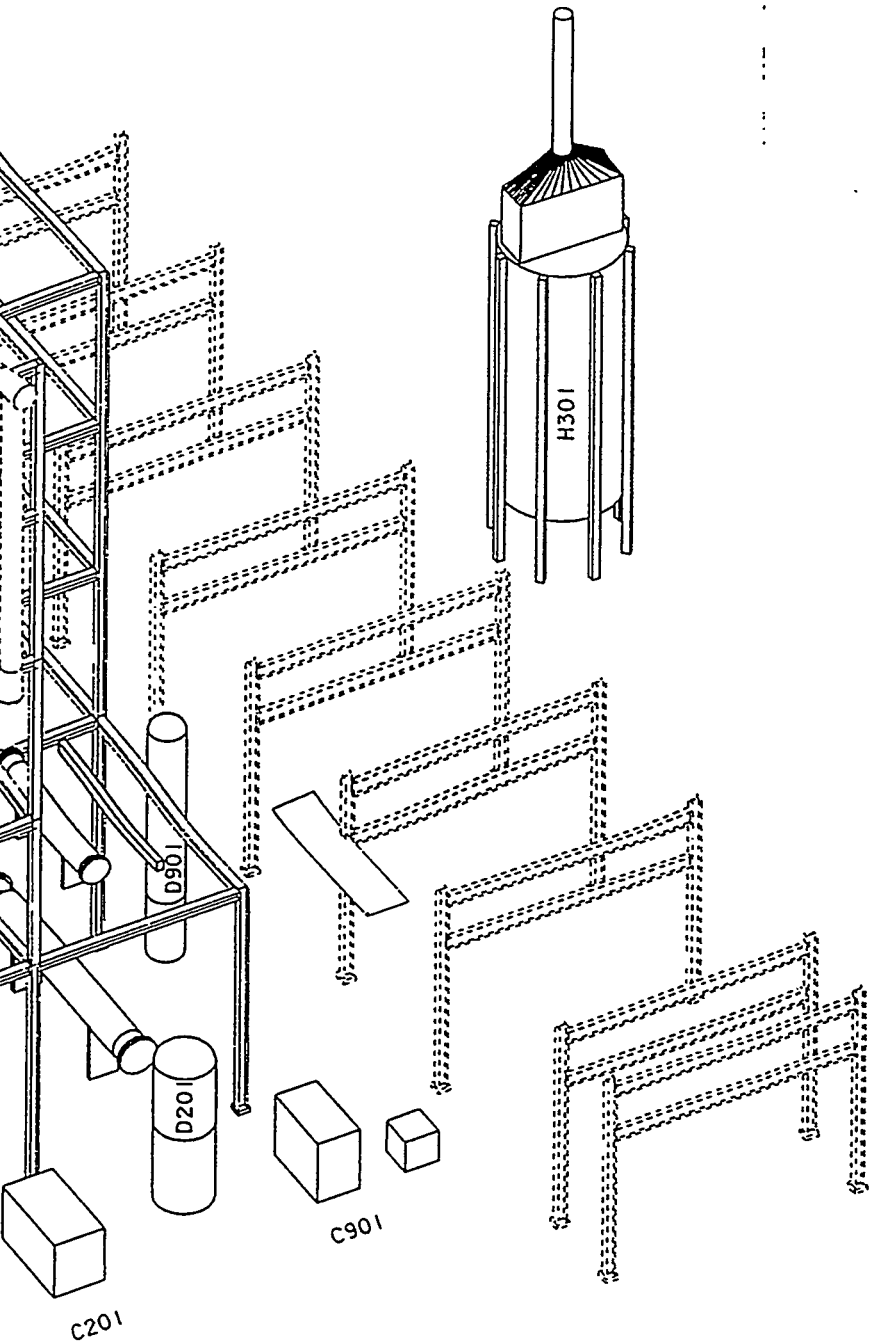
ISS

3

FILE VII:.ZJI:[246.113]ISO.ACT;1
DATE 21-OCT-94 TIME 14:14:20
ISSUE BY CLAYDEN BOX J13D

D
22X34

61-D8



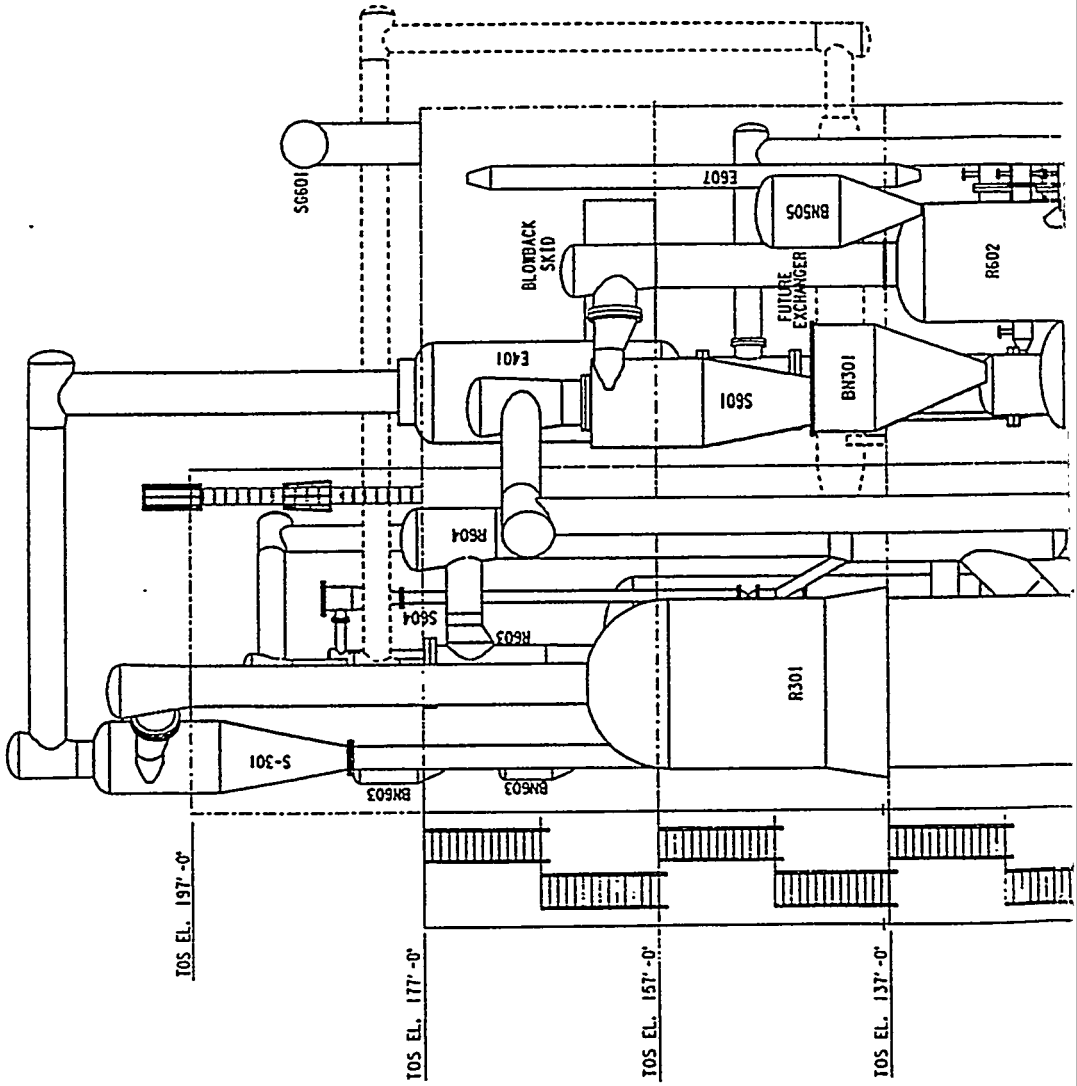
NO	REVISION DESCRIPTION	BY	CHK.	APPR.	DATE
3	ISSUED FOR PLANT LAYOUT				
2	ISSUED FOR APPROVAL	H. C.	J. I.	M. G.	
1	ISSUED FOR F. C. E.	R. C.	J. T.	M. G.	
C	PRELIMINARY PLOT PLAN ISSUE	R. C.	—	—	—

ENGINEERED	DRAWN P. CLAYDEN	SCALE NONE
	CHECK J. INGLISH	ISSUED FOR F&B
DESIGNED	APPR. R. A. HUNT	
R. CLAYDEN	DATE 9 SEP 94	ISSUED FOR CONST

TRACY POWER STATION - UNIT No. 4
PIÑON PINE POWER PROJECT, RENO, NV

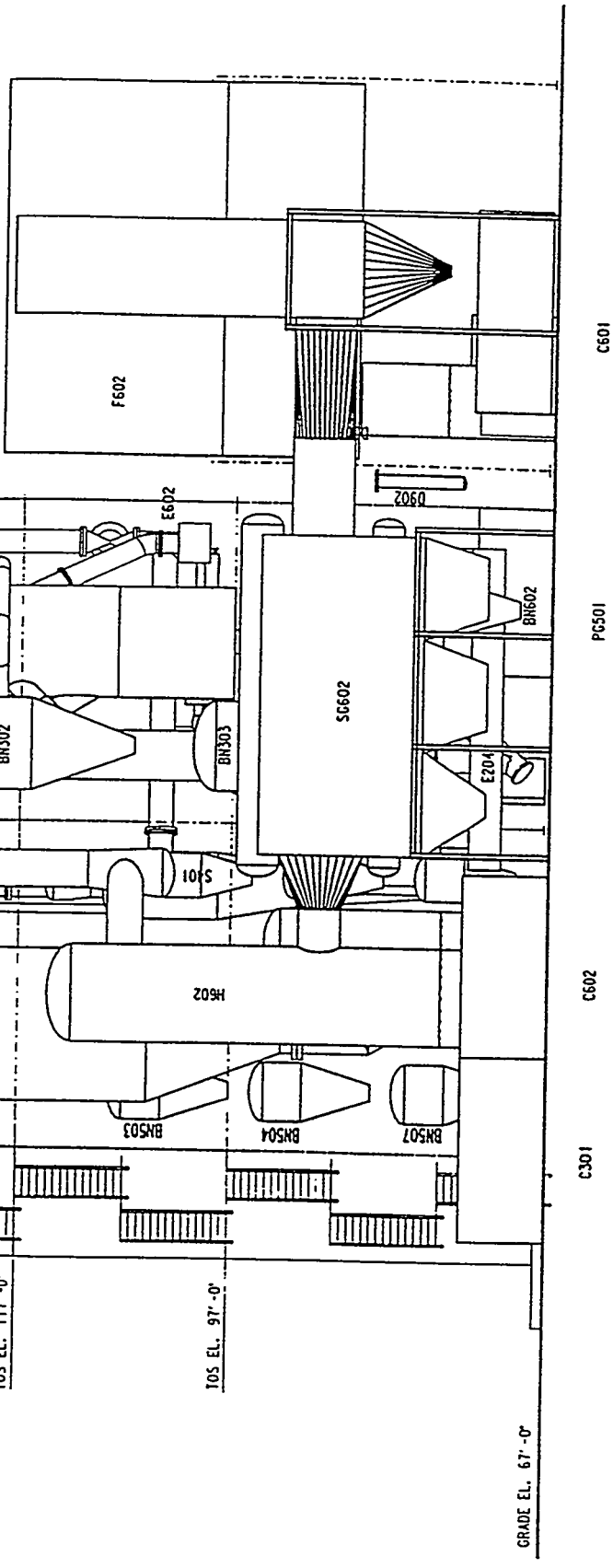
GASIFIER ISLAND PLOT PLAN
ISOMETRIC VIEW

M	CLIENT 15-4141		ISS 3
	MWK 7514	61-08	
MWK CLASS	JOB NUMBER	DRAWING NUMBER	REV



FILE V11:ZJ1:[246.113]EAST.ACT;1
DATE 21-OCT-94 TIME 14:15:57
ISSUE BY CLAYDEN BOX J13D

D
22X34



VIEW LOOKING EAST

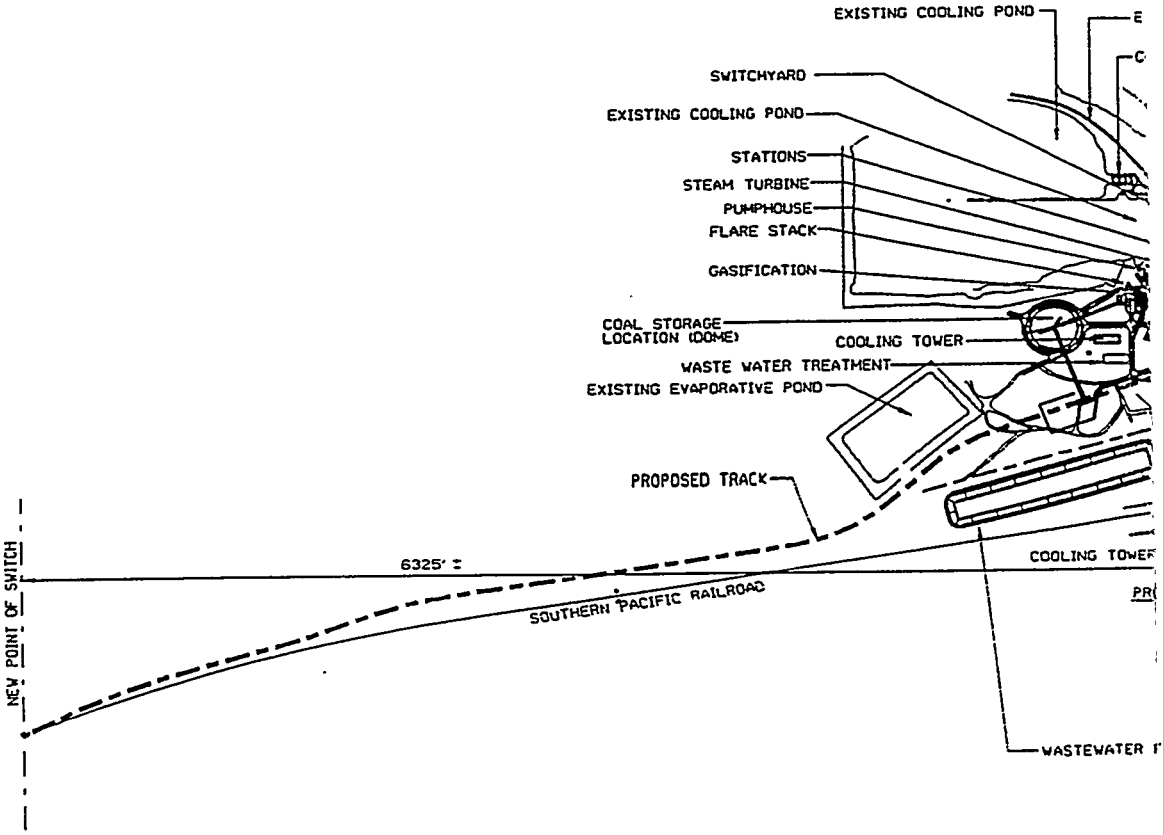
NO	REVISION DESCRIPTION	BY	CHK.	APPD.	DATE
3	ISSUED FOR PLANT LAYOUT				
2	ISSUED FOR APPROVAL	R. C.	J. I.	M. G.	9 SEP 94
1	ISSUED FOR F. C. E.	R. C.	J. I.	M. G.	11 AUG 94
0	PRELIMINARY PLOT PLAN ISSUE	R. C.	—	—	—

ENGINEERED	DRAWN R. CLAYDEN	SCALE NONE
	CHECK J. INGLISH	ISSUED FOR FAB
DESIGNED	APPR. R. C. HUNT	ISSUED FOR CONST
R. CLAYDEN	DATE 5 SEP 94	

TRACY POWER STATION - UNIT No. 4
PIÑON PINE POWER PROJECT, RENO, NV

GASIFIER ISLAND PLOT PLAN
WEST ELEVATION

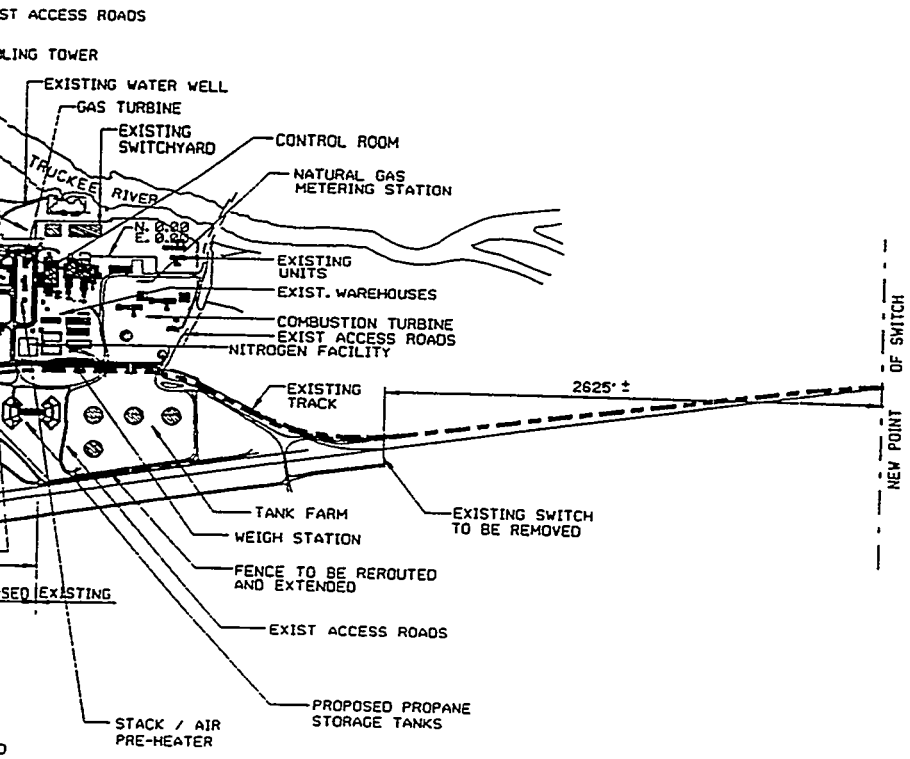
M	CLIENT 15-4141		ISS 3
	WBS 7514	61-09	
MWK CLASS	JOB NUMBER	DRAWING NUMBER	REV


EXISTING COOLING POND
SWITCHYARD
EXISTING COOLING POND
STATIONS
STEAM TURBINE
PUMPHOUSE
FLARE STACK
GASIFICATION
COAL STORAGE LOCATION (DOME)
COOLING TOWER
WASTE WATER TREATMENT
EXISTING EVAPORATIVE POND
PROPOSED TRACK
6325' ±
SOUTHERN PACIFIC RAILROAD
NEW POINT OF SWITCH
COOLING TOWER
WASTEWATER

4142-1-51-100

NOTES

1. FOR GENERAL NOTES SEE DRAWING #A142-1-51-10.



SCALE

0 200 400 800 1200

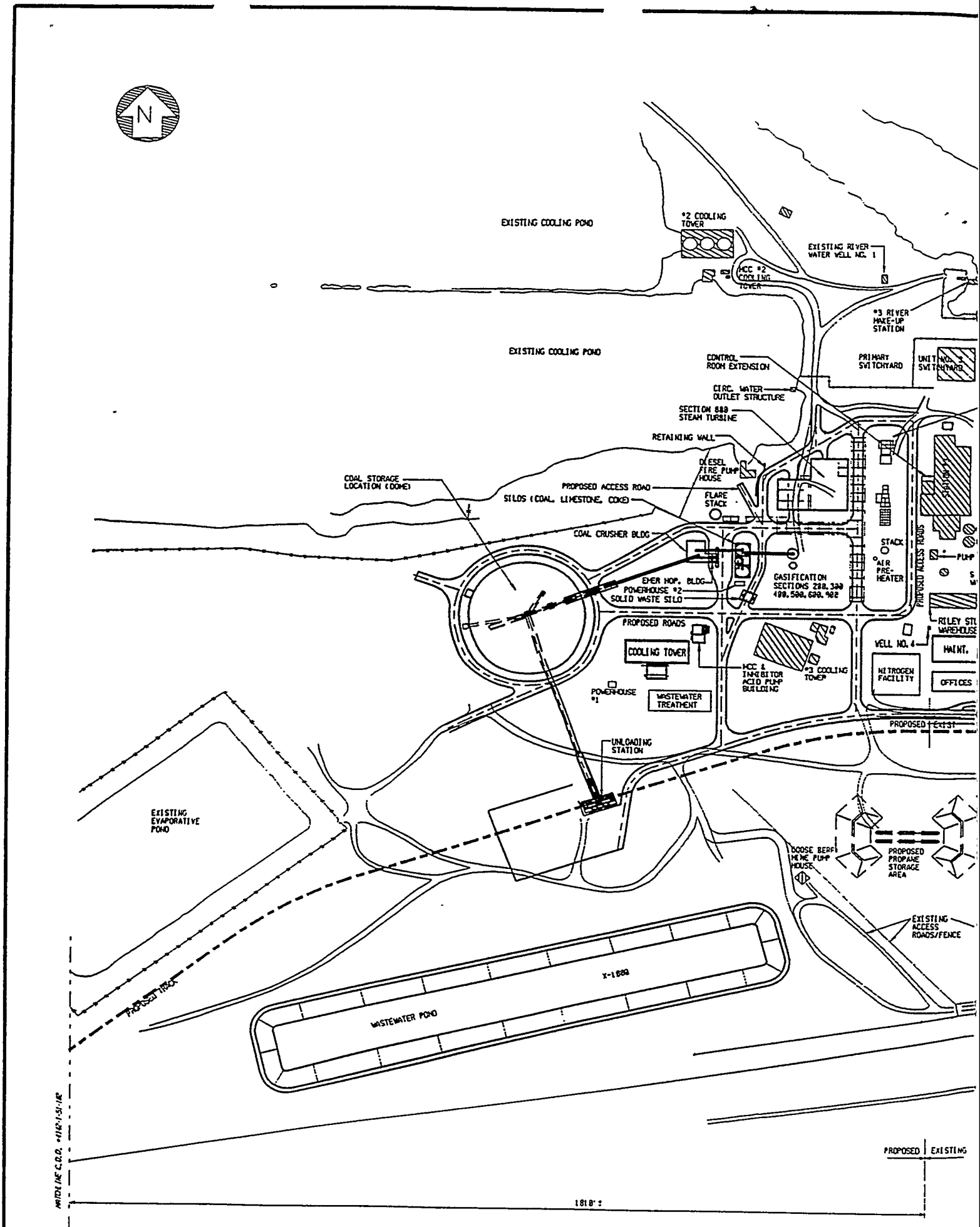
100

1"=400'-0"

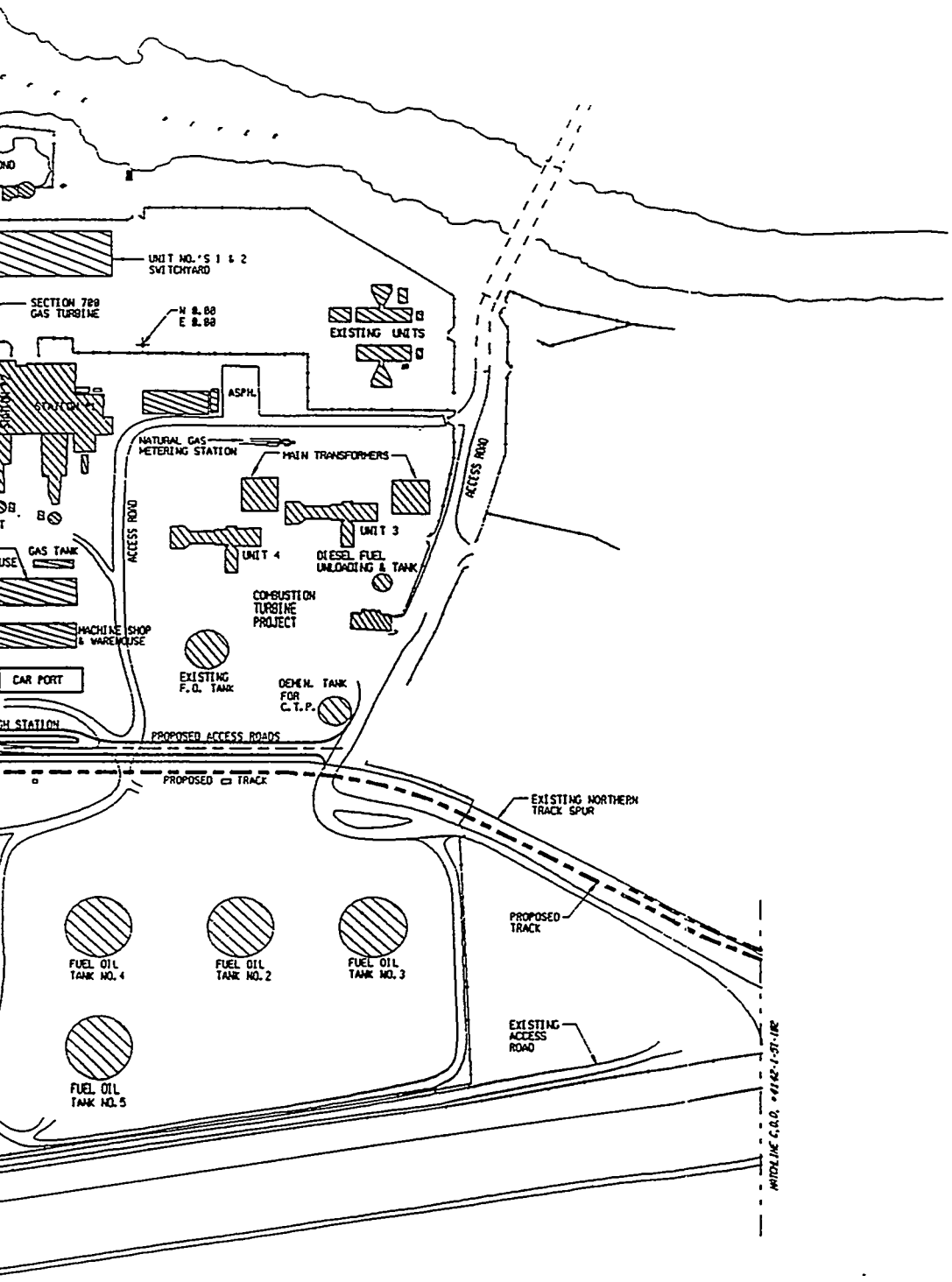
A142-1-51-100

B	10-07-14	UPDATED PER CLOSE "11" EXTENSION
C	07-17-14	ISSUED FOR CLOSE OUT APPROVAL
B	05-30-14	ISSUED FOR INTERNAL COMMENT
A	05-11-14	ISSUED FOR INTERNAL COMMENT
REV.	DATE	DESCRIPTION

SITE KEY PLOT PLAN


N
EXISTING COOLING POND
#2 COOLING TOWER
EXISTING RIVER WATER WELL NO. 1
MCC #2 COOLING TOWER
#3 RIVER MAKE-UP STATION
EXISTING COOLING POND
CONTROL ROOM EXTENSION
PRIMARY SWITCHYARD
UNIT NO. 1 SWITCHYARD
CIRC. WATER OUTLET STRUCTURE
SECTION 888 STEAM TURBINE
RETAINING WALL
DIESEL FIRE PUMP HOUSE
COAL STORAGE LOCATION (DOME)
PROPOSED ACCESS ROAD
SILOS (COAL, LIMESTONE, COKE)
FLARE STACK
COAL CRUSHER BLDG.
STACK
AIR PRE-HEATER
PUMP
EMER HOP. BLDG.
POWERHOUSE #2
SOLID WASTE SILO
GASIFICATION SECTIONS 200, 300 400, 500, 600, 900
PROPOSED ACCESS ROADS
PROPOSED ROADS
COOLING TOWER
WELL NO. 4
MAINT.
NITROGEN FACILITY
OFFICES
MCC & INHIBITOR ACID PUMP BUILDING
#3 COOLING TOWER
POWERHOUSE #1
WASTEWATER TREATMENT
PROPOSED
UNLOADING STATION
EXISTING EVAPORATIVE POND
PROPOSED PROPANE STORAGE AREA
EXISTING ACCESS ROADS/FENCE
PROPOSED TRAIL
WASTEWATER POND
PROPOSED
EXISTING
1818'±

4142-1-51-101



SCALE

0 100 200 300

50

1"=100'-0"

HOLD

1. SIZE OF WASTEWATER POND
2. SIZE NITROGEN FACILITY
3. NEW LOCATION OF FENCE

GENERAL NOTES

1. THE FOLLOWING PLOT PLANS WERE DEVELOPED WITH PRELIMINARY INFORMATION. HOLD FOR CERTIFIED EQUIPMENT DRAWINGS.

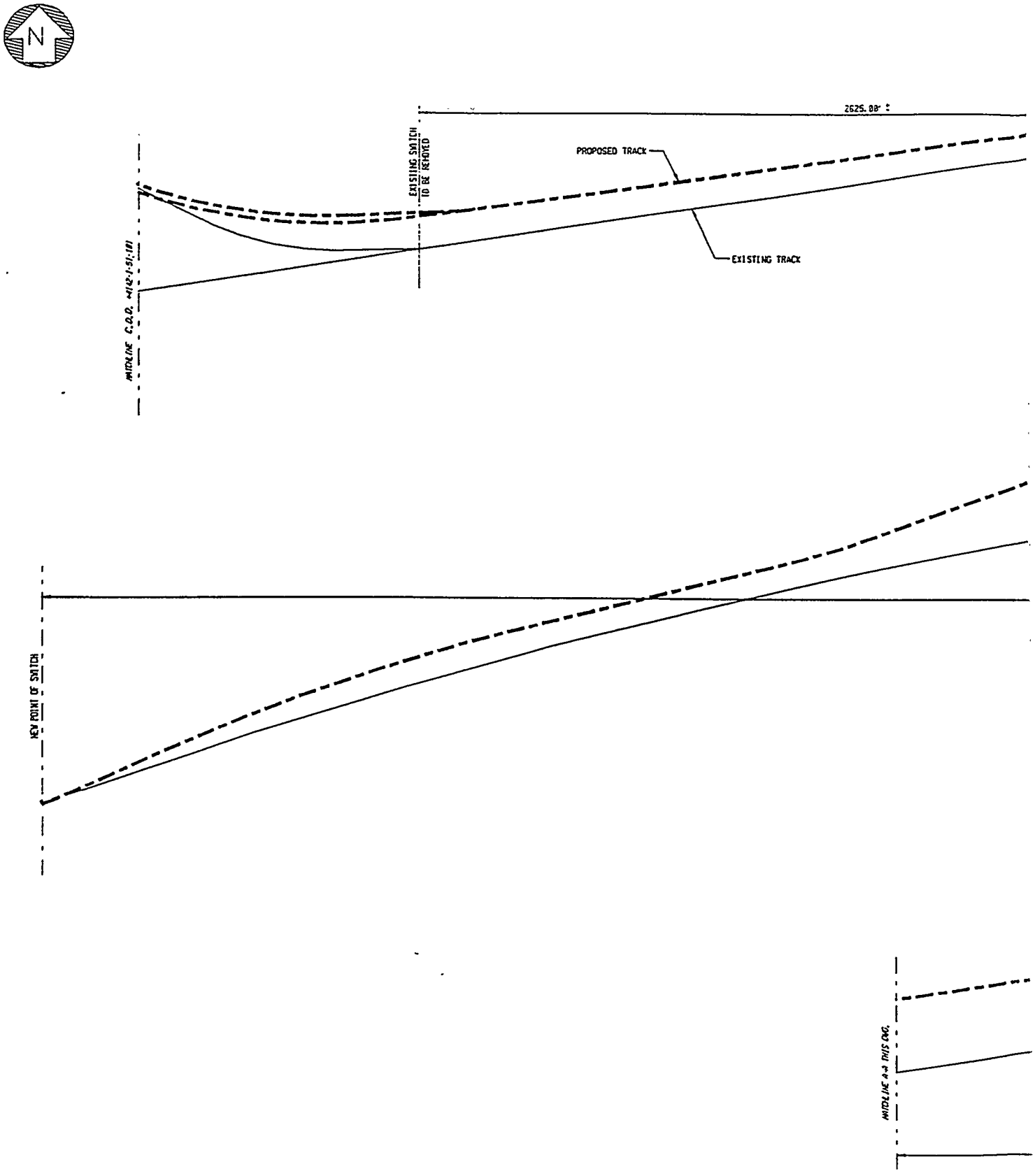
LEGEND

- EXISTING STRUCTURES
- PROPOSED STRUCTURES
- EXISTING FENCE LINE
- PROPOSED FENCE LINE
- EDGE OF WATER
- EDGE OF EXISTING RD
- EDGE OF PROPOSED RD
- EXISTING TRACKS
- PROPOSED TRACKS
- PROPOSED KEY OR FUTURE FACILITIES

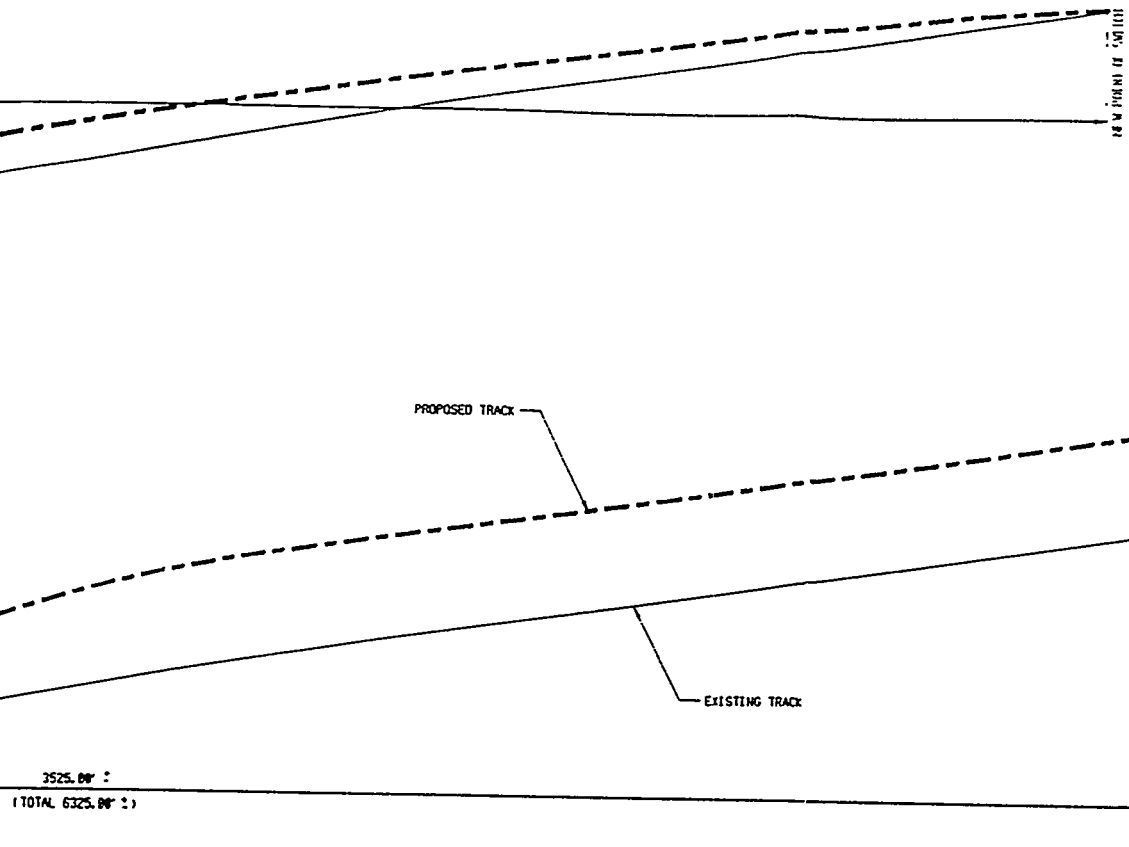
4142-1-51-101

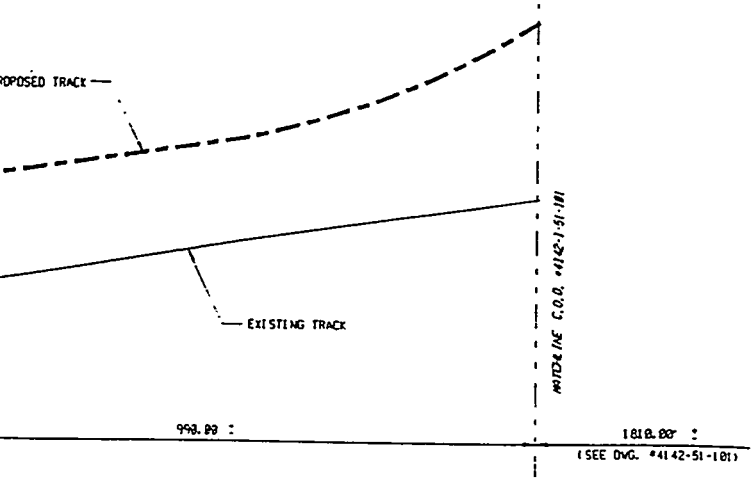
B	10-07-94	ISSUED FOR CLIENT "11" SET/MKT
C	09-23-94	ISSUED FOR CLIENT APPROVAL
D	09-30-94	ISSUED FOR PERMIT SERVICES
E	09-11-94	ISSUED FOR PERMIT SERVICES
NO.	DATE	DESCRIPTION

KEY PLOT PLAN
GASIFICATION ISLAND, COMBINED CYCLE POWER ISLAND & OFFSITES


N
2625.88'
EXISTING SWITCH TO BE REMOVED
PROPOSED TRACK
EXISTING TRACK
MEY POINT OF SWITCH

4142-1-51-102





4142-1-51-102

B	10-07-94	UPDATED FOR CLASS "II" CUTSHEET
C	07-18-94	ISSUED FOR CLIENT APPROVAL
B	05-20-94	ISSUED FOR INTERNAL COMMENT
A	04-11-94	ISSUED FOR INTERNAL COMMENTS
REV.	DATE	DESCRIPTION

SCALE

0 100 200 300

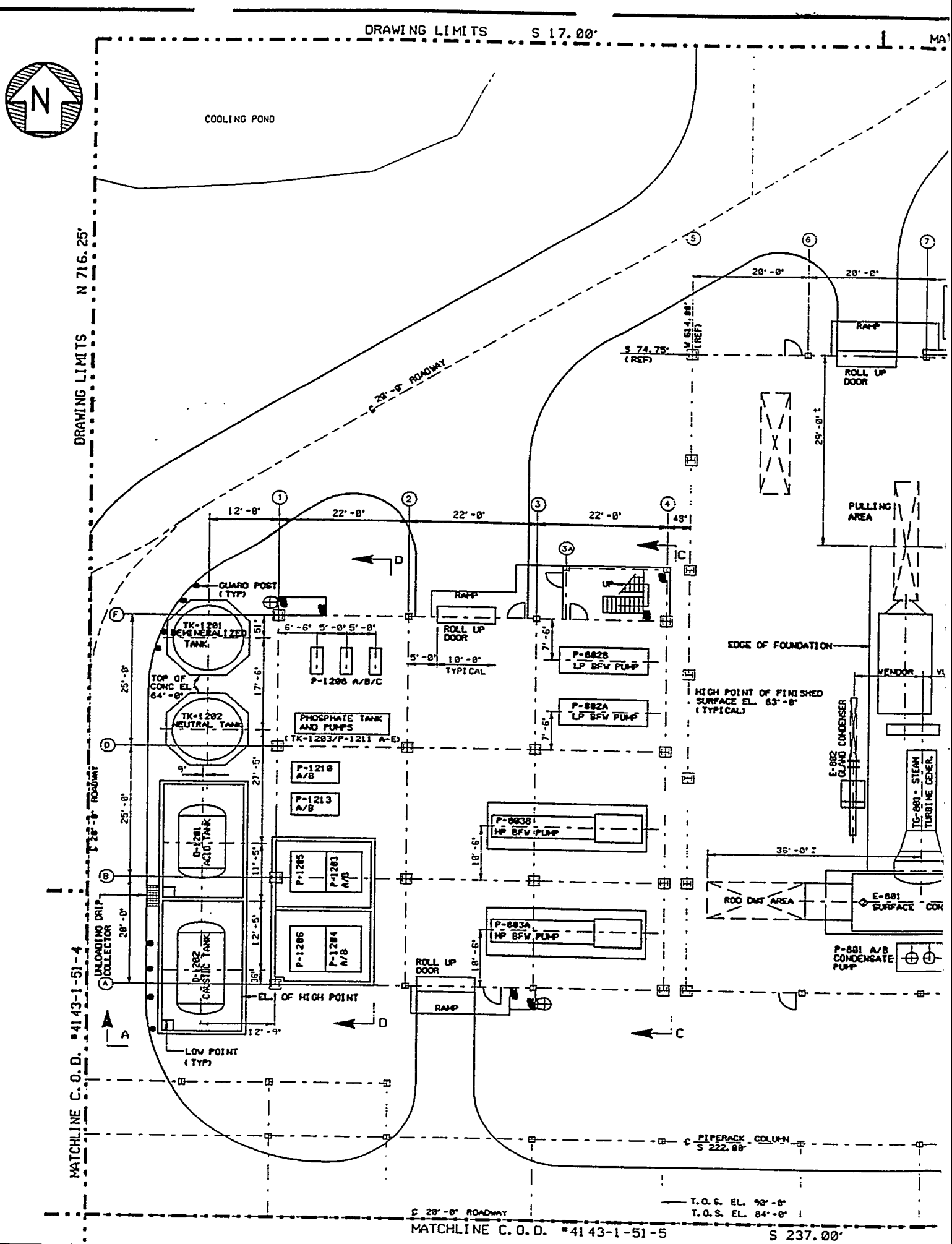
50

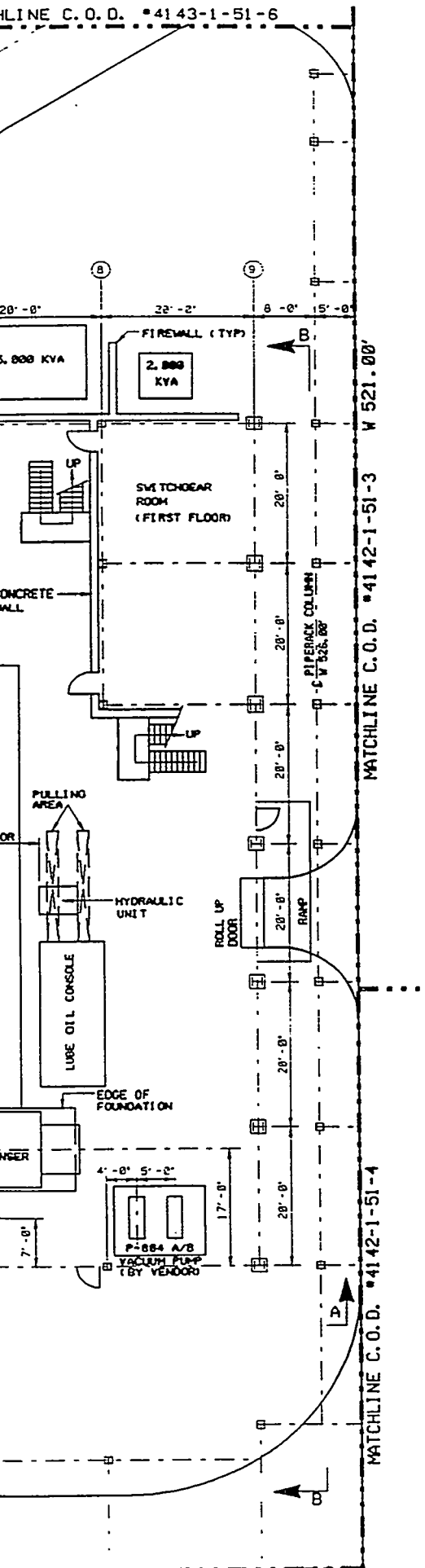
1"=100'-0"

KEY PLOT PLAN
OFFSITES

ROCK POINT GAS STORAGE PROJECT — ROCK POINT SYSTEM-WEST NO. 4

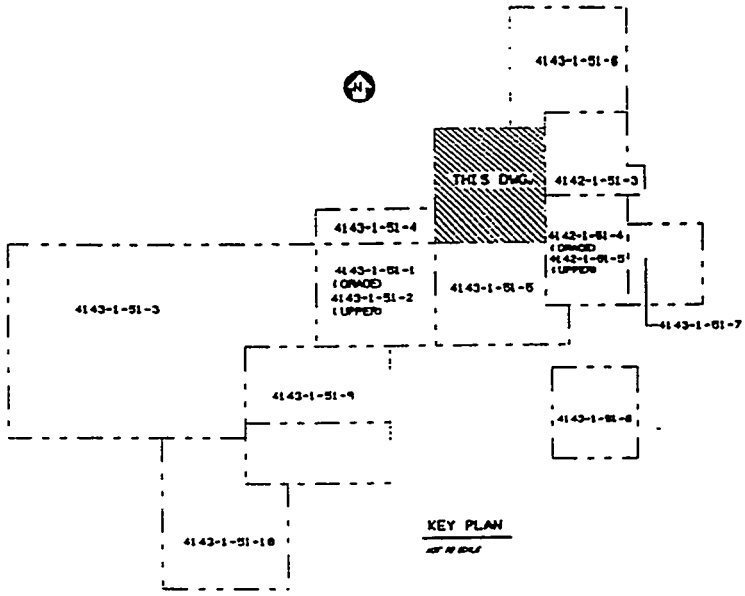
DRAWN BY:	TT	3-29-94	SCALE:	1"=100'-0"


DRAWING LIMITS S 17.00'
N
COOLING POND
DRAWING LIMITS N 716.25'
MATCHLINE C.O.D. "4143-1-51-4
MATCHLINE C.O.D. "4143-1-51-5
S 237.00'
℄ 20'-0" ROADWAY
S 74.75' (REF)
W 614.88' (REF)
20'-0"
20'-0"
RAMP
ROLL UP DOOR
29'-0"±
PULLING AREA
12'-0"
22'-0"
22'-0"
22'-0"
48°
GUARD POST (TYP)
TK-1201 DEMINERALIZED TANK
TOP OF CONC EL 64'-0"
TK-1202 NEUTRAL TANK
PHOSPHATE TANK AND PUMPS (TK-1203/P-1211 A-E)
P-1206 A/B/C
6'-6" 5'-0" 5'-0"
5'-0"
10'-0" TYPICAL
RAMP
ROLL UP DOOR
UP
P-882B LP BFW PUMP
P-882A LP BFW PUMP
EDGE OF FOUNDATION
VENDOR
HIGH POINT OF FINISHED SURFACE EL. 63'-0" (TYPICAL)
E-882 GLAND CONDENSER
TG-681 - STEAM TURBINE GENER.
P-1210 A/B
P-1213 A/B
D-1201 ACID TANK
D-1202 CAUSTIC TANK
P-1205
P-1203 A/B
P-1206
P-1204 A/B
P-883B HP BFW PUMP
P-883A HP BFW PUMP
36'-0"±
ROD UNIT AREA
E-681 SURFACE CON
P-681 A/B CONDENSATE PUMP
UNLOADING DRIP COLLECTOR
EL. OF HIGH POINT
LOW POINT (TYP)
ROLL UP DOOR
RAMP
℄ PIPERACK COLUMN S 222.98'
T.O.S. EL. 90'-8"
T.O.S. EL. 84'-8"
℄ 20'-0" ROADWAY



NOTES

1. FOR GENERAL NOTES SEE DRAWING *4142-1-51-101
2. PLANT REFERENCE ELEVATION WILL BE N.G.V.D. 4263'-0" (FOR THE PURPOSE OF SIMPLIFICATION THE N.G.V.D. 4200'-0" = 0'-0" PLANT ELEVATION HENCE PLANT REFERENCE WILL BE 63'-0")



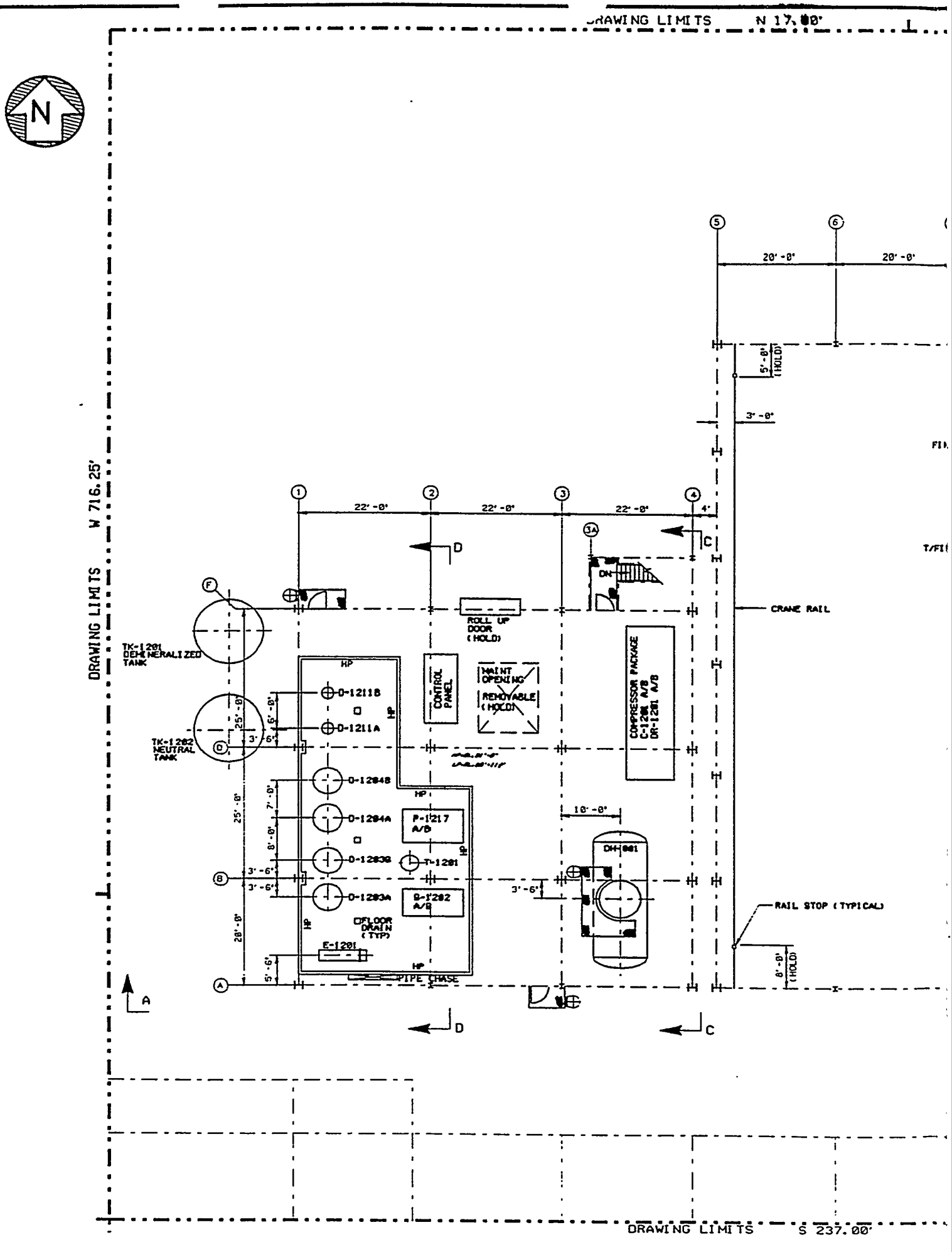
HOLD

1. SIZE BLDG., FDN. & PIPE RACK
2. EQUIPMENT NUMBERS
3. LOCATION OF CLEAN, DIRTY AND OVERFLOW SUMPS
4. VENDOR'S DRAWINGS (ALL)

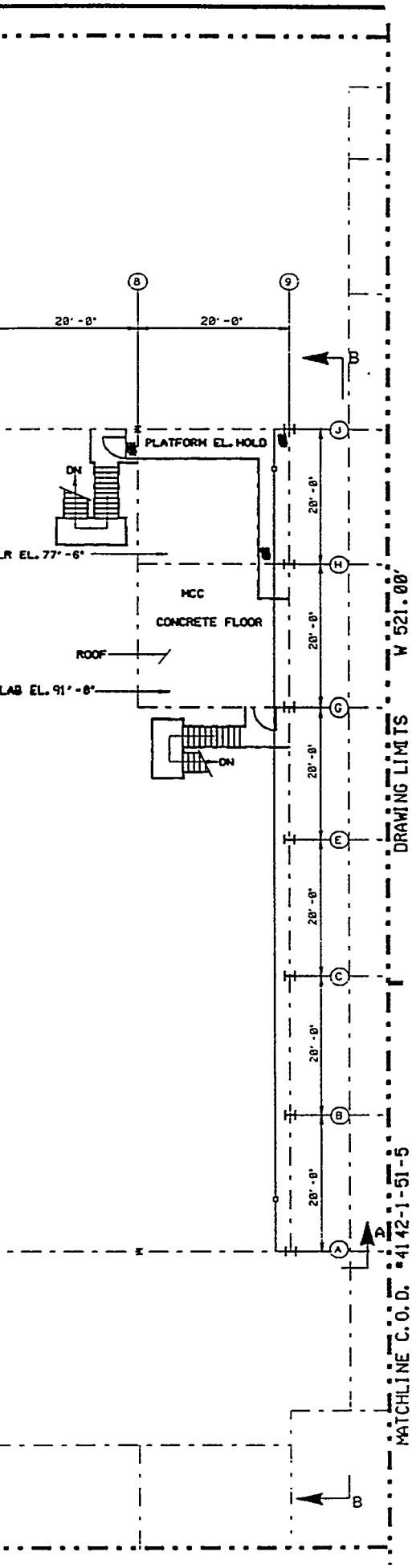
4142-1-51-1

C	10-29-01	ISSUED FOR CLASS "2" ESTIMATE
B	09-28-01	ISSUED FOR CLIENT APPROVAL
A	08-14-01	ISSUED FOR INTERNAL REVIEW
NO.	DATE	DESCRIPTION

PLOT PLAN
STEAM TURBINE AT GRADE

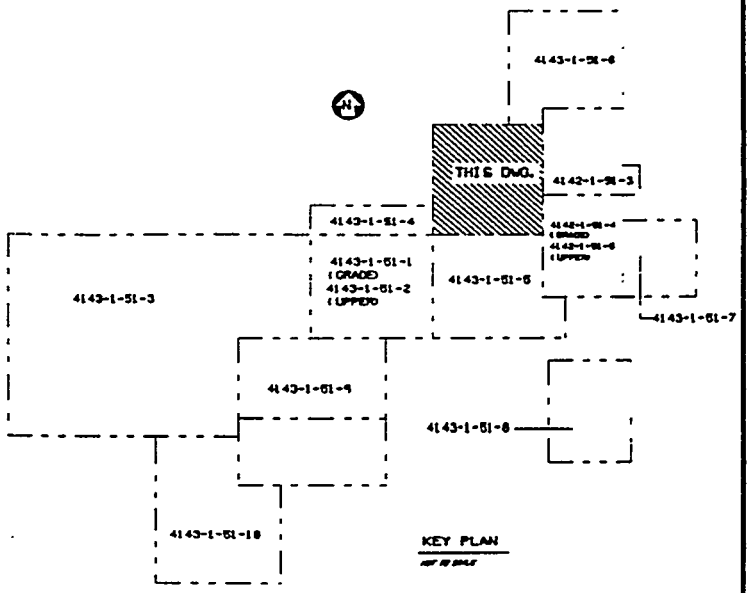

DRAWING LIMITS N 17.00'
DRAWING LIMITS W 716.25'
DRAWING LIMITS S 237.00'
N
20'-0"
20'-0"
22'-0"
22'-0"
22'-0"
4"
5'-0" (HOLD)
3'-0"
CRANE RAIL
ROLL UP DOOR (HOLD)
DN
TK-1201 DEHUMERALIZED TANK
TK-1202 NEUTRAL TANK
CONTROL PANEL
MAINT OPENING REMOVABLE (HOLD)
COMPRESSOR PACKAGE C-1201 A/B DR-1201 A/B
HP
O-1211B
O-1211A
O-1204B
O-1204A
O-1203B
O-1203A
P-1217 A/B
T-1201
P-1202 A/B
FLOOR DRAIN (TYP)
E-1201
PIPE CHASE
DH-1201
10'-0"
3'-6"
RAIL STOP (TYPICAL)
8'-0" (HOLD)
25'-0"
7'-0"
8'-0"
28'-0"
5'-6"
A
B
C
D
1
2
3
3A
4
5
6
F

4142-1-51-2



NOTES

1. FOR GENERAL NOTES SEE DRAWING "4142-1-51-101



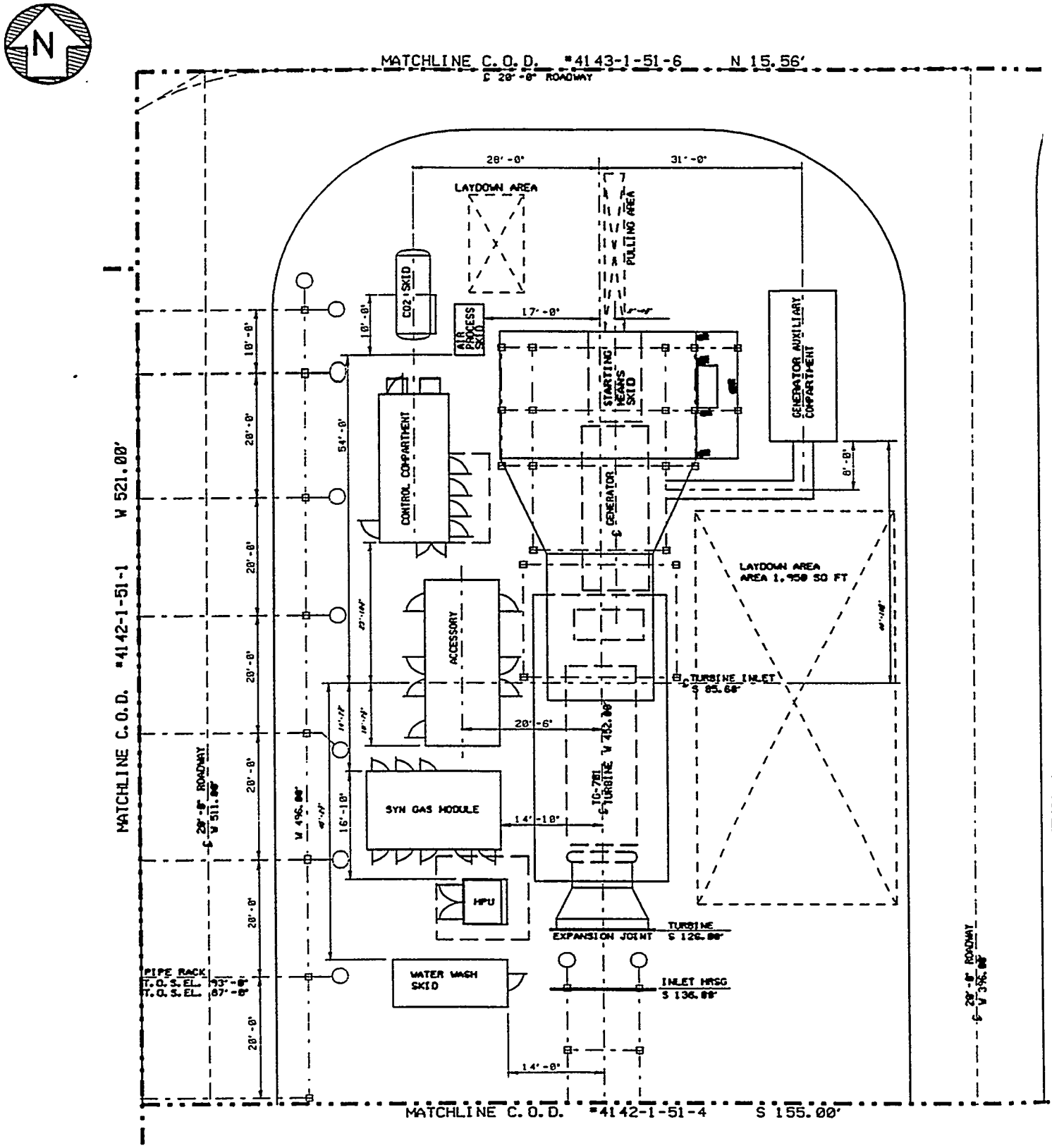
KEY PLAN

HOLD

1. MAINT OPENING AT SECOND FLOOR
2. PLATF EL (CRANE MAINT AREA)
3. D-1207 LOCATION
4. CRANE DRAWING

4142-1-51-2

PLOT PLAN
STEAM TURBINE AT UPPER LEVEL


N
MATCHLINE C.O.D. #4143-1-51-6 N 15.56'
℄ 28'-0" ROADWAY
28'-0"
31'-0"
LAYDOWN AREA
PULLING AREA
CO2 SKID
AIR PROCESS SKID
17'-0"
18'-0"
STARTING MEANS SKID
GENERATOR AUXILIARY COMPARTMENT
CONTROL COMPARTMENT
54'-0"
℄ GENERATOR
8'-0"
LAYDOWN AREA
AREA 1,950 SQ FT
ACCESSORY
℄ TURBINE INLET
S 85.68'
20'-6"
IC-7EL TURBINE
SYN GAS MODULE
14'-10"
16'-10"
HPU
TURBINE
EXPANSION JOINT S 126.88'
WATER WASH SKID
INLET HRSG
S 136.88'
PIPE RACK
T.O.S.EL. 93'-0"
T.O.S.EL. 87'-0"
14'-0"
MATCHLINE C.O.D. #4142-1-51-1 W 521.00'
℄ 28'-0" ROADWAY
W 511.88'
W 496.88'
20'-0"
MATCHLINE C.O.D. #4142-1-51-4 S 155.00'
℄ 28'-0" ROADWAY
S 395.88'

NOTES

1. FOR GENERAL NOTES SEE DRAWING #4142-1-51-101

APPROX DRAWINGS

GENERAL ELECTRIC DRAWINGS:

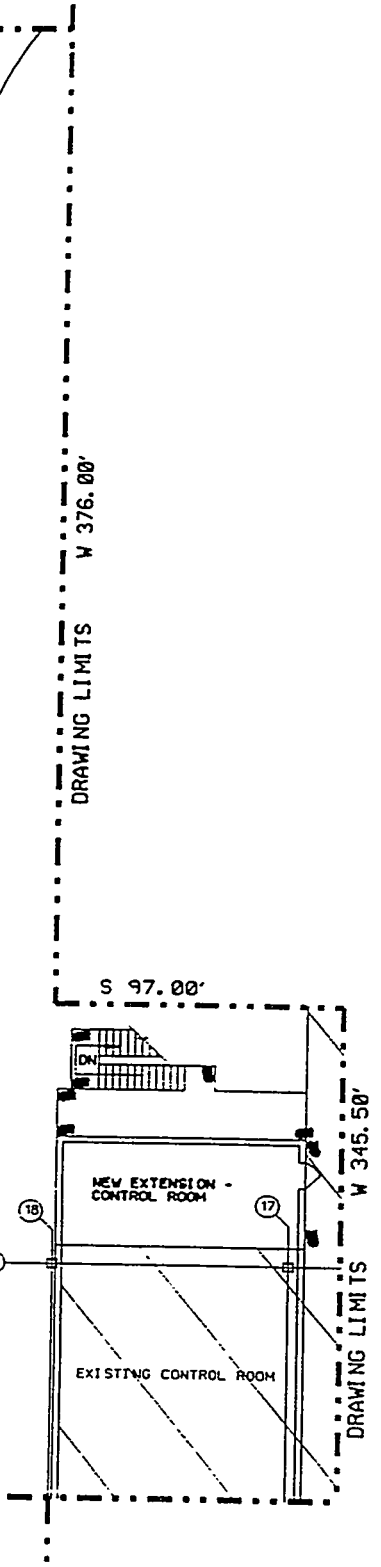
DWG. # M805 - EQUIPMENT ARRANGEMENT GAS TURBINE SECTION 700

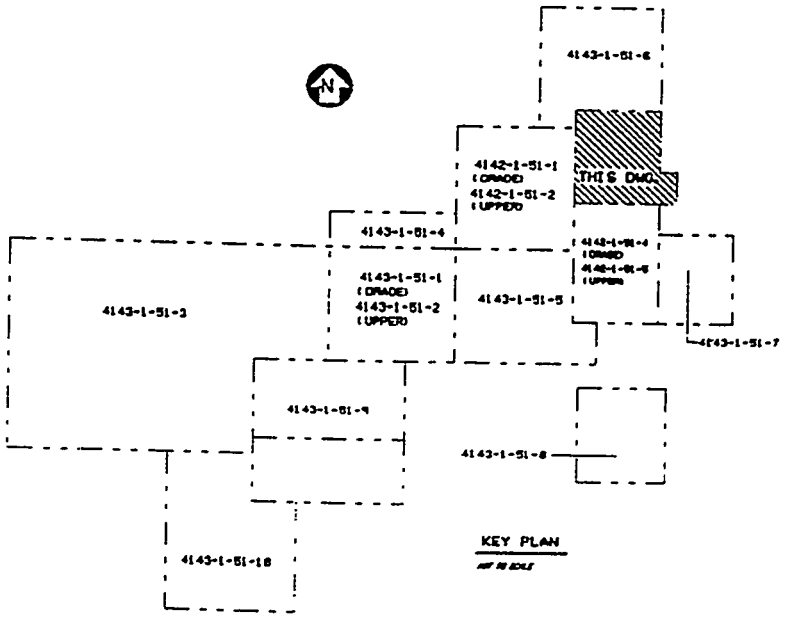
DWG. # 17207529 - OUTLINE AIR PRODUCT UNIT

DWG. # 181D9388 (SHT. 1 AND 2) - WATER WASH SKID OUTLINE

DWG. # 189E9434 - OUTLINE, HYDRAULIC POWER UNIT

DWG. # D1-848-8972G - 6 TON STORAGE UNIT-1 HAZARD / 3 ZONE (CO2 SKID)





KEY PLAN

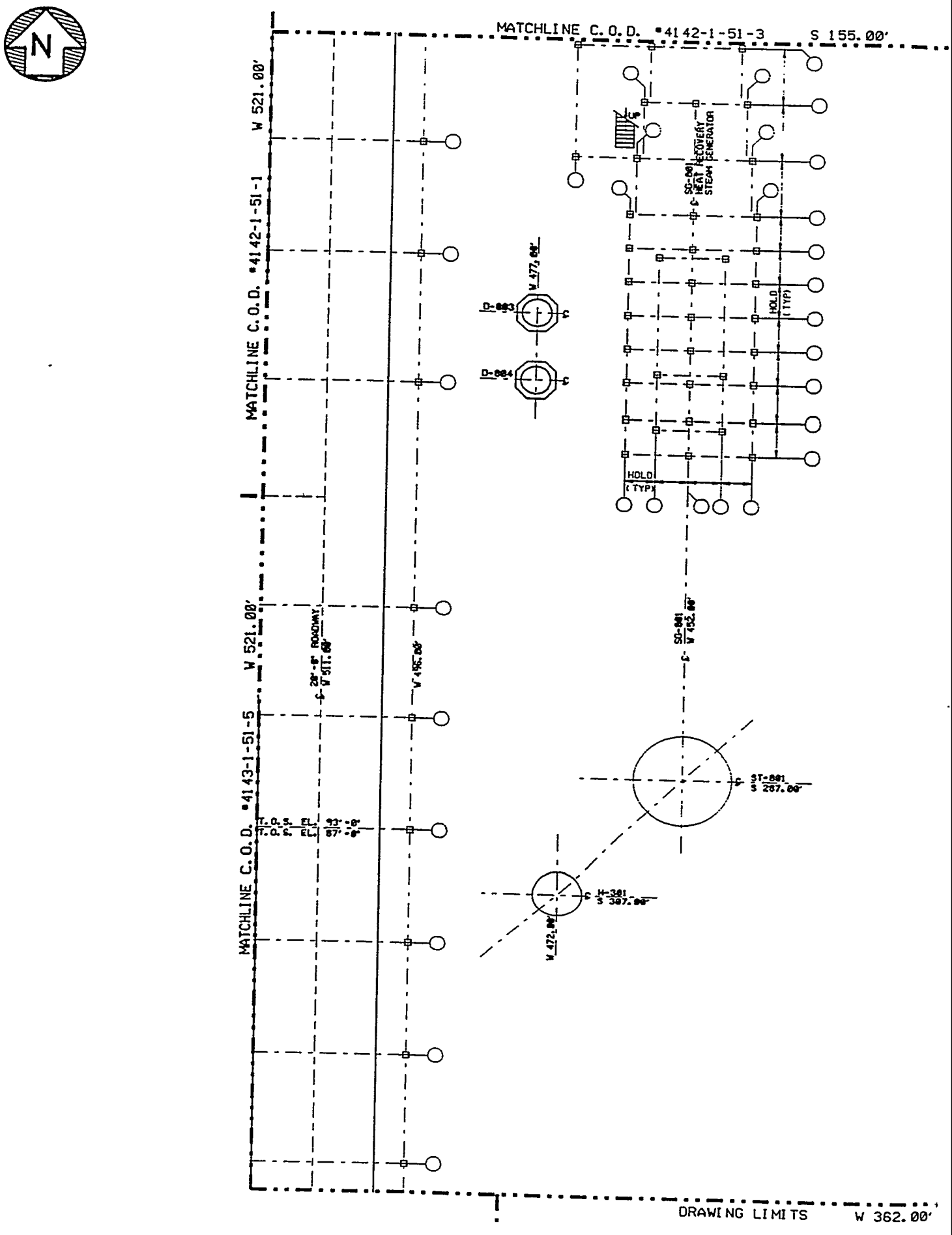
HOLD

1. STEEL LOCATION OF AIR INLET DUCT
2. DWG. SG-801 (BY VENDOR)
3. ELEV OF ALL EQUIPMENT

4142-1-51-3

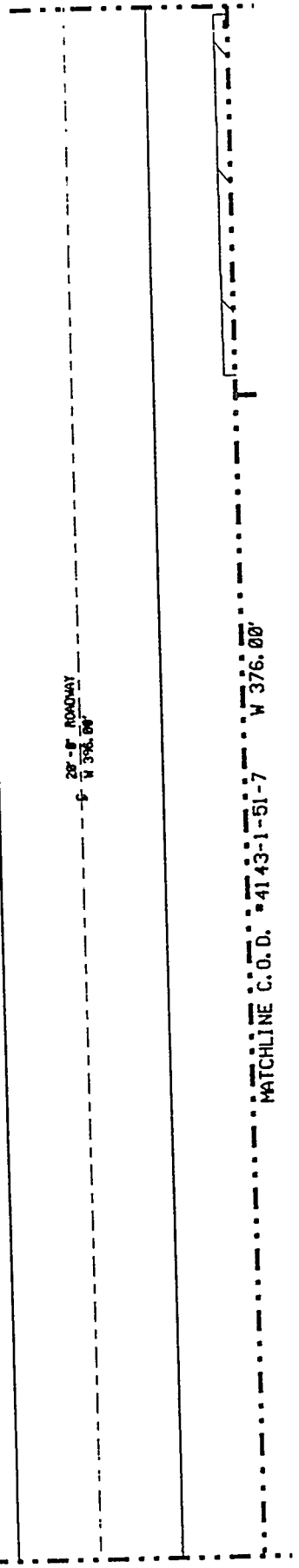
NO.	DATE	DESCRIPTION
C	10-07-14	ISSUED FOR CLASS "A" BIDDING
B	09-02-14	ISSUED FOR CLIENT REVIEW
A	08-11-14	ISSUED FOR INTERNAL REVIEW

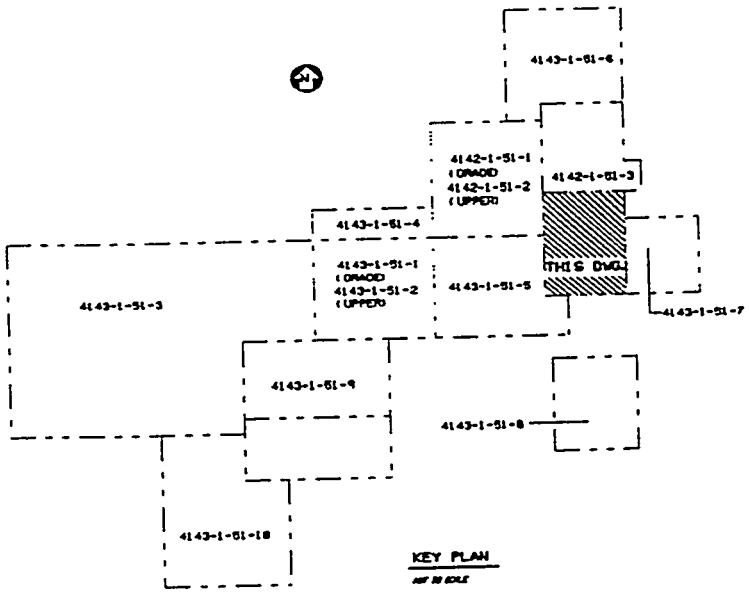
PLOT PLAN
GAS TURBINE


N
MATCHLINE C.O.D. #4142-1-51-3
S 155.00'
W 521.00'
MATCHLINE C.O.D. #4142-1-51-1
W 521.00'
MATCHLINE C.O.D. #4143-1-51-5
28'-8" ROADWAY
W 511.68'
W 485.68'
W 477.68'
D-883
D-884
SG-881
HEAT RECOVERY STEAM GENERATOR
HOLD (TYP)
HOLD (TYP)
SG-881
W 452.68'
ST-881
S 287.00'
H-381
S 387.00'
W 472.68'
T.O.P.S. EL. 43'-0" 87'-8"
DRAWING LIMITS
W 362.00'

NOTES

1. FOR GENERAL NOTES SEE DRAWING #4142-1-51-101





KEY PLAN

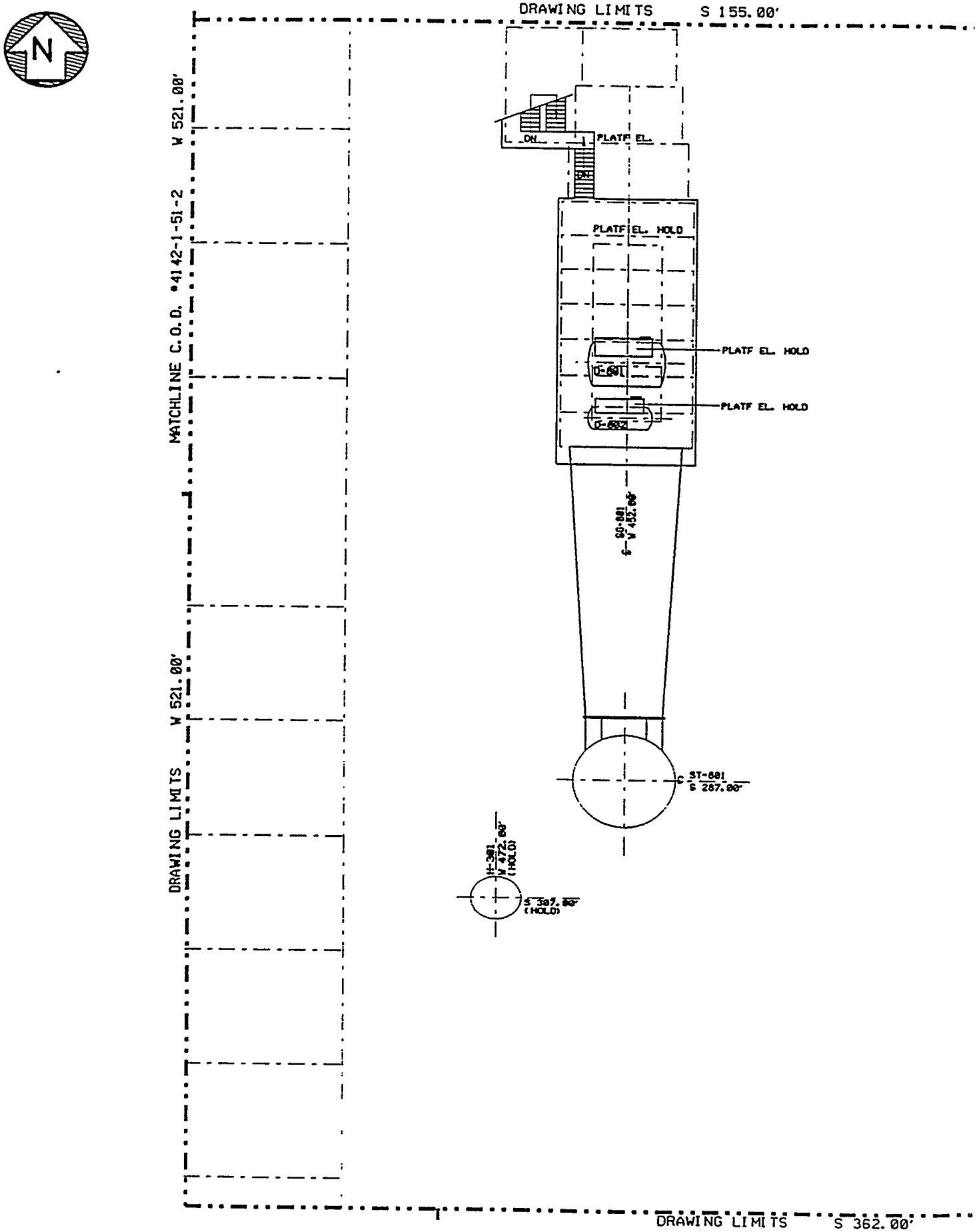
HOLD

1. MAK - HEATER (H-301)
2. SG-001 - NO INFO
3. ST-001 - NO INFO
4. D-883 / D-884 LOCATION
5. MONITORING SHELTER - LOCATION

4142-1-51-4

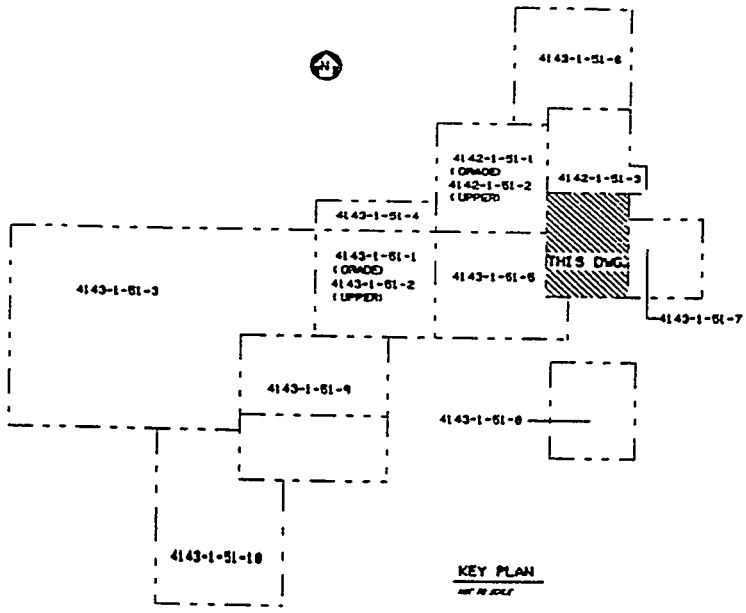
NO.	DATE	DESCRIPTION
C		
B		
A		

PLOT PLAN
HRSG AT GRADE


N
DRAWING LIMITS S 155.00'
MATCHLINE C.O.D. #4142-1-51-2
W 521.00'
W 521.00'
DRAWING LIMITS
PLATF EL.
PLATF EL. HOLD
PLATF EL. HOLD
PLATF EL. HOLD
ST-681
S 287.00'
H-381
W 472.00'
(HOLD)
S 307.00'
(HOLD)
DRAWING LIMITS S 362.00'

NOTES

1. FOR GENERAL NOTES SEE DRAWING #4142-1-51-101



KEY PLAN

HOLD

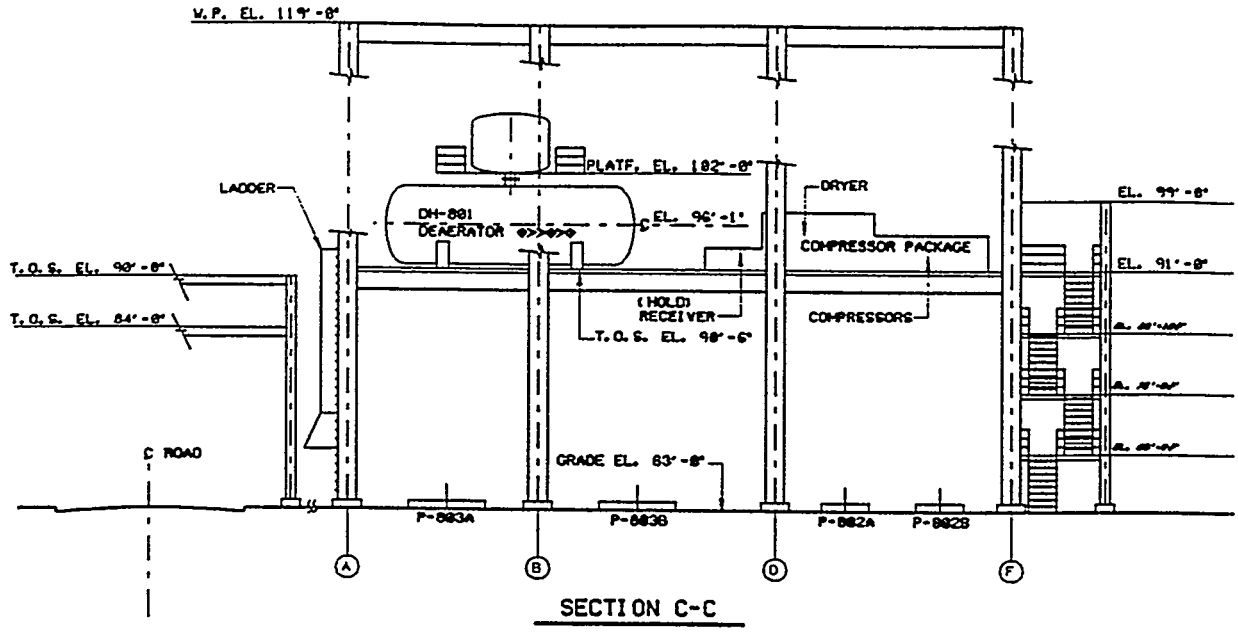
1. LOCATION OF H-301 - NO INFO
2. SG-801 (BY VENDOR) - NO INFO

4142-1-51-5

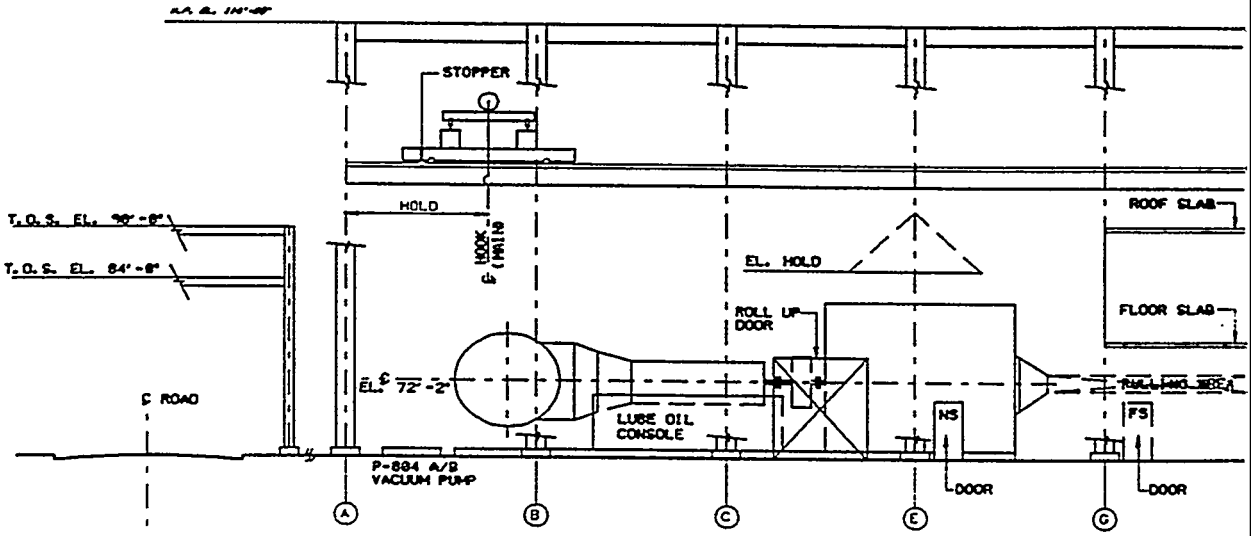
NO.	DATE	DESCRIPTION
C		
B		
A		

PLOT PLAN
HRSG AT UPPER LEVEL

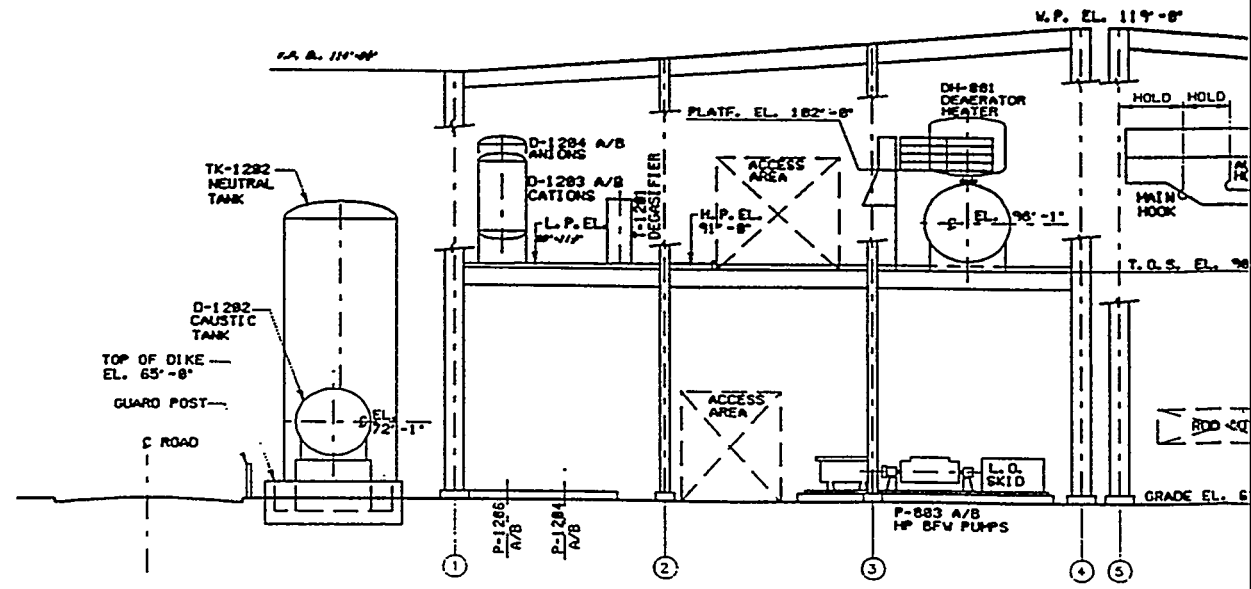
DRAWING LIMITS W 376.00'



SECTION C-C



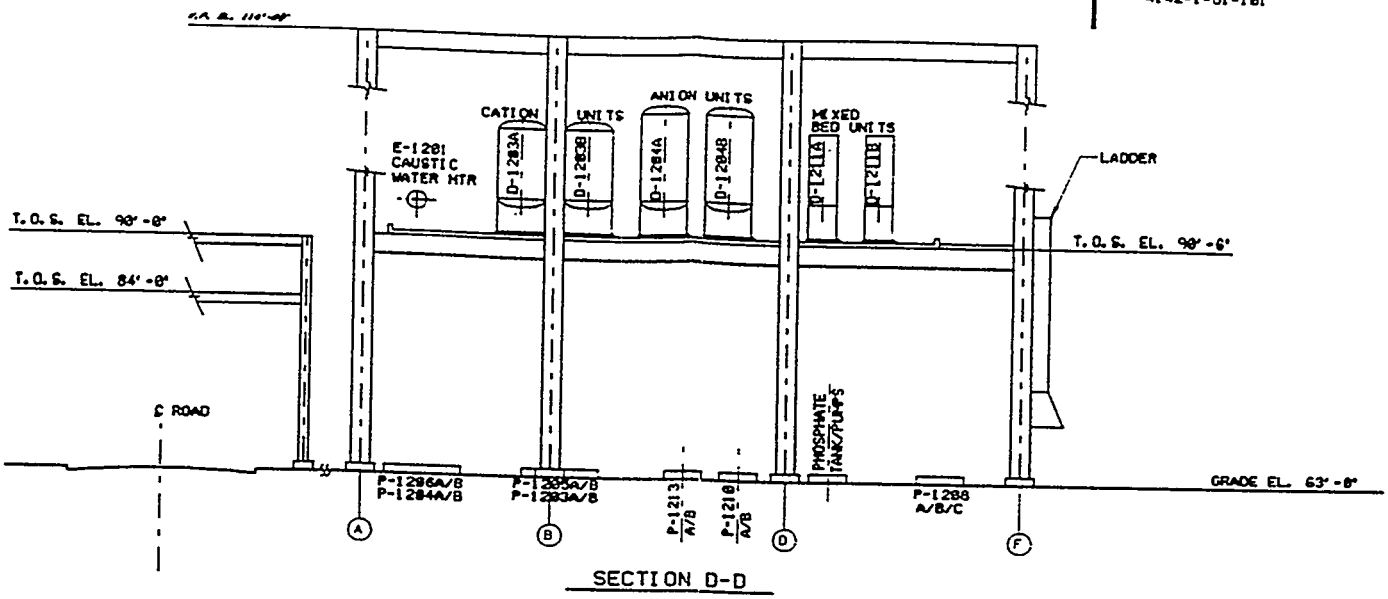
SECTION B-B



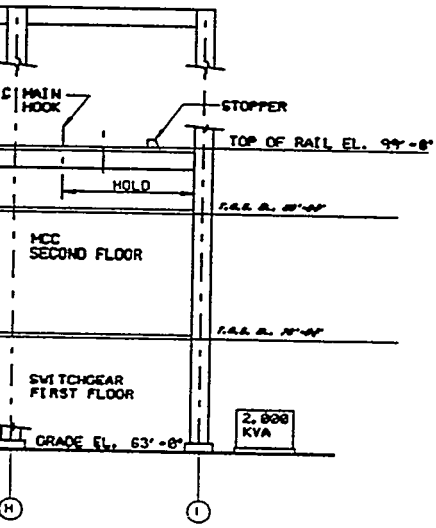
SECTION A-A

NOTES

1. FOR GENERAL NOTES SEE DRAWING #4142-1-51-101

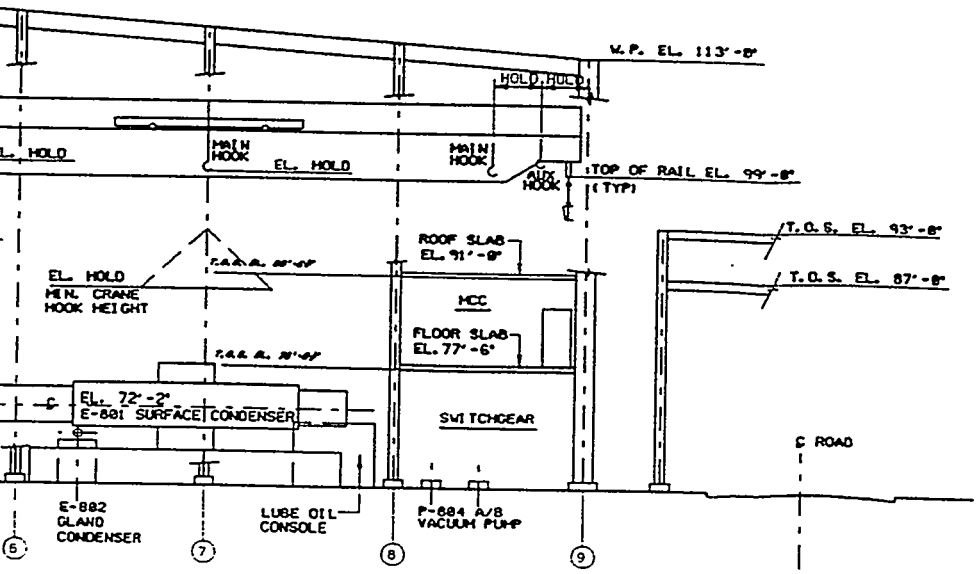


SECTION D-D



HOLD

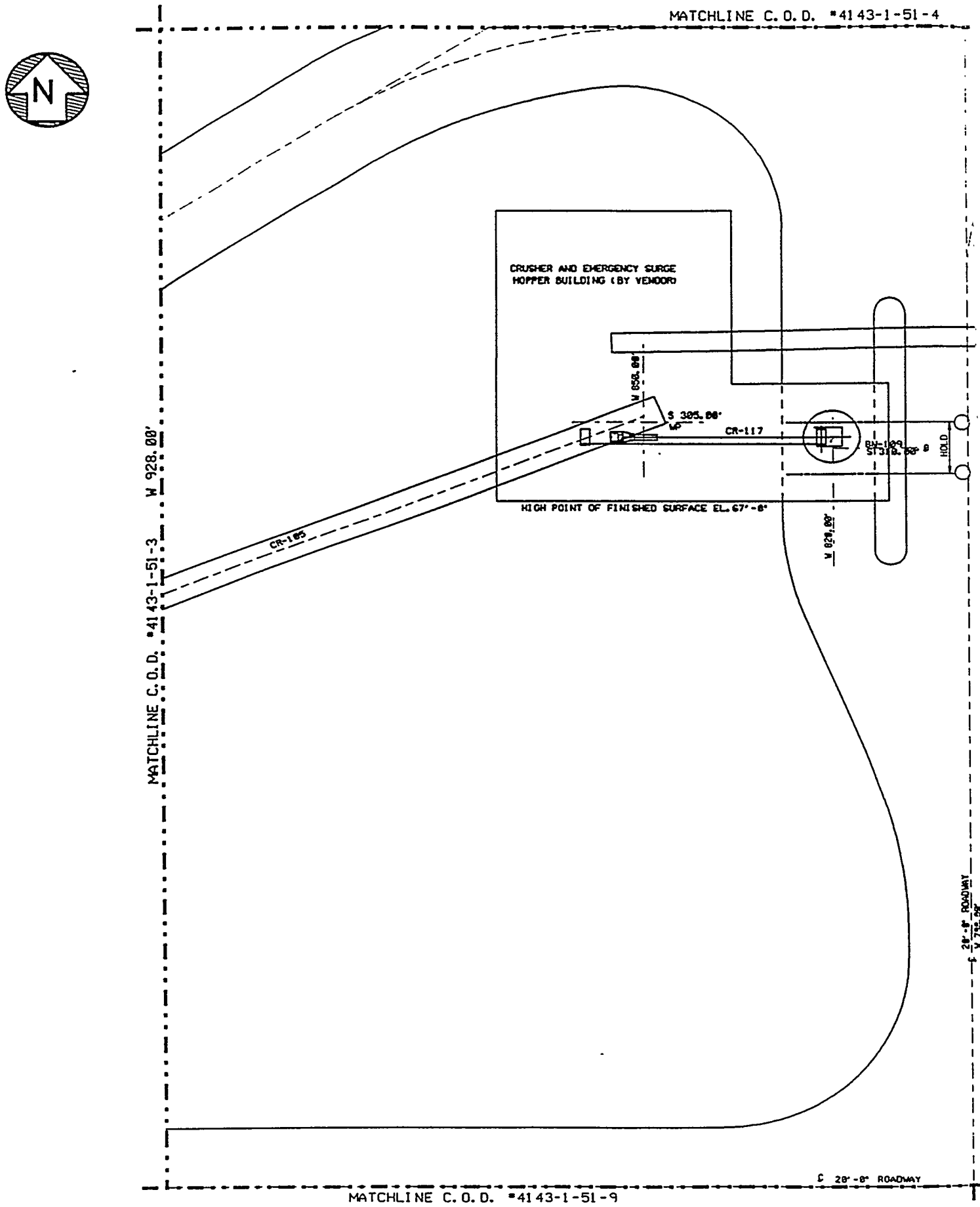
1. CRANE SPAN - LOCATION OF RAIL/ ELECTRICAL LINES
2. EQUIPMENT VENDOR DWGS (ALL)
3. BUILDING DIMENSIONS
4. CRANE ELECTRICAL SUPPLY
5. LIFTING PLAY
6. RAIL ELEVATION
7. DIKE CAPACITY



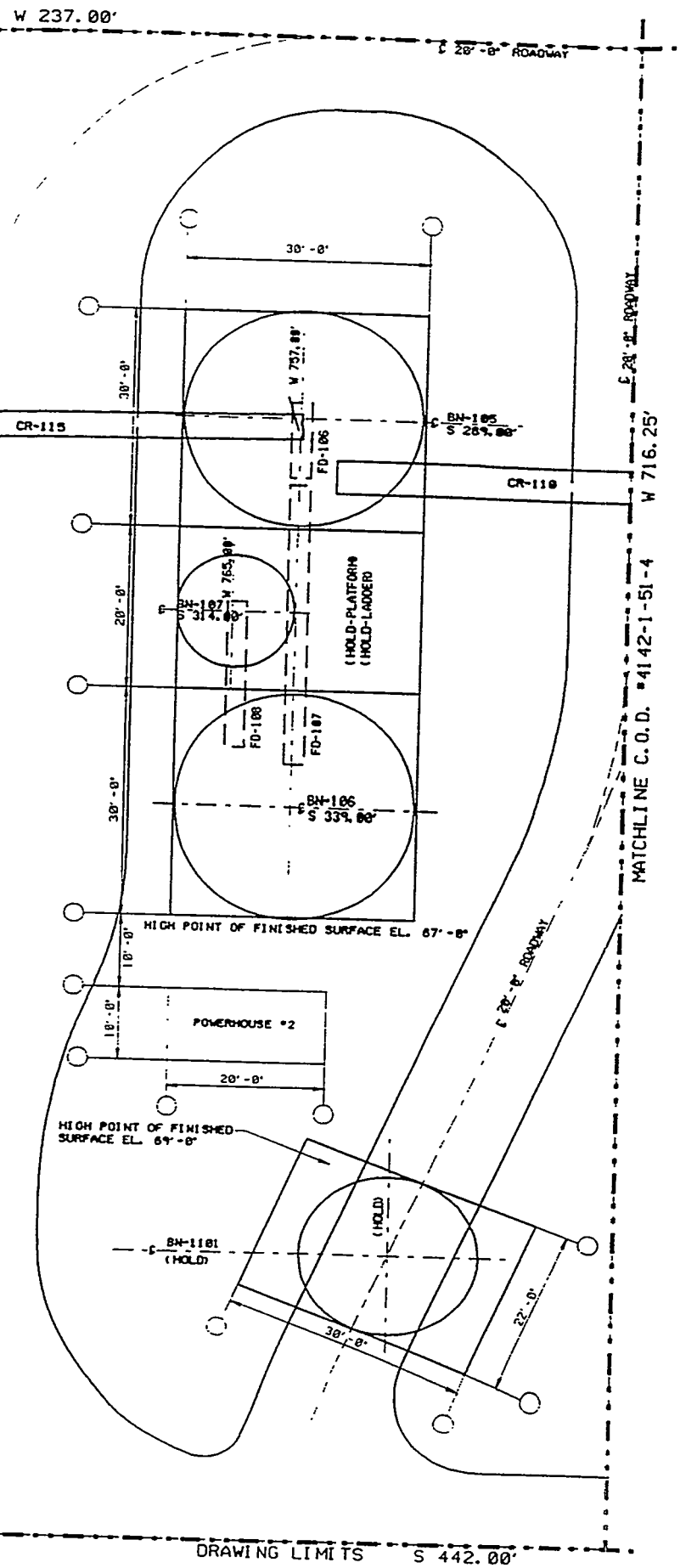
4142-1-51-6

C	10-07-01	ISSUED FOR CLIENT "C" REVIEW
B	09-10-01	ISSUED FOR CLIENT APPROVAL
A	08-11-01	ISSUED FOR GENERAL COMMENT
NO.	DATE	DESCRIPTION

EQUIPMENT ARRANGEMENT SECTION 800 / 1200 (PER 01-51-3)

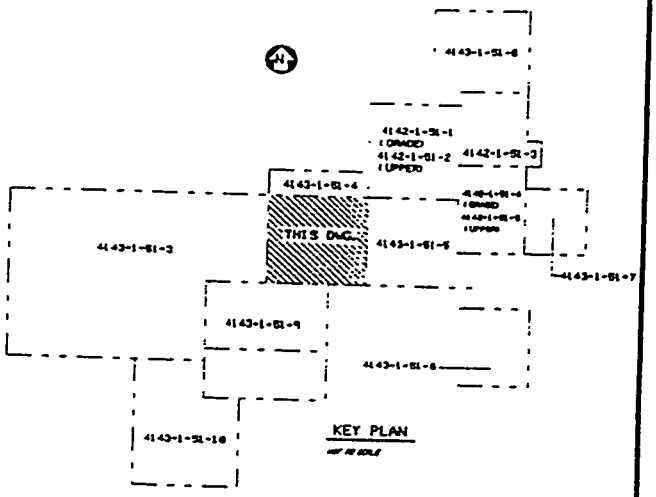

MATCHLINE C.O.D. #4143-1-51-4
N
CRUSHER AND EMERGENCY SURGE HOPPER BUILDING (BY VENDOR)
S 395.88'
CR-117
HOLD
HIGH POINT OF FINISHED SURFACE EL. 67'-8"
W 928.88'
MATCHLINE C.O.D. #4143-1-51-3
CR-185
28'-8" ROADWAY
℄ 28'-8" ROADWAY
MATCHLINE C.O.D. #4143-1-51-9

4143-1-51-1



NOTES

1. FOR GENERAL NOTES SEE DRAWING #4142-1-51-101



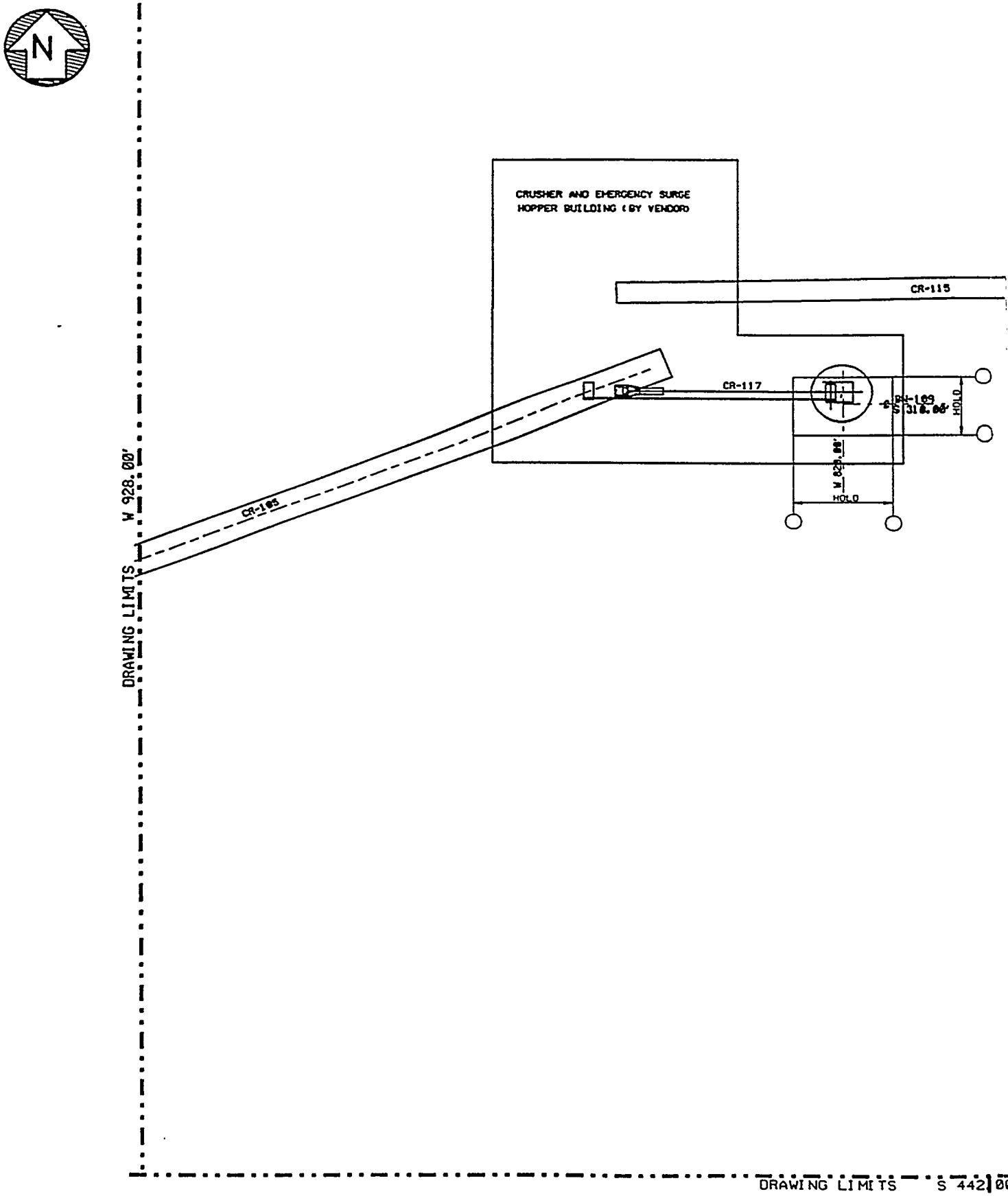
HOLD

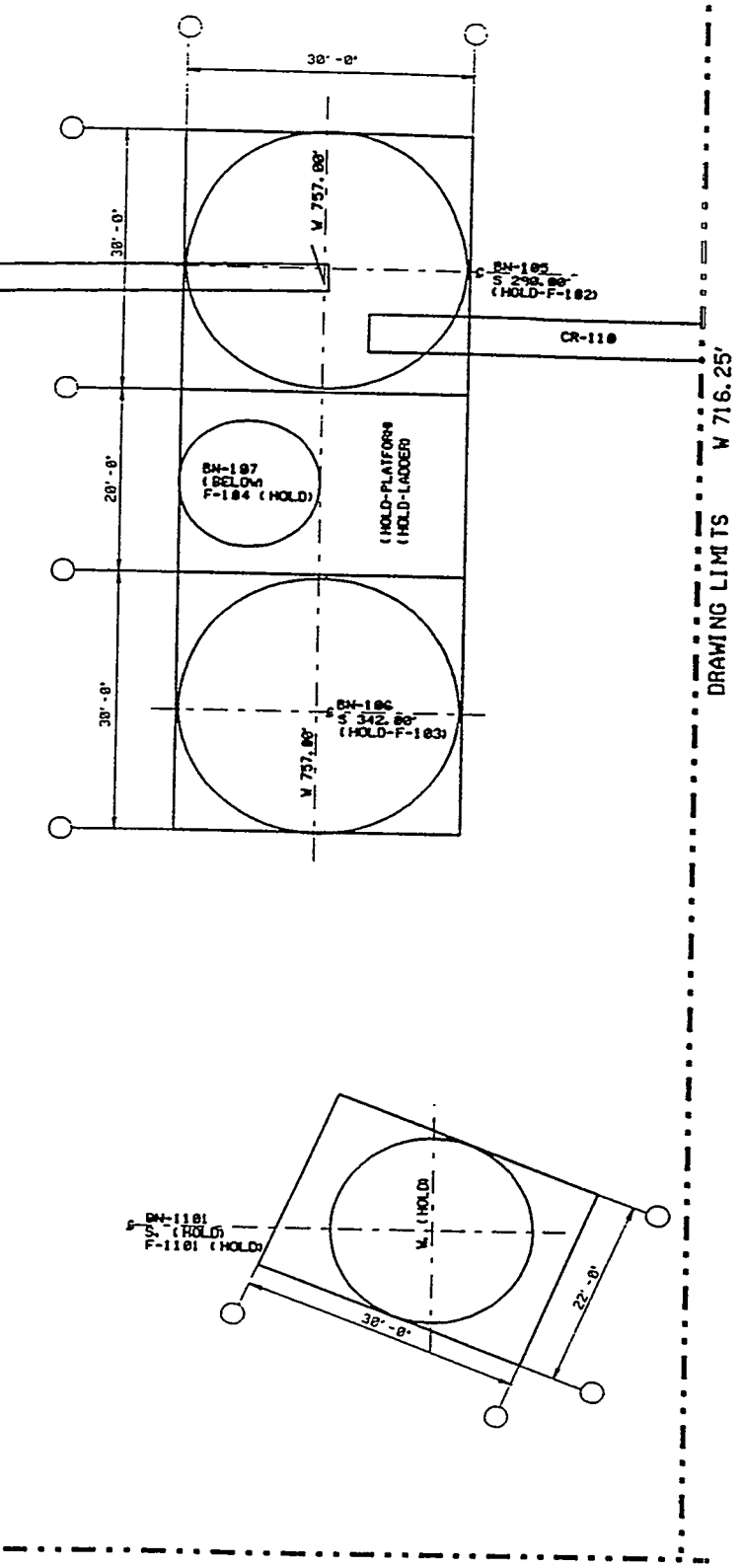
1. LOCATION OF STAIRS
2. PLATFORM ELEVATION
3. VENDOR'S DRAWINGS
4. POWERHOUSE #2 INFORMATION

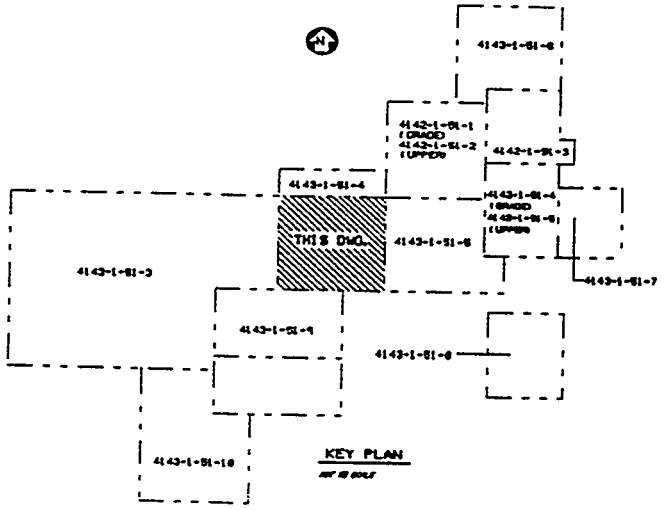
4143-1-51-1

NO.	DATE	DESCRIPTION
C	07-07-94	APPROVED FOR CLASS "IT" CONTRACT
B	07-18-94	ISSUED FOR CLIENT APPROVAL
A	06-21-94	ISSUED FOR INTERNAL COMMENTS

PLOT PLAN
SECTION 100 AND 1100 AT GRADE


DRAWING LIMITS S 237.00'
N
CRUSHER AND EMERGENCY SURGE HOPPER BUILDING (BY VENDOR)
CR-115
CR-117
CR-169
HOLD
W 828.00'
HOLD
CR-165
W 928.00'
DRAWING LIMITS
DRAWING LIMITS S 442.00





KEY PLAN

NOTES

1. FOR GENERAL NOTES SEE DRAWING #4142-1-51-101

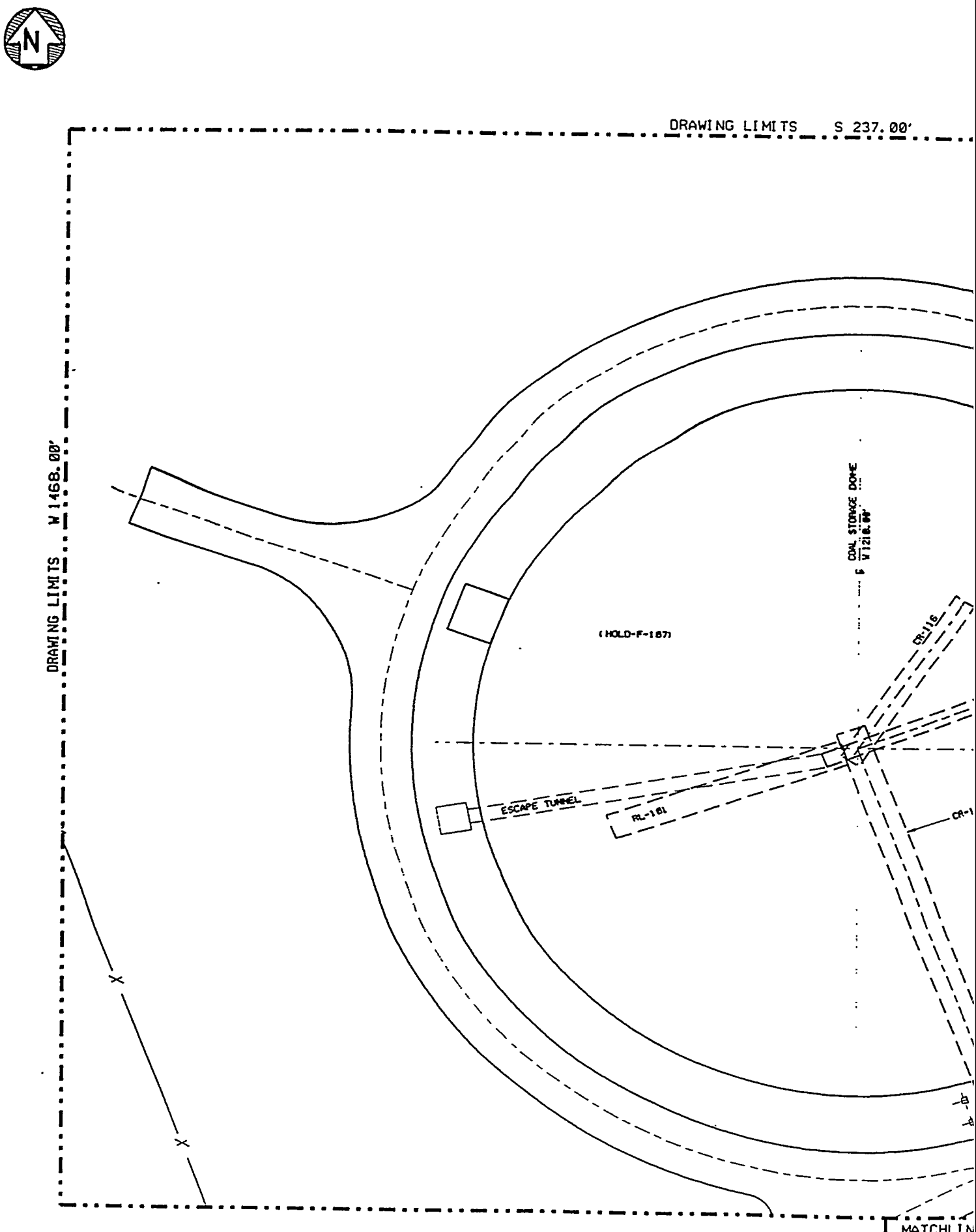
HOLD

1. LADDER & PLATFORM (ELEV/LOCATION)
2. EQUIPMENT NUMBERS
3. BUILDING SIZE (CRUSHER BLDG)
4. EQUIPMENT LOCATION : F-102
   : F-103
   : F-1101

4143-1-51-2

NO.	DATE	DESCRIPTION
C		
B		
A		

PLOT PLAN
SECTION 100 AND 1100 AT UPPER LEVEL


N
DRAWING LIMITS S 237.00'
DRAWING LIMITS W 1468.00'
COAL STORAGE DOME
(HOLD-F-187)
CR-116
ESCAPE TUNNEL
RL-181
MATCHLIN

NOTES

1. FOR GENERAL NOTES SEE DRAWING
4143-1-51-10

℄ 28'-6" ROADWAY

COUNTER WEIGHT (BY VENDOR)

CR-185

MATCHLINE C.O.D. #4143-1-51-1 W 928.00'

℄ 28'-6" ROADWAY

MATCHLINE C.O.D. #4143-1-51-9 S 442.00'

℄ S 452.00'

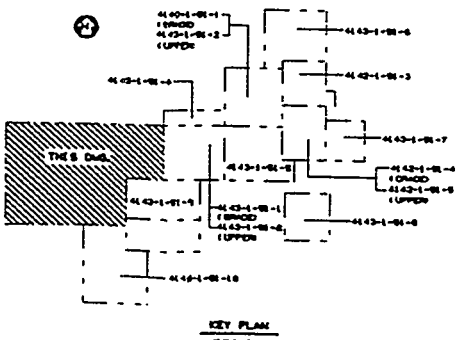
℄ 28'-6" ROADWAY

MATCHLINE C.O.D. #4143-1-51-9 W 1055.00'

DRIVE AND TAKE UP TOWER (BY VENDOR)

SUPPORT (BY VENDOR)

C. O. D. #4143-1-51-10 S 620.00'



KEY PLAN

HOLD

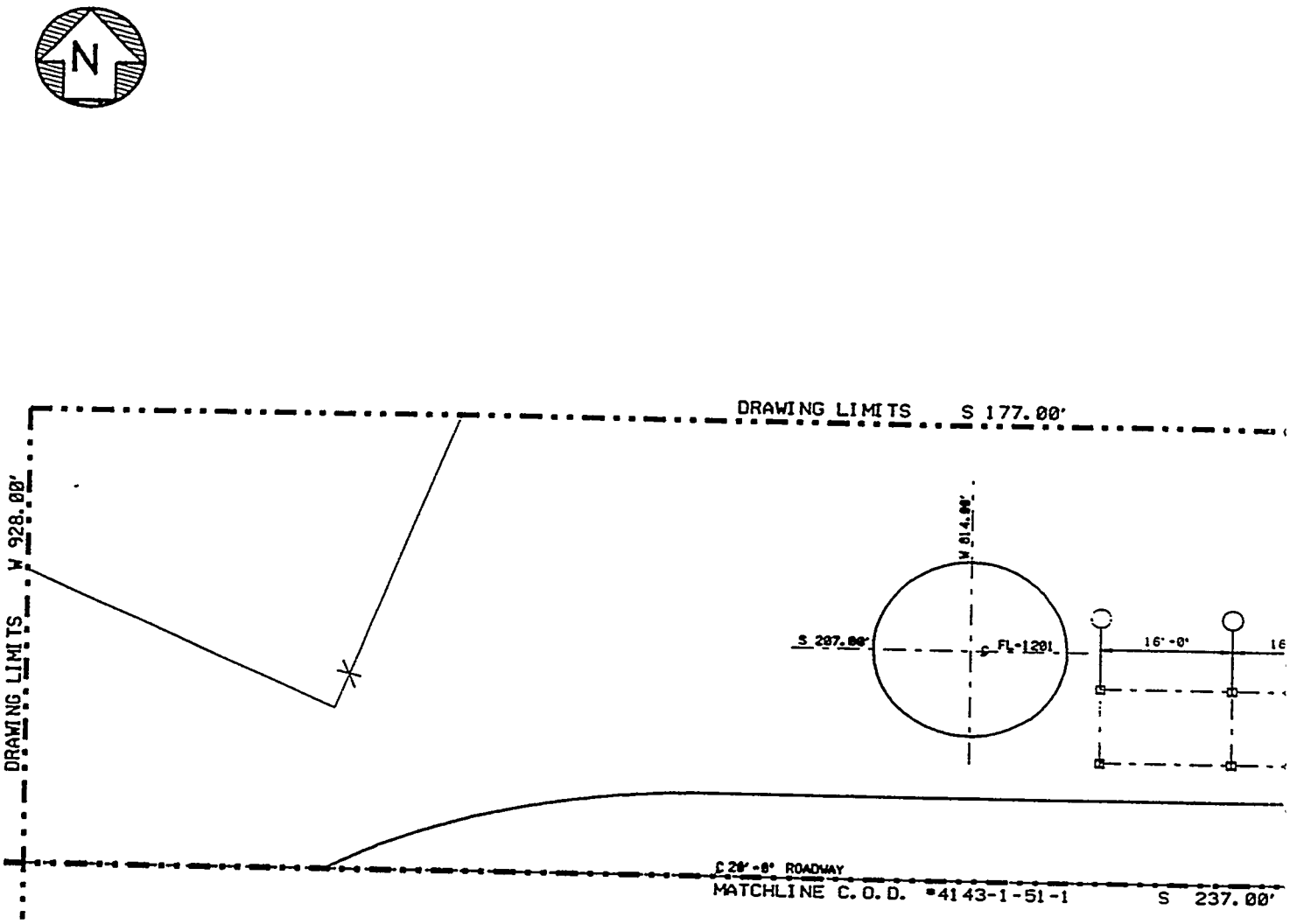
1. CONVEYOR SUPPORT (BY VENDOR)
2. F-107 (DUST FILTER)
3. LOCATION OF P-103 A/B

4143-1-51-3

REV.	DATE	DESCRIPTION
C	10-07-04	ISSUED FOR CLOSE "C" SERVICE
B	09-15-04	ISSUED FOR CLOSE APPROVAL
A	07-11-03	ISSUED FOR PRELIMINARY REVIEW

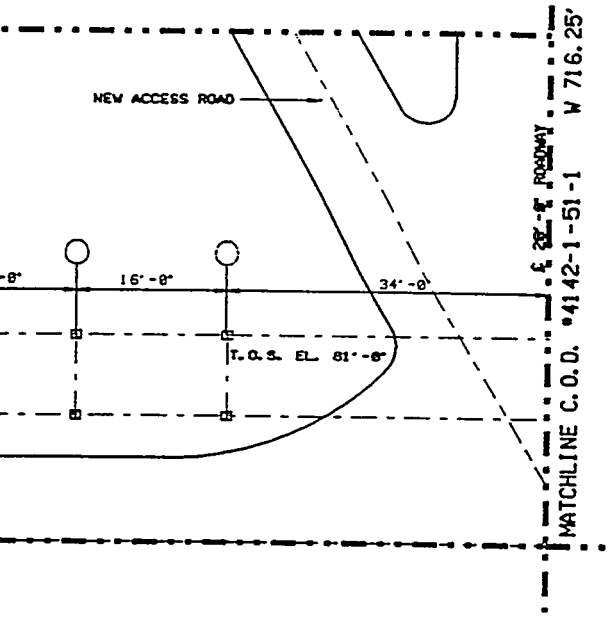
PLOT PLAN

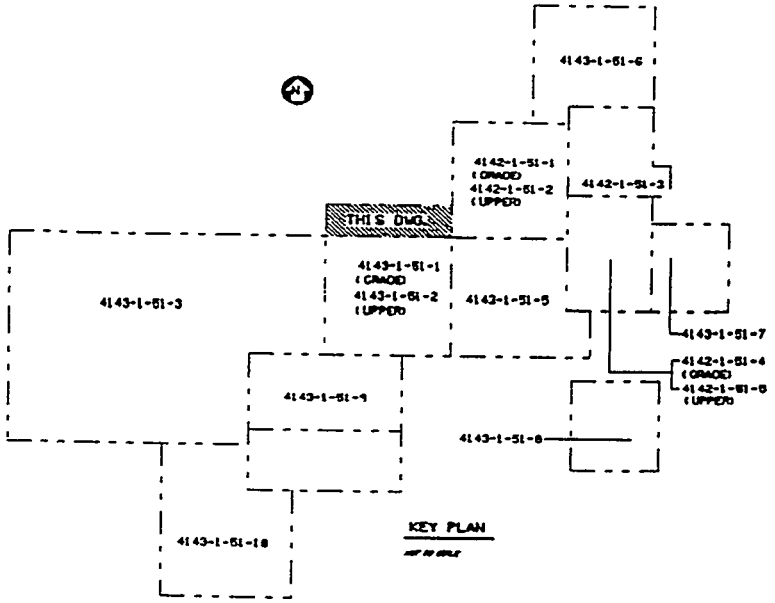
COAL STORAGE SHED


N
DRAWING LIMITS
S 177.00'
W 928.00'
DRAWING LIMITS
W 814.00'
S 287.00'
℄ FL-1201
16'-0"
16
℄ 28'-8" ROADWAY
MATCHLINE C.O.D. #4143-1-51-1
S 237.00'

NOTES

1. FOR GENERAL NOTES SEE DRAWING #4142-1-51-101





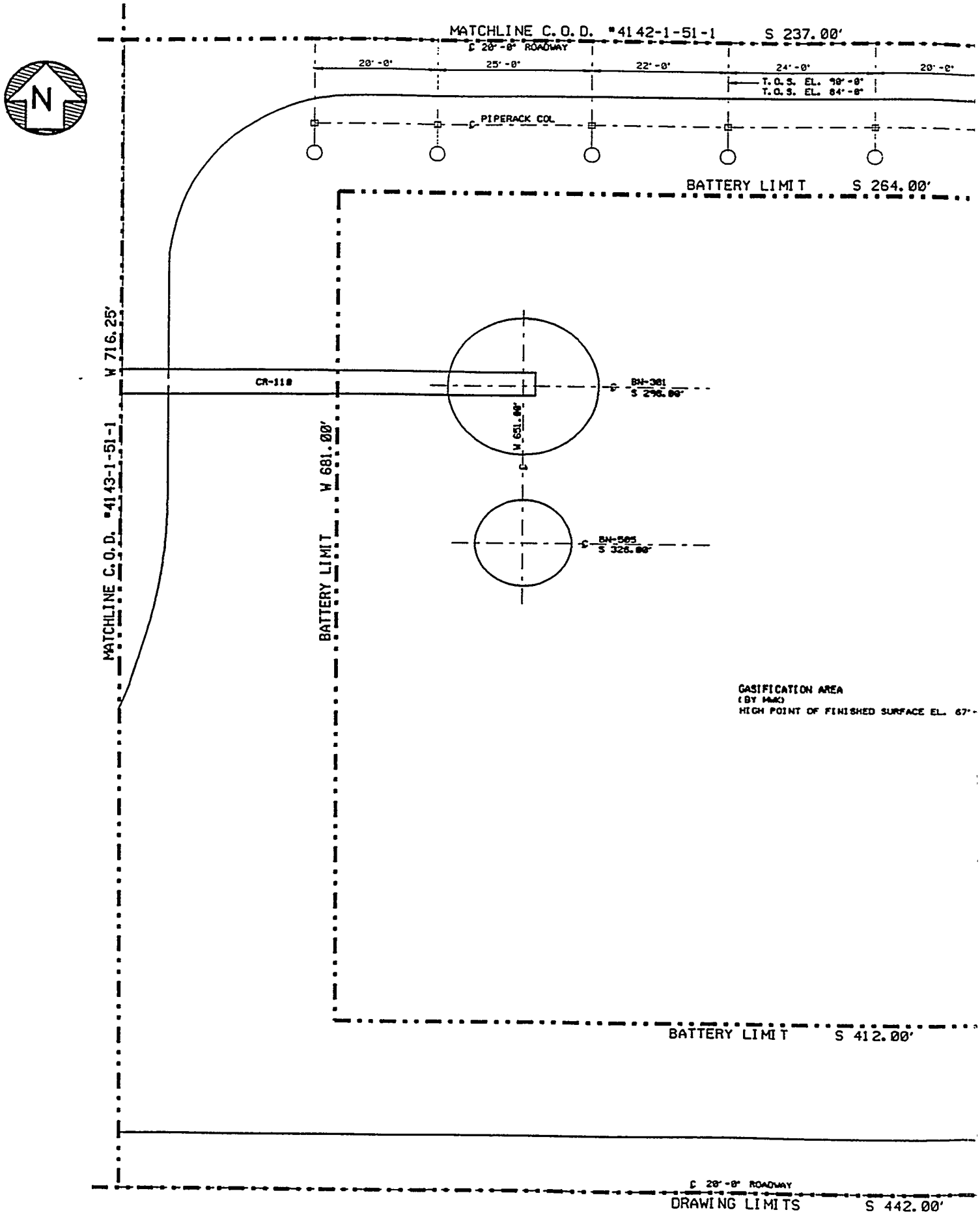
HOLD

1. FLARE SIZE

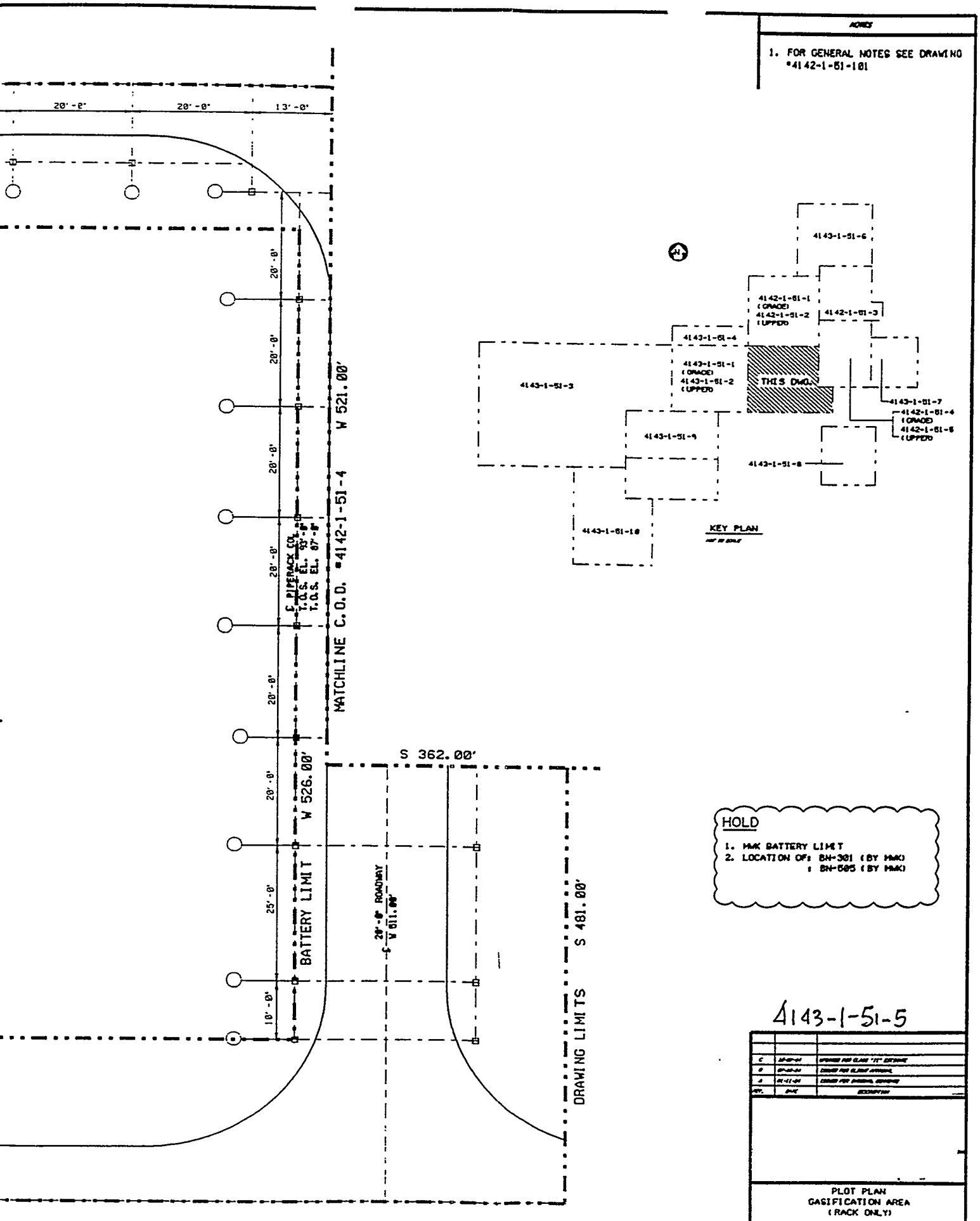
4143-1-51-4

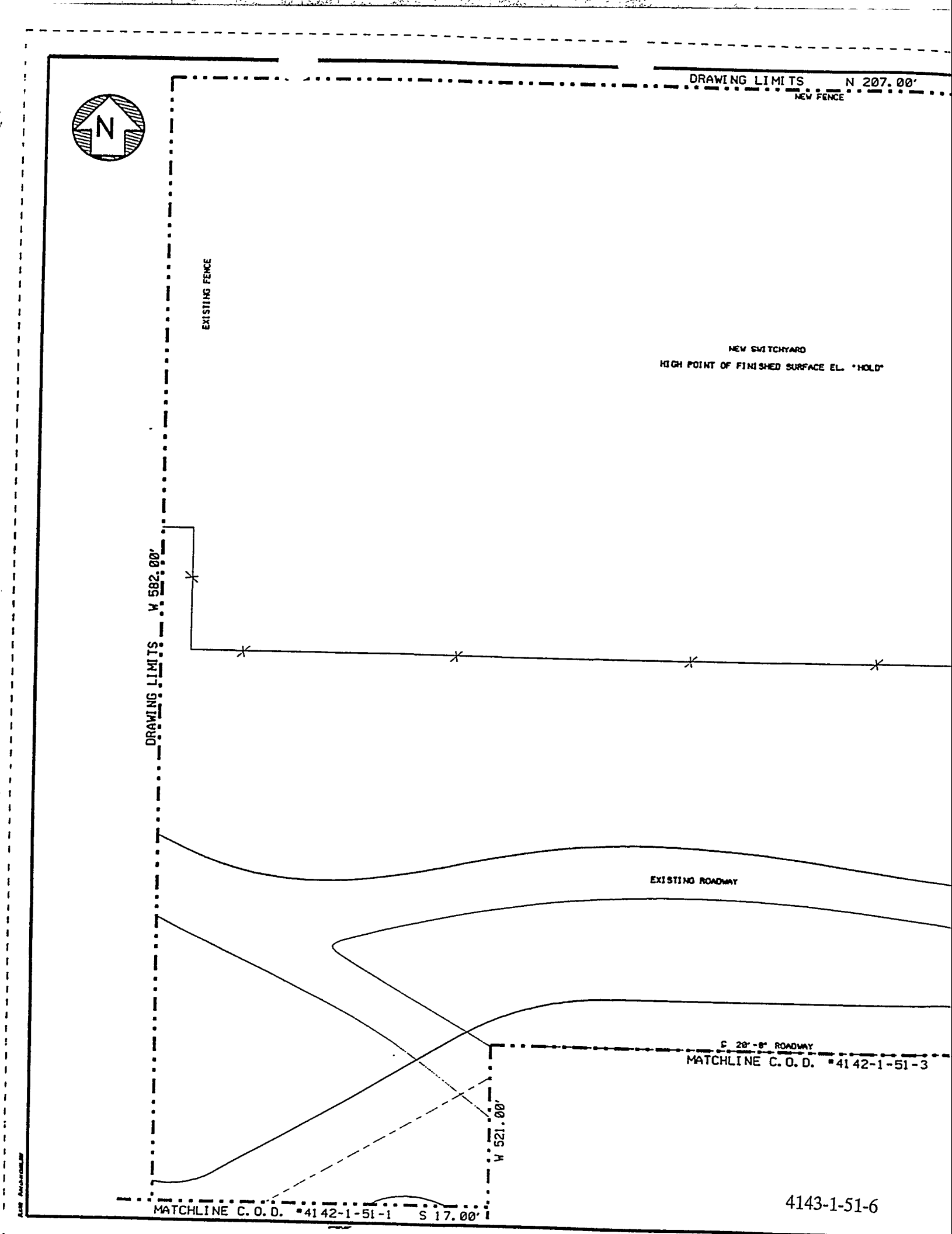
C	07-07-04	APPROVED FOR CLASS "A" ESTIMATE
B	07-02-04	ISSUED FOR CLIENT APPROVAL
A	06-11-04	ISSUED FOR PRELIMINARY ESTIMATE
REV.	DATE	DESCRIPTION

PLOT PLAN
FLARE STACK


MATCHLINE C.O.D. #4142-1-51-1
S 237.00'
℄ 20'-0" ROADWAY
20'-0"
25'-0"
22'-0"
24'-0"
20'-0"
T.O.S. EL. 98'-0"
T.O.S. EL. 84'-0"
PIPERACK COL
BATTERY LIMIT
S 264.00'
W 716.25'
CR-118
BH-301
S 296.00'
W 651.00'
BH-505
S 326.00'
MATCHLINE C.O.D. #4143-1-51-1
BATTERY LIMIT
W 681.00'
GASIFICATION AREA
(BY HMC)
HIGH POINT OF FINISHED SURFACE EL. 67'-
BATTERY LIMIT
S 412.00'
℄ 20'-0" ROADWAY
DRAWING LIMITS
S 442.00'

4143-1-51-5


NOTES
1. FOR GENERAL NOTES SEE DRAWING #4142-1-51-101
20'-0"
20'-0"
13'-0"
20'-0"
20'-0"
20'-0"
20'-0"
20'-0"
20'-0"
25'-0"
10'-0"
MATCHLINE C.O.D. #4142-1-51-4 W 521.00'
℄ PIPERACK COL.
T.O.S. EL. 93'-8"
T.O.S. EL. 87'-8"
W 526.00'
BATTERY LIMIT
S 362.00'
28'-0" ROADWAY
℄ W 611.00'
DRAWING LIMITS S 481.00'
4143-1-51-6
4142-1-61-1
(GRADE)
4142-1-51-2
(UPPER)
4142-1-61-3
4143-1-61-4
4143-1-51-1
(GRADE)
4143-1-61-2
(UPPER)
THIS DWG.
4143-1-51-3
4143-1-51-7
4142-1-61-4
(GRADE)
4142-1-61-5
(UPPER)
4143-1-51-9
4143-1-51-8
4143-1-61-10
KEY PLAN
HOLD
1. MAK BATTERY LIMIT
2. LOCATION OF: BN-301 (BY MAK)
BN-505 (BY MAK)
4143-1-51-5
PLOT PLAN
GASIFICATION AREA
(RACK ONLY)


N
DRAWING LIMITS N 207.00'
NEW FENCE
EXISTING FENCE
NEW SWITCHYARD
HIGH POINT OF FINISHED SURFACE EL. "HOLD"
DRAWING LIMITS W 582.00'
EXISTING ROADWAY
℄ 28'-8" ROADWAY
MATCHLINE C.O.D. "4142-1-51-3
W 521.00'
MATCHLINE C.O.D. "4142-1-51-1 S 17.00'

4143-1-51-6

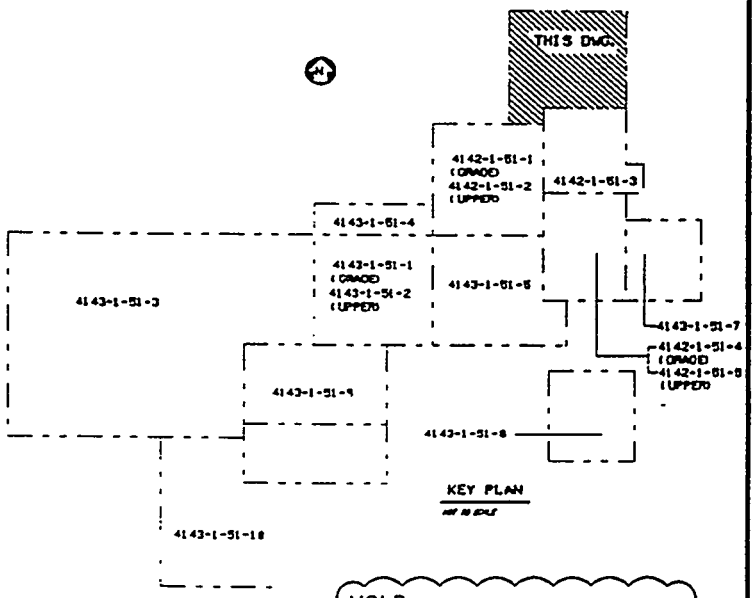
NOTES

1. FOR GENERAL NOTES SEE DRAWING #4142-1-51-101

EXISTING FENCE TO BE REMOVED

DRAWING LIMITS W 376.00'

N 15.56'



KEY PLAN

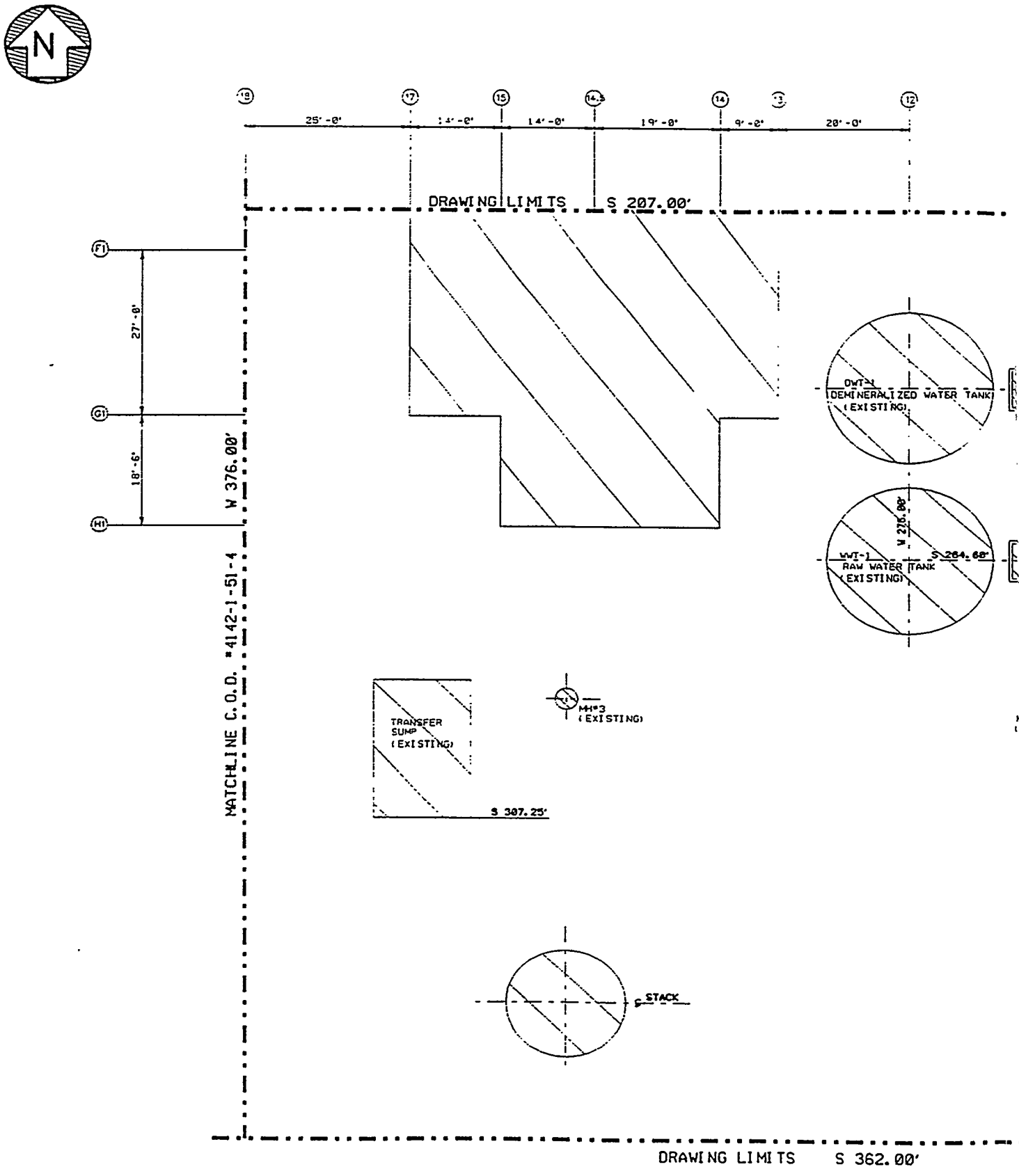
HOLD

1. LOCATION OF EXISTING ROAD
2. EXTENSION OF TRENCH
3. SIZE OF NEW SWITCHYARD

4143-1-51-6

NO.	DATE	DESCRIPTION
C	10-01-01	UPGRADED FOR CLASS "B" ENTRANCE
B	07-10-01	ISSUED FOR CLIENT APPROVAL
A	07-11-01	ISSUED FOR PERMITTING, ESTIMATE

PLOT PLAN
SWITCHYARD


N
DRAWING LIMITS S 207.00'
DWT-1
DEMINERALIZED WATER TANK
(EXISTING)
WWT-1
RAW WATER TANK
(EXISTING)
W 215.00'
S 284.68'
TRANSFER
SUMP
(EXISTING)
S 307.25'
MH#3
(EXISTING)
STACK
MATCHLINE C.O.D. #4142-1-51-4
W 376.00'
DRAWING LIMITS S 362.00'

NOTES

1. FOR GENERAL NOTES SEE DRAWING #4142-1-51-101

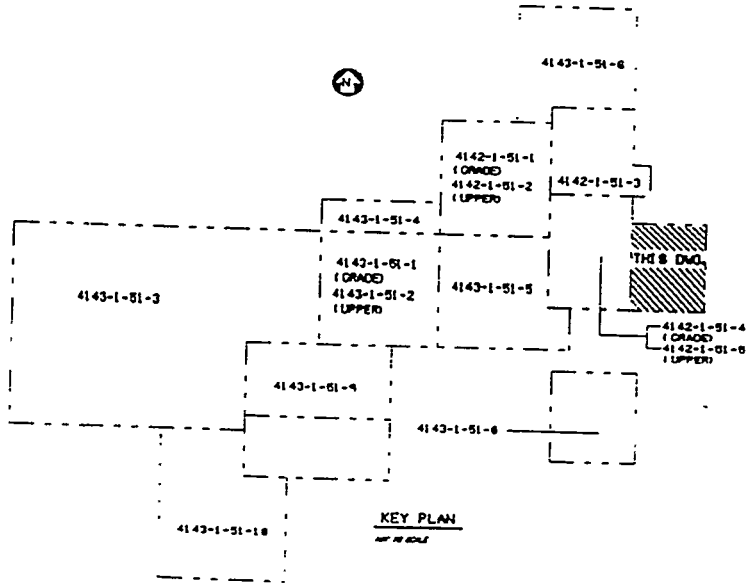
MH (EXISTING)

MH (EXISTING)

W 245.00'

DRAWING LIMITS

STING)



KEY PLAN

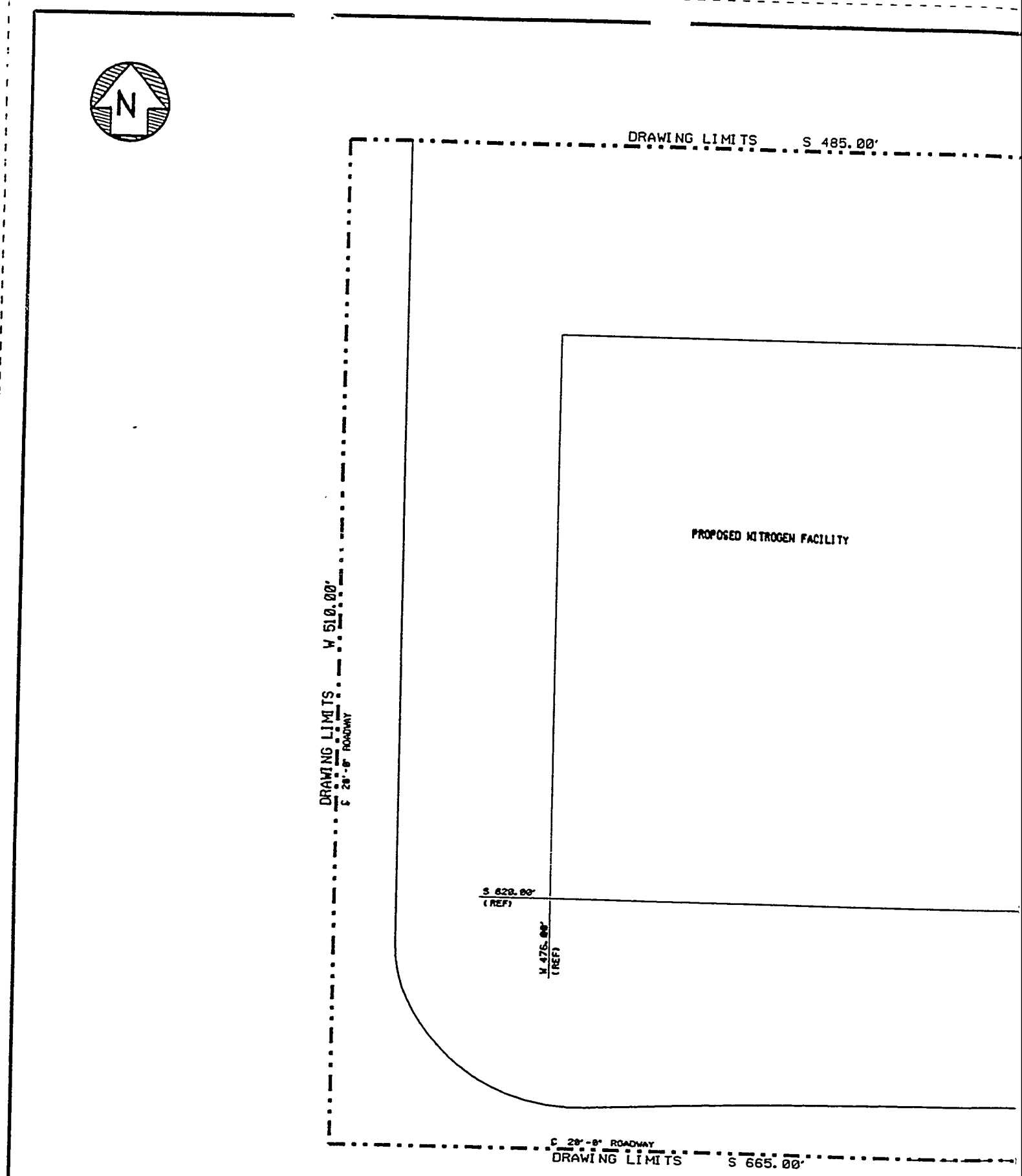
HOLD

1. LOCATION OF P-1202 A/B

4143-1-51-7

C	10-07-91	UPDATED FOR CLASS "II" SUBMIT
B	09-15-91	UPDATED FOR CLIENT APPROVAL
A	08-11-91	ISSUED FOR SHOPPING COMMENTS
NO.	DATE	DESCRIPTION

PLOT PLAN
TRANSFER SUMP

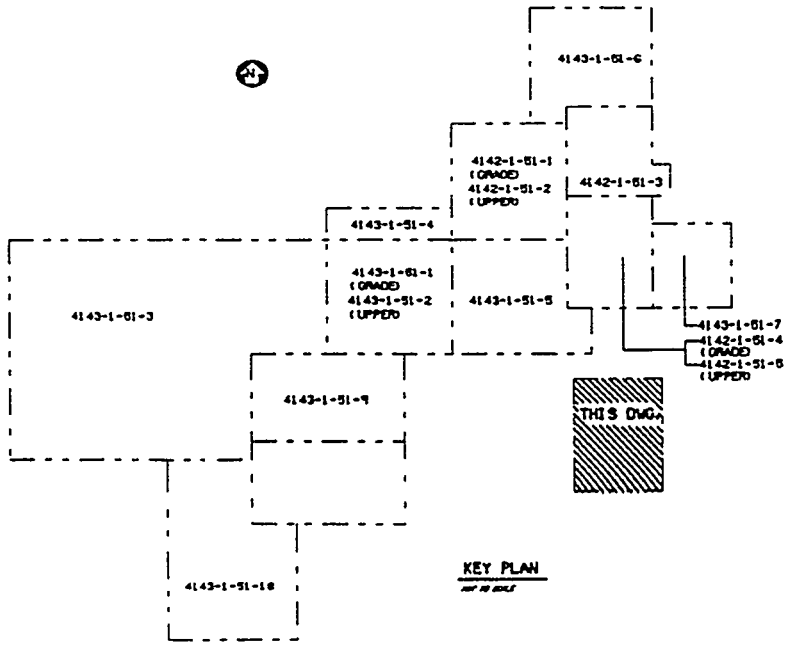

N
DRAWING LIMITS
S 485.00'
W 510.00'
DRAWING LIMITS
℄ 28'-8" ROADWAY
PROPOSED NITROGEN FACILITY
S 628.00'
(REF)
W 476.00'
(REF)
℄ 28'-8" ROADWAY
DRAWING LIMITS
S 665.00'

4143-1-51-8

NOTES

1. FOR GENERAL NOTES SEE DRAWING #4142-1-51-101

DRAWING LIMITS W 486.00'



KEY PLAN

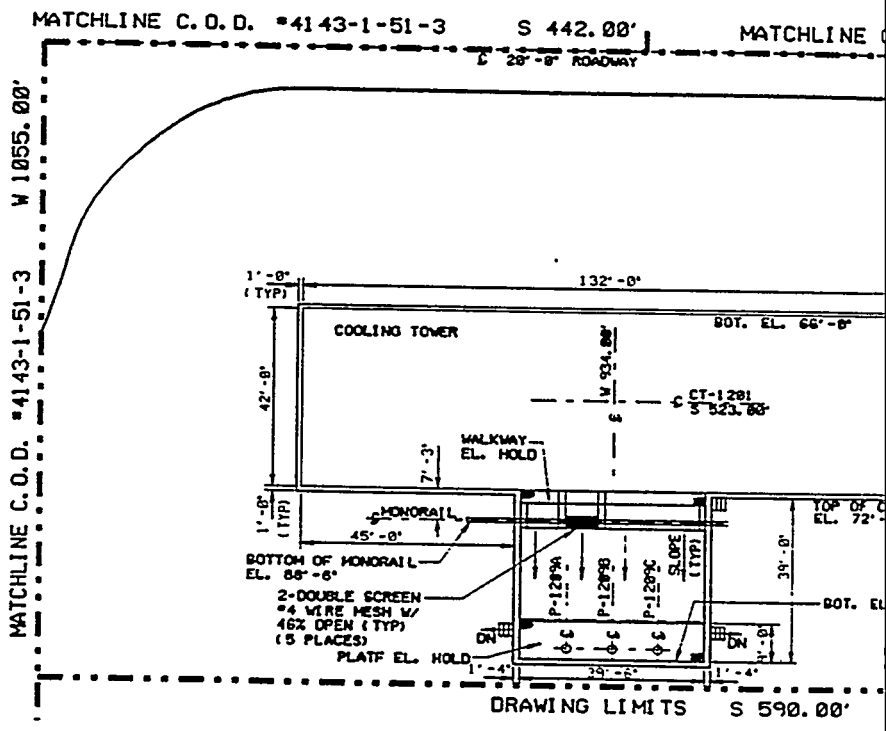
HOLD

1. EQUIPMENT NUMBER/INFORMATION

4143-1-51-8

C	24-07-24	ISSUED FOR CLASS "C" ESTIMATE
B	24-05-24	ISSUED FOR CLIENT APPROVAL
A	24-02-24	ISSUED FOR INTERNAL REVIEW
NO.	DATE	DESCRIPTION

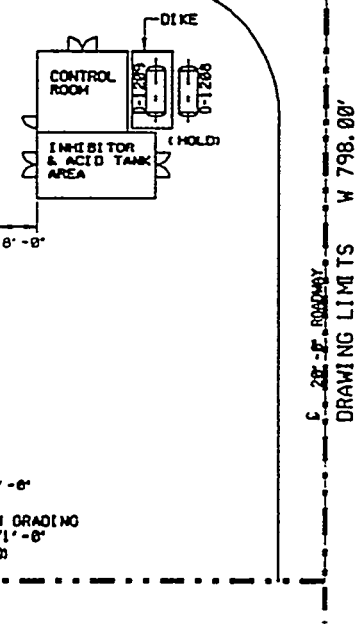
PLOT PLAN
NITROGEN FACILITY

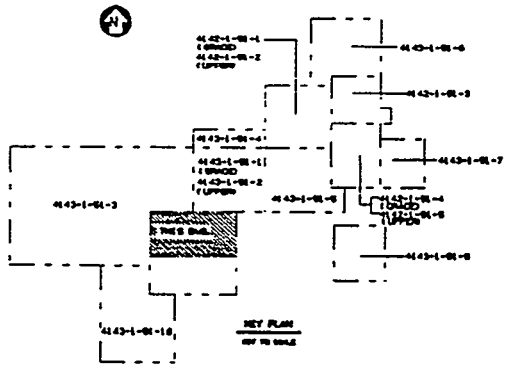

MATCHLINE C.O.D. #4143-1-51-3
S 442.00'
MATCHLINE
℄ 28'-0" ROADWAY
W 1055.00'
MATCHLINE C.O.D. #4143-1-51-3
1'-0" (TYP)
132'-8"
COOLING TOWER
BOT. EL. 66'-8"
42'-8"
W 934.88'
℄ CT-1201
S 523.88'
WALKWAY EL. HOLD
7'-3"
1'-0" (TYP)
MONORAIL
45'-8"
BOTTOM OF MONORAIL EL. 88'-6"
2-DOUBLE SCREEN #4 WIRE MESH W/ 46% OPEN (TYP) (5 PLACES)
PLATF EL. HOLD
P-1209A
P-1209B
P-1209C
SLOPE (TYP)
39'-8"
DN
1'-4"
39'-6"
1'-4"
DRAWING LIMITS
S 590.00'

NOTES

1. FOR GENERAL NOTES SEE DRAWING #4142-1-51-101

D. #4143-1-51-1





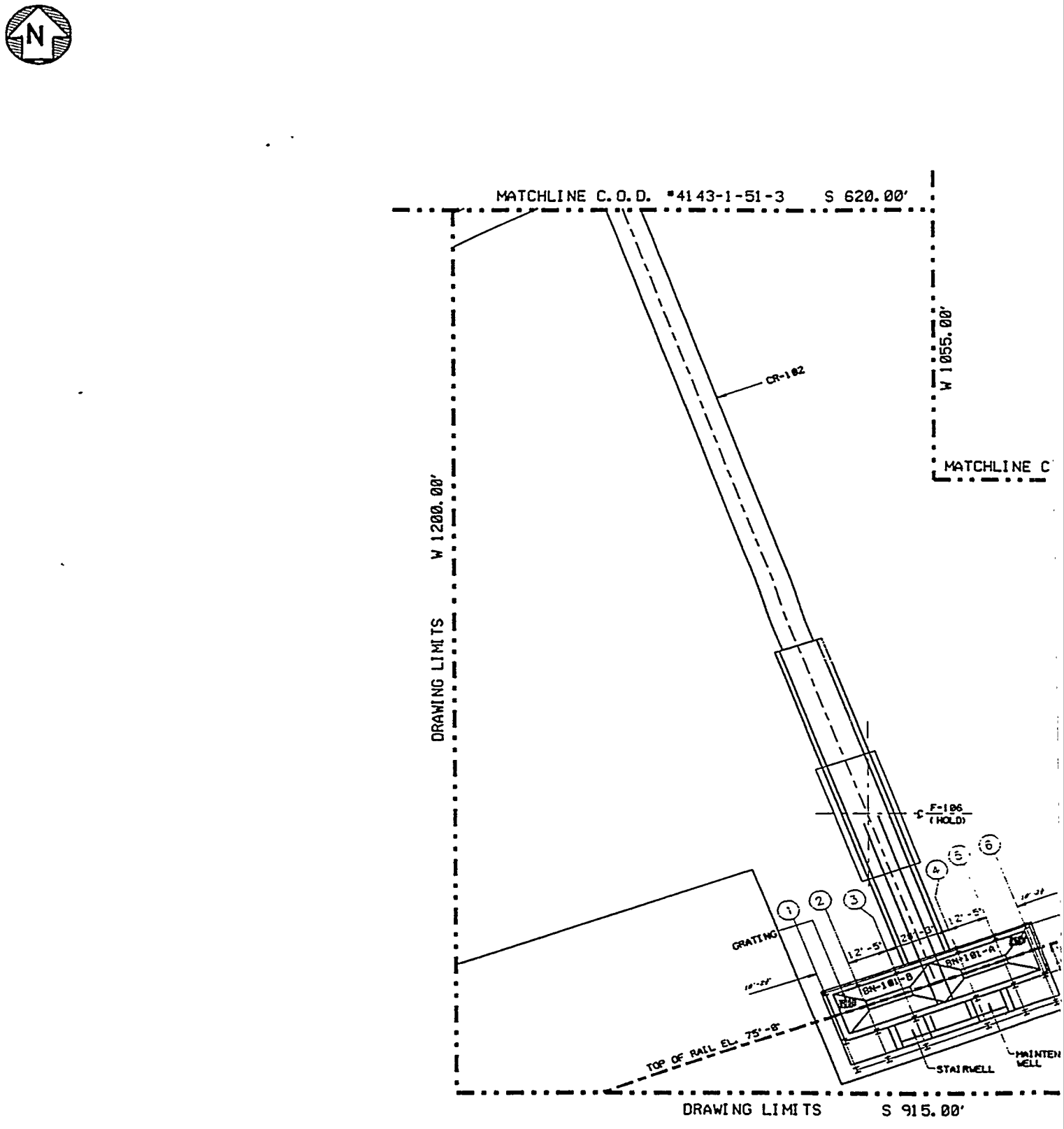
HOLD

1. COOLING TOWER-DETAIL
2. BLDG SIZE - NO INFO
   A. HCC COOLING TOWER
   B. ACID/INHIBITOR AREA
3. ELEV OF COOLING TOWER AND ROUGH GRADING
4. DIKE SIZE FOR D-1289
5. PLATFORM ELEVATION
6. D-1289 AND D-1288 SIZES

4143-1-51-9

C		
B		
A		
NO.	DATE	DESCRIPTION

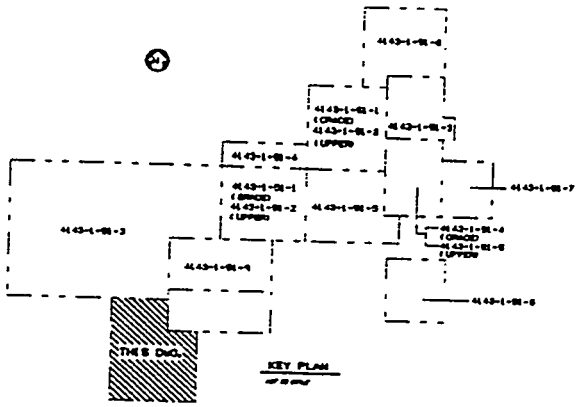
PLOT PLAN
COOLING TOWER


N
MATCHLINE C.O.D. #4143-1-51-3 S 620.00'
W 1055.00'
MATCHLINE C
CR-182
W 1200.00'
DRAWING LIMITS
℄ F-186 (HOLD)
1
2
3
4
5
6
GRATING
12'-5"
BN-181-A
BN-181-B
TOP OF RAIL EL. 75'-8"
STAIRWELL
MAINTEN WELL
DRAWING LIMITS S 915.00'

4143-1-51-10

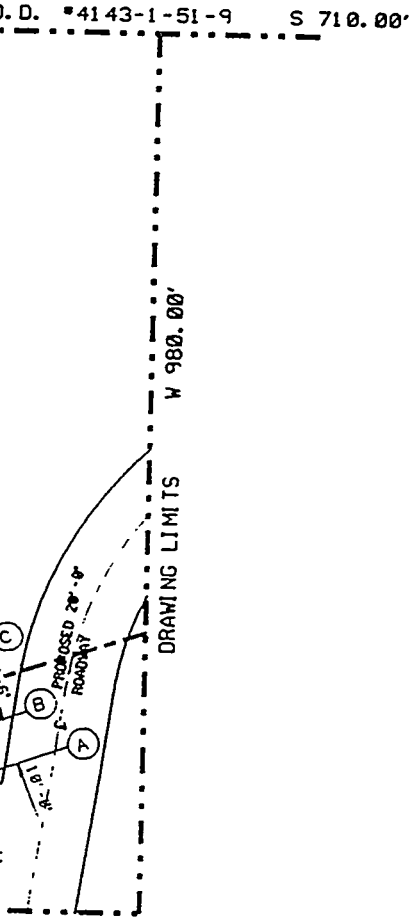
NOTES

1. [illegible]



HOLD

1. LOCATION OF CONVEYOR SUPPORT (BY VENDOR)
2. DETAIL OF UNLOADING (BY CIVIL)
3. LOCATION OF P-181 A/B (SUMP PUMP)
4. F-186 INFO (DUST COLLECTOR)



4143-1-51-10

C	[illegible]	[illegible]
B	[illegible]	[illegible]
A	[illegible]	[illegible]
NO.	DATE	DESCRIPTION

PLOT PLAN

UNLOADING STATION

[illegible]

SIERRA PACIFIC POWER COMPANY

TRACY 4 - PIÑON PROJECT

RENO, NEVADA

HEAT AND MATERIAL BALANCE - BASE CASE

THE M. W. KELLOGG COMPANY

JOB 7514

DATE	REV #	PREP'D	CHECKED	CTE APPR
27 JUL 93	0	FC	GKM	GBH
11 APR 94	1	SN	GKM	GBH
08 JUN 94	2	SN	GKM	GBH
09 DEC 94	3	SN	JOD	GBH

HEAT AND MATERIAL BALANCE - BASE CASE
UNDRIED SUFCO COAL WITH TRANSPORT DESULFURIZER

IDENTIFICATION	Molecular Weight	1 Prepared Coal Feedstock		2 Limestone Feedstock		3 Ash Withdrawal From Gasifier		4 Coal Transport Air	
		Wt%	Lb/Hr	Wt%	Lb/Hr	Wt%	Lb/Hr	Vol%	Lb/Hr
GASES:									
Carbon Monoxide	28.01							0.00	0
Hydrogen	2.02							0.00	0
Carbon Dioxide	44.01							0.00	0
Methane	16.04							0.00	0
Nitrogen	28.01							78.00	14,645
Argon	39.95							0.90	240
Oxygen	32.00							20.82	4,466
Ammonia	17.03							0.00	0
Hydrogen Sulfide	34.08							0.00	0
Carbonyl Sulfide	60.08							0.00	0
Sulfur Dioxide	64.06							0.00	0
Water Vapor	18.02							0.29	35
Hydrogen Chloride	36.46							0.00	0
TOTAL GASES								100.00	19,385
Gas Flow, Lb Moles/Hr									670.3
Molecular Weight, Gases									28.92
Gas Volume, ACFM									193.0
Gas Volume, SCFM									4,238
LIQUIDS:									
Water	18.02								
SOLIDS:									
Carbon	12.01	64.24	47,249			27.19	1,685		
Hydrogen	1.01	4.33	3,187			0.07	5		
Oxygen	16.00	10.94	8,043			0.35	22		
Nitrogen	14.01	1.08	798			0.22	14		
Sulfur	32.06	0.41	298			0.17	10		
Chlorides	35.45	0.00	0			0.00	0		
Ash		9.00	6,620			72.00	4,463		
Moisture	18.02	10.00	7,355			0.00	0		
TOTAL SOLIDS		100.00	73,550			100.00	6,199		
SORBENT:									
CaO	56.08			0.00	0	74.50	1,305		
CaCO3	100.09			90.04	3,720	0.00	0		
CaS	72.14			0.00	0	12.44	218		
CaSO4	136.14			0.00	0	0.00	0		
MgO	40.31			0.00	0	3.26	57		
MgCO3	84.32			4.09	169	0.00	0		
Inerts				5.87	242	9.79	172		
TOTAL SORBENT				100.00	4,131	100.00	1,752		
TOTAL FLOW, Lb/Hr			73,550		4,131		7,951		19,385
HEATING VALUE:									
Gas LHV, Btu/SCF									
Gaseous Fuel LHV, MMBtu/hr									
TEMPERATURE, F			50		50		500		120
PRESSURE, PSIA			13		13		310		360

(3)

HEAT AND MATERIAL BALANCE - BASE CASE
UNDRIED SUFCO COAL WITH TRANSPORT DESULFURIZER

IDENTIFICATION	Molecular Weight	5 Process Air To Gasifier		6 Product Gas From Gasifier		7 Product Gas From Cyclone		8 Total Air From Gas Turbine (3)	
		Vol%	Lb/Hr	Vol%	Lb/Hr	Vol%	Lb/Hr	Vol%	Lb/Hr
GASES:									
Carbon Monoxide	28.01	0.00	0	23.89	82,996	23.89	82,996	0.00	0
Hydrogen	2.02	0.00	0	14.57	3,643	14.57	3,643	0.00	0
Carbon Dioxide	44.01	0.00	0	5.44	29,708	5.44	29,708	0.00	0
Methane	16.04	0.00	0	1.35	2,679	1.35	2,679	0.00	0
Nitrogen	28.01	78.00	145,063	48.65	169,052	48.65	169,052	78.00	164,042
Argon	39.95	0.90	2,379	0.56	2,760	0.56	2,760	0.90	2,690
Oxygen	32.00	20.82	44,235	0.00	0	0.00	0	20.82	50,022
Ammonia	17.03	0.00	0	0.02	40	0.02	40	0.00	0
Hydrogen Sulfide	34.08	0.00	0	0.03	127	0.03	127	0.00	0
Carbonyl Sulfide	60.08	0.00	0	0.00	30	0.00	30	0.00	0
Sulfur Dioxide	64.06	0.00	0	0.00	0	0.00	0	0.00	0
Water Vapor	18.02	0.29	342	5.50	12,284	5.50	12,284	0.29	387
Hydrogen Chloride	36.46	0.00	0	0.00	0	0.00	0	0.00	0
TOTAL GASES		100.00	192,019	100.00	303,319	100.00	303,319	100.00	217,141
Gas Flow, Lb Moles/Hr			6639.3		12404.2		12404.2		7,508.0
Molecular Weight, Gases			28.92		24.45		24.45		28.92
Gas Volume, ACFM			3660.0		16992.1		17166.6		10067.6
Gas Volume, SCFM			41,977		78,425		78,425		47,469
LIQUIDS:									
Water	18.02								
				Wt%		Wt%			
SOLIDS:									
Carbon	12.01			54.20	45,794	54.20	2,656		
Hydrogen	1.01			0.33	275	0.33	16		
Oxygen	16.00			0.70	591	0.70	34		
Nitrogen	14.01			0.41	345	0.41	20		
Sulfur	32.06			0.36	308	0.36	18		
Chlorides	35.45			0.00	0	0.00	0		
Ash				44.00	37,174	44.00	2,156		
Moisture	18.02			0.00	0	0.00	0		
TOTAL SOLIDS				100.00	84,487	100.00	4,900		
SORBENT:									
CaO	56.08			74.50	26,976	74.50	539		
CaCO3	100.09			0.00	0	0.00	0		
CaS	72.14			12.44	4,505	12.44	90		
CaSO4	136.14			0.00	0	0.00	0		
MgO	40.31			3.26	1,181	3.26	24		
MgCO3	84.32			0.00	0	0.00	0		
Inerts				9.79	3,546	9.79	71		
TOTAL SORBENT				100.00	36,209	100.00	724		
TOTAL FLOW, Lb/Hr			192,019		424,015		308,943		217,141
HEATING VALUE:									
Gas LHV, Btu/SCF					129		129		-
Gaseous Fuel LHV, MMBtu/hr					607.4		607.4		
TEMPERATURE, F			650		1,800		1,800 (3)		752
PRESSURE, PSIA			360		295		292 (3)		162

HEAT AND MATERIAL BALANCE - BASE CASE
UNDRIED SUFCO COAL WITH TRANSPORT DESULFURIZER

IDENTIFICATION	Molecular Weight	9 Recycle Gas To Grid		10 Steam to Gasifier		11 Recycle Gas to Annulus		12 Product Gas From Desulfurizer (3)	
		Vol%	Lb/Hr	Vol%	Lb/Hr	Vol%	Lb/Hr	Vol%	Lb/Hr
GASES:									
Carbon Monoxide	28.01	23.91	736			23.91	2,864	23.89	86,604
Hydrogen	2.02	14.58	32			14.58	126	14.57	3,802
Carbon Dioxide	44.01	5.45	264			5.45	1,026	5.45	31,022
Methane	16.04	1.35	24			1.35	92	1.35	2,795
Nitrogen	28.01	48.70	1,500			48.70	5,833	48.66	176,400
Argon	39.95	0.56	24			0.56	95	0.56	2,880
Oxygen	32.00	0.00	0			0.00	0	0.00	0
Ammonia	17.03	0.02	0			0.02	1	0.02	42
Hydrogen Sulfide	34.08	0.00	0			0.00	0	0.00	9
Carbonyl Sulfide	60.08	0.00	0			0.00	0	0.00	0
Sulfur Dioxide	64.06	0.00	0			0.00	0	0.00	0
Water Vapor	18.02	5.43	108	100.00	12,356	5.43	419	5.51	12,836
Hydrogen Chloride	36.46	0.00	0			0.00	0	0.00	0
TOTAL GASES		100.00	2,689	100.00	12,356	100.00	10,455	100.00	316,389
Gas Flow, Lb Moles/Hr			109.9		685.9		427.6		12,941
Molecular Weight, Gases			24.45		18.02		24.45		24.45
Gas Volume, ACFM			47.5		312.8		184.8		12,462
Gas Volume, SCFM			695		4,336		2,703		81,819
LIQUIDS:									
Water	18.02								
SOLIDS:								Wt%	
Carbon	12.01							54.20	2,531
Hydrogen	1.01							0.33	15
Oxygen	16.00							0.70	33
Nitrogen	14.01							0.41	19
Sulfur	32.06							0.36	17
Chlorides	35.45							0.00	0
Ash								44.00	2,054
Moisture	18.02							0.00	0
TOTAL SOLIDS								100.00	4,669
SORBENT:									
CaO	56.08							74.50	514
CaCO3	100.09							0.00	0
CaS	72.14							12.44	86
CaSO4	136.14							0.00	0
MgO	40.31							3.26	23
MgCO3	84.32							0.00	0
Inerts								9.79	68
TOTAL SORBENT								100.00	690
TOTAL FLOW, Lb/Hr			2,689		12,356		10,455		321,748
HEATING VALUE:									
Gas LHV, Btu/SCF			129		-		129		129
Gaseous Fuel LHV, MMBtu/hr			5.4				20.9		632.7
TEMPERATURE, F			350 (3)		700		350 (3)		1,013
PRESSURE, PSIA			335		433		335		274

HEAT AND MATERIAL BALANCE - BASE CASE
UNDRIED SUFCO COAL WITH TRANSPORT DESULFURIZER

IDENTIFICATION	Molecular Weight	13 (3) Condensate From Recycle Gas		14 (Note 1) (3) Blowback Gas to Filter		15 (3) Recycle Gas To RG Booster Comp.		16 (Note 1) (3) Pressurization Recycle Gas	
		Wt%	Lb/Hr	Vol%	Lb/Hr	Vol%	Lb/Hr	Vol%	Lb/Hr
GASES:									
Carbon Monoxide	28.01			25.21	1266	25.21	1,444	25.21	177
Hydrogen	2.02			15.37	56	15.37	63	15.37	8
Carbon Dioxide	44.01			5.75	454	5.75	517	5.75	63
Methane	16.04			1.42	41	1.42	47	1.42	6
Nitrogen	28.01			51.34	2579	51.34	2,940	51.34	361
Argon	39.95			0.59	42	0.59	48	0.59	6
Oxygen	32.00			0.00	0	0.00	0	0.00	0
Ammonia	17.03			0.02	1	0.02	1	0.02	0
Hydrogen Sulfide	34.08			0.00	0	0.00	0	0.00	0
Carbonyl Sulfide	60.08			0.00	0	0.00	0	0.00	0
Sulfur Dioxide	64.06			0.00	0	0.00	0	0.00	0
Water Vapor	18.02			0.30	10	0.30	11	0.30	1
Hydrogen Chloride	36.46			0.00	0	0.00	0	0.00	0
TOTAL GASES				100.00	4,448	100.00	5,071	100.00	622
Gas Flow, Lb Moles/Hr					179.3		204.4		25.1
Molecular Weight, Gases					24.80		24.80		24.80
Gas Volume, ACFM					18.4		80.5		5.5
Gas Volume, SCFM					1,134		1,293		159
LIQUIDS:									
Water	18.02	100.00	200						
SOLIDS:									
Carbon	12.01								
Hydrogen	1.01								
Oxygen	16.00								
Nitrogen	14.01								
Sulfur	32.06								
Chlorides	35.45								
Ash									
Moisture	18.02								
TOTAL SOLIDS									
SORBENT:									
CaO	56.08								
CaCO3	100.09								
CaS	72.14								
CaSO4	136.14								
MgO	40.31								
MgCO3	84.32								
Inerts									
TOTAL SORBENT									
TOTAL FLOW, Lb/Hr			200		4,448		5,071		622
HEATING VALUE:									
Gas LHV, Btu/SCF					136		136		136
Gaseous Fuel LHV, MMBtu/hr					9.3		10.5		1.3
TEMPERATURE, F			90		230		90		230
PRESSURE, PSIA			250		1,200		250		565

Note 1: Streams 14 and 16 are time averaged flow rates.
Stream 14 also includes 1200 lb/hr instrument purge flow.

HEAT AND MATERIAL BALANCE - BASE CASE
UNDRIED SUFCO COAL WITH TRANSPORT DESULFURIZER

IDENTIFICATION	Molecular Weight	17 (3) Sorbent Regeneration Gas To Sulfator		18 (3) Cooled Recycle Gas		19 (Note 1) Pressurization Air		20 (3) Hot Recycle Gas	
		Vol%	Lb/Hr	Vol%	Lb/Hr	Vol%	Lb/Hr	Vol%	Lb/Hr
GASES:									
Carbon Monoxide	28.01	0.00	0	23.91	10,566	0.00	0	23.91	10,565
Hydrogen	2.02	0.00	0	14.58	464	0.00	0	14.58	464
Carbon Dioxide	44.01	0.00	0	5.45	3,785	0.00	0	5.45	3,785
Methane	16.04	0.00	0	1.35	341	0.00	0	1.35	341
Nitrogen	28.01	83.81	626	48.70	21,521	78.00	2,970	48.70	21,520
Argon	39.95	0.96	10	0.56	351	0.90	49	0.56	351
Oxygen	32.00	0.00	0	0.00	0	20.82	906	0.00	0
Ammonia	17.03	0.00	0	0.02	5	0.00	0	0.02	5
Hydrogen Sulfide	34.08	0.00	0	0.00	1	0.00	0	0.00	1
Carbonyl Sulfide	60.08	0.00	0	0.00	0	0.00	0	0.00	0
Sulfur Dioxide	64.06	14.91	255	0.00	0	0.00	0	0.00	0
Water Vapor	18.02	0.31	1	5.43	1,545	0.29	7	5.43	1,545
Hydrogen Chloride	36.46	0.00	0	0.00	0	0.00	0	0.00	0
TOTAL GASES		99.99	892	100.00	38,578	100.00	3,932	100.00	38,577
Gas Flow, Lb Moles/Hr			26.6		1,577.6		136.0		1,577.6
Molecular Weight, Gases			33.47		24.45		28.92		24.45
Gas Volume, ACFM			219.6		801.7		23.5		1567.0
Gas Volume, SCFM			168		9,974		860		9,974
LIQUIDS:									
Water	18.02								
SOLIDS:									
Carbon	12.01								
Hydrogen	1.01								
Oxygen	16.00								
Nitrogen	14.01								
Sulfur	32.06								
Chlorides	35.45								
Ash									
Moisture	18.02								
TOTAL SOLIDS									
SORBENT:									
CaO	56.08								
CaCO3	100.09								
CaS	72.14								
CaSO4	136.14								
MgO	40.31								
MgCO3	84.32								
Inerts									
TOTAL SORBENT									
TOTAL FLOW, Lb/Hr			892		38,578		3,932		38,577
HEATING VALUE:									
Gas LHV, Btu/SCF					129				129
Gaseous Fuel LHV, MMBtu/hr					77.2				77.2
TEMPERATURE, F			600		270		120		1,000
PRESSURE, PSIA			23		257		600		263

Note 1: Stream 19 is a time averaged flow rate.

HEAT AND MATERIAL BALANCE - BASE CASE
UNDRIED SUFCO COAL WITH TRANSPORT DESULFURIZER

IDENTIFICATION	Molecular Weight	21 Limestone To Sulfator		22 (3) Sulfator System Flue Gas To Vent		23 Solids From Sulfator		24 (Note 1) Total Solids to Disposal	
		Wt%	Lb/Hr	Vol%	Lb/Hr	Wt%	Lb/Hr	Wt%	Lb/Hr
GASES:									
Carbon Monoxide	28.01			0.00	0				
Hydrogen	2.02			0.00	0				
Carbon Dioxide	44.01			9.65	18,033				
Methane	16.04			0.00	0				
Nitrogen	28.01			77.23	91,879				
Argon	39.95			0.89	1,507				
Oxygen	32.00			10.33	14,044				
Ammonia	17.03			0.00	1				
Hydrogen Sulfide	34.08			0.00	0				
Carbonyl Sulfide	60.08			0.00	0				
Sulfur Dioxide	64.06			0.01	37				
Water Vapor	18.02			1.88	1,438				
Hydrogen Chloride	36.46			0.00	0				
TOTAL GASES				100.00	126,939				
Gas Flow, Lb Moles/Hr					4,246.7				
Molecular Weight, Gases					29.89				
Gas Volume, ACFM					47301.8				
Gas Volume, SCFM					26,849				
LIQUIDS:									
Water	18.02								
SOLIDS:									
Carbon	12.01					0.74	34	1.28	87
Hydrogen	1.01					0.00	0	0.00	0
Oxygen	16.00					0.48	22	0.82	56
Nitrogen	14.01					0.30	14	0.50	34
Sulfur	32.06					0.00	0	0.01	0
Chlorides	35.45					0.00	0	0.00	0
Ash						98.47	4,463	97.40	6,619
Moisture	18.02					0.00	0	0.00	0
TOTAL SOLIDS						100.00	4,533	100.00	6,796
SORBENT:									
CaO	56.08	0.00	0			52.94	1,305	57.84	1,844
CaCO3	100.09	90.04	426			0.00	0	0.00	0
CaS	72.14	0.00	0			4.42	109	6.24	199
CaSO4	136.14	0.00	0			31.85	785	24.62	785
MgO	40.31	0.00	0			2.69	66	2.82	90
MgCO3	84.32	4.09	19			0.00	0	0.00	0
Inerts		5.87	28			8.09	199	8.47	270
TOTAL SORBENT		100.00	473			100.00	2,465	100.00	3,189
TOTAL FLOW, Lb/Hr			473		126,939		6,998		9,985
HEATING VALUE:									
Gas LHV, Btu/SCF					-				
Gaseous Fuel LHV, MMBtu/hr									
TEMPERATURE, F			50		350		1,600		(3) 210
PRESSURE, PSIA			20		13		17		13

Note 1: Temperature of stream 24 is calculated by blending stream 64 with the cooled sulfator solids stream.

HEAT AND MATERIAL BALANCE - BASE CASE
UNDRIED SUFCO COAL WITH TRANSPORT DESULFURIZER

IDENTIFICATION	Molecular Weight	25 Cyclone Fines to Gasifier		26 (3) Desulfurized Product Gas From Hot Gas Filter		27 (3) Hot Regen. Air to Transp. Regenerator		28 (3) Regeneration Air to Transp. Regenerator	
		Wt%	Lb/Hr	Vol%	Lb/Hr	Vol%	Lb/Hr	Vol%	Lb/Hr
GASES:									
Carbon Monoxide	28.01			23.91	88,418	0.00	0	0.00	0
Hydrogen	2.02			14.58	3,881	0.00	0	0.00	0
Carbon Dioxide	44.01			5.45	31,672	0.00	0	0.00	0
Methane	16.04			1.35	2,853	0.00	0	0.00	0
Nitrogen	28.01			48.70	180,095	78.00	626	78.00	626
Argon	39.95			0.56	2,940	0.90	10	0.90	10
Oxygen	32.00			0.00	0	20.82	191	20.82	191
Ammonia	17.03			0.02	43	0.00	0	0.00	0
Hydrogen Sulfide	34.08			0.00	9	0.00	0	0.00	0
Carbonyl Sulfide	60.08			0.00	0	0.00	0	0.00	0
Sulfur Dioxide	64.06			0.00	0	0.00	0	0.00	0
Water Vapor	18.02			5.43	12,926	0.29	1	0.29	1
Hydrogen Chloride	36.46			0.00	0	0.00	0	0.00	0
TOTAL GASES				100.00	322,837	100.00	828	100.00	828
Gas Flow, Lb Moles/Hr					13,202.1		28.6		28.6
Molecular Weight, Gases					24.45		28.92		28.92
Gas Volume, ACFM					13113.8		23.5		15.8
Gas Volume, SCFM					83,469		181		181
LIQUIDS:									
Water	18.02								
SOLIDS:									
Carbon	12.01	54.20	43,138						
Hydrogen	1.01	0.33	259						
Oxygen	16.00	0.70	557						
Nitrogen	14.01	0.41	325						
Sulfur	32.06	0.36	290						
Chlorides	35.45	0.00	0						
Ash		44.00	35,018						
Moisture	18.02	0.00	0						
TOTAL SOLIDS		100.00	79,587						
SORBENT:									
CaO	56.08	74.50	26,437						
CaCO3	100.09	0.00	0						
CaS	72.14	12.44	4,415						
CaSO4	136.14	0.00	0						
MgO	40.31	3.26	1,158						
MgCO3	84.32	0.00	0						
Inerts		9.79	3,475						
TOTAL SORBENT		100.00	35,485						
TOTAL FLOW, Lb/Hr			115,072		322,837		828		828
HEATING VALUE:									
Gas LHV, Btu/SCF					129				
Gaseous Fuel LHV, MMBtu/hr					646.1				
TEMPERATURE, F		(3)	1,790		1,000		1,100		650
PRESSURE, PSIA			292		263		340		360

HEAT AND MATERIAL BALANCE - BASE CASE
UNDRIED SUFCO COAL WITH TRANSPORT DESULFURIZER

IDENTIFICATION	Molecular Weight	29 (3) Desulf. Feed Cyc. Fines Transport Gas		30 Ash Transport Gas		31 Fines Transport Gas		32 (3) Product Gas to Gas Turbine	
		Vol%	Lb/Hr	Vol%	Lb/Hr	Vol%	Lb/Hr	Vol%	Lb/Hr
GASES:									
Carbon Monoxide	28.01	23.91	82	23.91	436	23.91	308	23.91	77,852
Hydrogen	2.02	14.58	4	14.58	19	14.58	14	14.58	3,417
Carbon Dioxide	44.01	5.45	29	5.45	156	5.45	110	5.45	27,887
Methane	16.04	1.35	3	1.35	14	1.35	10	1.35	2,512
Nitrogen	28.01	48.70	167	48.70	887	48.70	627	48.70	158,575
Argon	39.95	0.56	3	0.56	14	0.56	10	0.56	2,589
Oxygen	32.00	0.00	0	0.00	0	0.00	0	0.00	0
Ammonia	17.03	0.02	0	0.02	0	0.02	0	0.02	38
Hydrogen Sulfide	34.08	0.00	0	0.00	0	0.00	0	0.00	8
Carbonyl Sulfide	60.08	0.00	0	0.00	0	0.00	0	0.00	0
Sulfur Dioxide	64.06	0.00	0	0.00	0	0.00	0	0.00	0
Water Vapor	18.02	5.43	12	5.43	64	5.43	45	5.43	11,381
Hydrogen Chloride	36.46	0.00	0	0.00	0	0.00	0	0.00	0
TOTAL GASES		100.00	300	100.00	1,590	100.00	1,125	100.00	284,260
Gas Flow, Lb Moles/Hr			12.3		65.0		46.0		11,624.5
Molecular Weight, Gases			24.45		24.45		24.45		24.45
Gas Volume, ACFM			5.3		33.0		23.4		11546.8
Gas Volume, SCFM			78		411		291		73,495
LIQUIDS:									
Water	18.02								
SOLIDS:									
Carbon	12.01								
Hydrogen	1.01								
Oxygen	16.00								
Nitrogen	14.01								
Sulfur	32.06								
Chlorides	35.45								
Ash									
Moisture	18.02								
TOTAL SOLIDS									
SORBENT:									
CaO	56.08								
CaCO3	100.09								
CaS	72.14								
CaSO4	136.14								
MgO	40.31								
MgCO3	84.32								
Inerts									
TOTAL SORBENT									
TOTAL FLOW, Lb/Hr			300		1,590		1,125		284,260
HEATING VALUE:									
Gas LHV, Btu/SCF			129		129		129		129
Gaseous Fuel LHV, MMBtu/hr			0.6		3.2		2.3		568.9
TEMPERATURE, F			350		270 (3)		270 (3)		1,000
PRESSURE, PSIA			335		257		257		263

HEAT AND MATERIAL BALANCE - BASE CASE
UNDRIED SUFCO COAL WITH TRANSPORT DESULFURIZER

IDENTIFICATION	Molecular Weight	33 Low Pressure Transport Gas		34 △3 High Pressure Transport Gas		35 △3 Brw Blowdown From Sulfator Steam Drum		36 △3 Desulf. Feed Cyc. Fines to HGF	
		Vol%	Lb/Hr	Vol%	Lb/Hr	Wt%	Lb/Hr	Wt%	Lb/Hr
GASES:									
Carbon Monoxide	28.01	23.91	744	23.91	520			23.91	82
Hydrogen	2.02	14.58	33	14.58	23			14.58	4
Carbon Dioxide	44.01	5.45	266	5.45	186			5.45	29
Methane	16.04	1.35	24	1.35	17			1.35	3
Nitrogen	28.01	48.70	1,515	48.70	1,060			48.70	167
Argon	39.95	0.56	25	0.56	17			0.56	3
Oxygen	32.00	0.00	0	0.00	0			0.00	0
Ammonia	17.03	0.02	0	0.02	0			0.02	0
Hydrogen Sulfide	34.08	0.00	0	0.00	0			0.00	0
Carbonyl Sulfide	60.08	0.00	0	0.00	0			0.00	0
Sulfur Dioxide	64.06	0.00	0	0.00	0			0.00	0
Water Vapor	18.02	5.43	109	5.43	76			5.43	12
Hydrogen Chloride	36.46	0.00	0	0.00	0			0.00	0
TOTAL GASES		100.00	2,715	100.00	1,900			100.00	300
Gas Flow, Lb Moles/Hr			111.0		77.7				12.3
Molecular Weight, Gases			24.45		24.45				24.45
Gas Volume, ACFM			56.4		33.6				9.0
Gas Volume, SCFM			702		491				78
LIQUIDS:									
Water	18.02					100.00	854		
SOLIDS:									
Carbon	12.01							54.20	125
Hydrogen	1.01							0.33	1
Oxygen	16.00							0.70	2
Nitrogen	14.01							0.41	1
Sulfur	32.06							0.36	1
Chlorides	35.45							0.00	0
Ash								44.00	102
Moisture	18.02							0.00	0
TOTAL SOLIDS								100.00	231
SORBENT:									
CaO	56.08							74.50	25
CaCO3	100.09							0.00	0
CaS	72.14							12.44	4
CaSO4	136.14							0.00	0
MgO	40.31							3.26	1
MgCO3	84.32							0.00	0
Inerts								9.79	3
TOTAL SORBENT								100.00	34
TOTAL FLOW, Lb/Hr			2,715		1,900		854		565
HEATING VALUE:									
Gas LHV, Btu/SCF			129		129				129
Gaseous Fuel LHV, MMBtu/hr			5.4		3.8				0.6
TEMPERATURE, F			270		350		553		670
PRESSURE, PSIA			257 △3		335		1,075		276

HEAT AND MATERIAL BALANCE - BASE CASE
UNDRIED SUFCO COAL WITH TRANSPORT DESULFURIZER

IDENTIFICATION	Molecular Weight	37 Filter Solids From Screw Cooler		38 (3) Gas From Sulfator Cyclone		39 Flue Gas (3) to BH Filter		40 (Note 1) Pressurization Air Vent	
		Wt%	Lb/Hr	Vol%	Lb/Hr	Vol%	Lb/Hr	Vol%	Lb/Hr
GASES:									
Carbon Monoxide	28.01			0.00	0	0.00	0	0.00	0
Hydrogen	2.02			0.00	0	0.00	0	0.00	0
Carbon Dioxide	44.01			15.65	7,484	9.65	18,033	0.00	0
Methane	16.04			0.00	0	0.00	0	0.00	0
Nitrogen	28.01			76.52	23,292	77.23	91,879	78.00	2,970
Argon	39.95			0.88	382	0.89	1,507	0.90	49
Oxygen	32.00			3.67	1,276	10.33	14,044	20.82	906
Ammonia	17.03			0.00	1	0.00	1	0.00	0
Hydrogen Sulfide	34.08			0.00	0	0.00	0	0.00	0
Carbonyl Sulfide	60.08			0.00	0	0.00	0	0.00	0
Sulfur Dioxide	64.06			0.00	2	0.01	37	0.00	0
Water Vapor	18.02			3.28	641	1.88	1,438	0.29	7
Hydrogen Chloride	36.46			0.00	0	0.00	0	0.00	0
TOTAL GASES				100.00	33,078	100.00	126,939	100.00	3,932
Gas Flow, Lb Moles/Hr					1,086.6		4,246.7		136.0
Molecular Weight, Gases					30.44		29.89		28.92
Gas Volume, ACFM					27413.7		45215.0		1084.2
Gas Volume, SCFM					6,870		26,849		860
LIQUIDS:									
Water	18.02								
						Wt%			
SOLIDS:									
Carbon	12.01	54.20	2,656			2.35	53		
Hydrogen	1.01	0.33	16			0.00	0		
Oxygen	16.00	0.70	34			1.52	34		
Nitrogen	14.01	0.41	20			0.88	20		
Sulfur	32.06	0.36	18			0.01	0		
Chlorides	35.45	0.00	0			0.00	0		
Ash		44.00	2,156			95.24	2,156		
Moisture	18.02	0.00	0			0.00	0		
TOTAL SOLIDS		100.00	4900			100	2,264		
SORBENT:									
CaO	56.08	74.50	539			74.50	539		
CaCO3	100.09	0.00	0			0.00	0		
CaS	72.14	12.44	90			12.44	90		
CaSO4	136.14	0.00	0			0.00	0		
MgO	40.31	3.26	24			3.26	24		
MgCO3	84.32	0.00	0			0.00	0		
Inerts		9.79	71			9.79	71		
TOTAL SORBENT		100	724			100	724		
TOTAL FLOW, Lb/Hr			5,624		33,078		129,926		3,932
HEATING VALUE:									
Gas LHV, Btu/SCF					-		-		
Gaseous Fuel LHV, MMBtu/hr									
TEMPERATURE, F		(3) 500			1,600		350		120
PRESSURE, PSIA		(3) 263			15		14		13

Note 1 : Time averaged flow.

HEAT AND MATERIAL BALANCE - BASE CASE
UNDRIED SUFCO COAL WITH TRANSPORT DESULFURIZER

IDENTIFICATION	Molecular Weight	41 (3) Total BFW From Sec. 800		42 Recycle Gas To Gasifier		43 (Note 1) Ash Hopper Vent Gas (3)		44 (Note 1) Fines Hopper Vent Gas (3)	
		Wt%	Lb/Hr	Vol%	Lb/Hr	Vol%	Lb/Hr	Vol%	Lb/Hr
GASES:									
Carbon Monoxide	28.01			23.91	4,231	25.21	50	25.21	127
Hydrogen	2.02			14.58	186	15.37	2	15.37	6
Carbon Dioxide	44.01			5.45	1,516	5.75	18	5.75	45
Methane	16.04			1.35	137	1.42	2	1.42	4
Nitrogen	28.01			48.70	8,618	51.34	102	51.34	259
Argon	39.95			0.56	141	0.59	2	0.59	4
Oxygen	32.00			0.00	0	0.00	0	0.00	0
Ammonia	17.03			0.02	2	0.02	0	0.02	0
Hydrogen Sulfide	34.08			0.00	0	0.00	0	0.00	0
Carbonyl Sulfide	60.08			0.00	0	0.00	0	0.00	0
Sulfur Dioxide	64.06			0.00	0	0.00	0	0.00	0
Water Vapor	18.02			5.43	619	0.30	0	0.30	1
Hydrogen Chloride	36.46			0.00	0	0.00	0	0.00	0
TOTAL GASES				100.00	15,448	100.00	176	100.00	446
Gas Flow, Lb Moles/Hr					631.7		7.1		18.0
Molecular Weight, Gases					24.45		24.80		24.80
Gas Volume, ACFM					273.1		2.8		8.4
Gas Volume, SCFM					3,994		45		114
LIQUIDS:									
Water	18.02	100.00	157,995						
SOLIDS:									
Carbon	12.01								
Hydrogen	1.01								
Oxygen	16.00								
Nitrogen	14.01								
Sulfur	32.06								
Chlorides	35.45								
Ash									
Moisture	18.02								
TOTAL SOLIDS									
SORBENT:									
CaO	56.08								
CaCO3	100.09								
CaS	72.14								
CaSO4	136.14								
MgO	40.31								
MgCO3	84.32								
Inerts									
TOTAL SORBENT									
TOTAL FLOW, Lb/Hr			157,995		15,448		176		446
HEATING VALUE:									
Gas LHV, Btu/SCF					129		136		136
Gaseous Fuel LHV, MMBtu/hr					30.9		0.4		0.9
TEMPERATURE, F			240		(3) 350		230		230
PRESSURE, PSIA			1,075		(3) 335		310		263

Note: 1. Streams 43 and 44 are time averaged flow rates.

HEAT AND MATERIAL BALANCE - BASE CASE
UNDRIED SUFCO COAL WITH TRANSPORT DESULFURIZER

IDENTIFICATION	Molecular Weight	45 (3) Brw to Air Precooler		46 (3) Ash to Collection Hopper		47 (3) Brw to Recycle Gas Cooler		48 (3) Recycle Gas To Filter	
		Wt%	Lb/Hr	Wt%	Lb/Hr	Wt%	Lb/Hr	Vol%	Lb/Hr
GASES:									
Carbon Monoxide	28.01			23.91	438			23.91	438
Hydrogen	2.02			14.58	19			14.58	19
Carbon Dioxide	44.01			5.45	157			5.45	157
Methane	16.04			1.35	14			1.35	14
Nitrogen	28.01			48.70	893			48.70	893
Argon	39.95			0.56	15			0.56	15
Oxygen	32.00			0.00	0			0.00	0
Ammonia	17.03			0.02	0			0.02	0
Hydrogen Sulfide	34.08			0.00	0			0.00	0
Carbonyl Sulfide	60.08			0.00	0			0.00	0
Sulfur Dioxide	64.06			0.00	0			0.00	0
Water Vapor	18.02			5.43	64			5.43	64
Hydrogen Chloride	36.46			0.00	0			0.00	0
TOTAL GASES				100.00	1,600			100.00	1600
Gas Flow, Lb Moles/Hr					65.4				65.4
Molecular Weight, Gases					24.45				24.45
Gas Volume, ACFM					36.2				36.2
Gas Volume, SCFM					414				414
LIQUIDS:									
Water	18.02	100.00	51,550			100.00	62,887		
SOLIDS:									
Carbon	12.01			27.19	1,685				
Hydrogen	1.01			0.07	5				
Oxygen	16.00			0.35	22				
Nitrogen	14.01			0.22	14				
Sulfur	32.06			0.17	10				
Chlorides	35.45			0.00	0				
Ash				72.00	4,463				
Moisture	18.02			0.00	0				
TOTAL SOLIDS				100.00	6,199				
SORBENT:									
CaO	56.08			74.50	1305.26				
CaCO3	100.09			0.00	0.00				
CaS	72.14			12.44	217.98				
CaSO4	136.14			0.00	0.00				
MgO	40.31			3.26	57.17				
MgCO3	84.32			0.00	0.00				
Inerts				9.79	171.59				
TOTAL SORBENT				100.00	1752.00				
TOTAL FLOW, Lb/Hr			51,550		9,551		62,887		1,600
HEATING VALUE:									
Gas LHV, Btu/SCF									
Gaseous Fuel LHV, MMBtu/hr									
TEMPERATURE, F			240		500		240		500
PRESSURE, PSIA			1,075		310		1,075		310

HEAT AND MATERIAL BALANCE - BASE CASE
UNDRIED SUFCO COAL WITH TRANSPORT DESULFURIZER

IDENTIFICATION	Molecular Weight	49 (3) Air To Sulfator		50 (3) Steam From Product Gas Trim Cooler		51 (3) Net Steam From Sulfator Steam Drum		52 (3) Steam From Product Gas Cooler	
		Vol%	Lb/Hr	Vol%	Lb/Hr	Vol%	Lb/Hr	Vol%	Lb/Hr
GASES:									
Carbon Monoxide	28.01	0.00	0						
Hydrogen	2.02	0.00	0						
Carbon Dioxide	44.01	0.00	0						
Methane	16.04	0.00	0						
Nitrogen	28.01	78.00	20,677						
Argon	39.95	0.90	339						
Oxygen	32.00	20.82	6,305						
Ammonia	17.03	0.00	0						
Hydrogen Sulfide	34.08	0.00	0						
Carbonyl Sulfide	60.08	0.00	0						
Sulfur Dioxide	64.06	0.00	0						
Water Vapor	18.02	0.29	49	100.00	34,182	100.00	42,704	100.00	59,297
Hydrogen Chloride	36.46	0.00	0						
TOTAL GASES		100.00	27,370	100.00	34,182	100.00	42,704	100.00	59,297
Gas Flow, Lb Moles/Hr			946.4		1,897.4		2,370.5		3,291.5
Molecular Weight, Gases			28.92		18.02		18.02		18.02
Gas Volume, ACFM			4486.3		239.8		299.6		416.0
Gas Volume, SCFM			5,983		11,998		14,989		20,813
LIQUIDS:									
Water	18.02								
SOLIDS:									
Carbon	12.01								
Hydrogen	1.01								
Oxygen	16.00								
Nitrogen	14.01								
Sulfur	32.06								
Chlorides	35.45								
Ash									
Moisture	18.02								
TOTAL SOLIDS									
SORBENT:									
CaO	56.08								
CaCO3	100.09								
CaS	72.14								
CaSO4	136.14								
MgO	40.31								
MgCO3	84.32								
Inerts									
TOTAL SORBENT									
TOTAL FLOW, Lb/Hr			27,370		34,182		42,704		59,297
HEATING VALUE:									
Gas LHV, Btu/SCF									
Gaseous Fuel LHV, MMBtu/hr									
TEMPERATURE, F			150		553		553		553
PRESSURE, PSIA			23		1,075		1,075		1,075

HEAT AND MATERIAL BALANCE - BASE CASE
UNDRIED SUFCO COAL WITH TRANSPORT DESULFURIZER

IDENTIFICATION	Molecular Weight	53 Total Blowdown to Sec. 800		54 Steam From Gasifier Steam Drum		55 Total Gas Flow To HGF		56 Pri. Solids Cooler Fluidization Air	
		Wt%	Lb/Hr	Vol%	Lb/Hr	Vol%	Lb/Hr	Vol%	Lb/Hr
GASES:									
Carbon Monoxide	28.01					23.89	87,124	0.00	0
Hydrogen	2.02					14.57	3,824	0.00	0
Carbon Dioxide	44.01					5.45	31,209	0.00	0
Methane	16.04					1.35	2,812	0.00	0
Nitrogen	28.01					48.66	177,460	78.00	738
Argon	39.95					0.56	2,897	0.90	12
Oxygen	32.00					0.00	0	20.82	225
Ammonia	17.03					0.02	42	0.00	0
Hydrogen Sulfide	34.08					0.00	9	0.00	0
Carbonyl Sulfide	60.08					0.00	0	0.00	0
Sulfur Dioxide	64.06					0.00	0	0.00	0
Water Vapor	18.02			100.00	112,193	5.51	12,912	0.29	2
Hydrogen Chloride	36.46					0.00	0	0.00	0
TOTAL GASES				100.00	112,193	100.00	318,289		977
Gas Flow, Lb Moles/Hr					6,227.8		13018.7		33.8
Molecular Weight, Gases					18.02		24.45		28.92
Gas Volume, ACFM					787.1		12597.7		
Gas Volume, SCFM					39,380		82,310		
LIQUIDS:									
Water	18.02	100.00	3,098						
SOLIDS:						Wt%			
Carbon	12.01					54.20	2,656		
Hydrogen	1.01					0.33	16		
Oxygen	16.00					0.70	34		
Nitrogen	14.01					0.41	20		
Sulfur	32.06					0.36	18		
Chlorides	35.45					0.00	0		
Ash						44.00	2,156		
Moisture	18.02					0.00	0		
TOTAL SOLIDS						100.00	4,900		
SORBENT:									
CaO	56.08					74.50	539		
CaCO3	100.09					0.00	0		
CaS	72.14					12.44	90		
CaSO4	136.14					0.00	0		
MgO	40.31					3.26	24		
MgCO3	84.32					0.00	0		
Inerts						9.79	71		
TOTAL SORBENT						100.00	724		
TOTAL FLOW, Lb/Hr			3,098		112,193		323,913		977
HEATING VALUE:									
Gas LHV, Btu/SCF							129		
Gaseous Fuel LHV, MMBtu/hr							637.0		
TEMPERATURE, F			553		553		1,011		110
PRESSURE, PSIA			1,075		1,075		272		155

HEAT AND MATERIAL BALANCE - BASE CASE
UNDRIED SUFCO COAL WITH TRANSPORT DESULFURIZER

IDENTIFICATION	Molecular Weight	57 (3) ~~Total Brw To~~ Sulfator HRSG		58 (3) ~~Total Steam~~ Export to Sec. 800		59 (3) ~~Air To~~ Fines Combustor		60 (3) Fines Combustor Effluents To HRSG	
		Wt%	Lb/Hr	Vol%	Lb/Hr	Vol%	Lb/Hr	Vol%	Lb/Hr
GASES:									
Carbon Monoxide	28.01					0.00	0	0.00	0
Hydrogen	2.02					0.00	0	0.00	0
Carbon Dioxide	44.01					0.00	0	9.65	18,033
Methane	16.04					0.00	0	0.00	0
Nitrogen	28.01					78.00	67,957	77.23	91,879
Argon	39.95					0.90	1,115	0.89	1,507
Oxygen	32.00					20.82	20,722	10.33	14,044
Ammonia	17.03					0.00	0	0.00	1
Hydrogen Sulfide	34.08					0.00	0	0.00	0
Carbonyl Sulfide	60.08					0.00	0	0.00	0
Sulfur Dioxide	64.06					0.00	0	0.01	37
Water Vapor	18.02			100.00	154,897	0.29	160	1.88	1,438
Hydrogen Chloride	36.46					0.00	0	0.00	0
TOTAL GASES				100.00	154,897	100.00	89,954	100.00	126,939
Gas Flow, Lb Moles/Hr					8,598.2		3,110.3		4,246.7
Molecular Weight, Gases					18.02		28.92		29.89
Gas Volume, ACFM					1,294.2		19268.7		117542.6
Gas Volume, SCFM					54,369		19,665		26,849
LIQUIDS:									
Water	18.02	100.00	43,558						
								Wt%	
SOLIDS:									
Carbon	12.01							2.35	53
Hydrogen	1.01							0.00	0
Oxygen	16.00							1.52	34
Nitrogen	14.01							0.88	20
Sulfur	32.06							0.01	0
Chlorides	35.45							0.00	0
Ash								95.24	2,156
Moisture	18.02							0.00	0
TOTAL SOLIDS								100.00	2,264
SORBENT:									
CaO	56.08							74.50	539
CaCO3	100.09							0.00	0
CaS	72.14							12.44	90
CaSO4	136.14							0.00	0
MgO	40.31							3.26	24
MgCO3	84.32							0.00	0
Inerts								9.79	71
TOTAL SORBENT								100.00	724.00
TOTAL FLOW, Lb/Hr			43,558		154,897		89,954		129,926
HEATING VALUE:									
Gas LHV, Btu/SCF									
Gaseous Fuel LHV, MMBtu/hr									
TEMPERATURE, F			240		600		150		1,800
PRESSURE, PSIA			1,075		1,020		18		15

HEAT AND MATERIAL BALANCE - BASE CASE
UNDRIED SUFCO COAL WITH TRANSPORT DESULFURIZER

IDENTIFICATION	Molecular Weight	61 (3) Cooled Extraction Air To C201		62 (3) BFW/Steam From E607 To SG401		63 (3) Total Desulfurizer Aeration Gas		64 Sulfator Fines From BH Filter	
		Vol%	Lb/Hr	Vol%	Lb/Hr	Vol%	Lb/Hr	Wt%	Lb/Hr
GASES:									
Carbon Monoxide	28.01	0.00	0			23.91	3,600		
Hydrogen	2.02	0.00	0			14.58	158		
Carbon Dioxide	44.01	0.00	0			5.45	1,289		
Methane	16.04	0.00	0			1.35	116		
Nitrogen	28.01	78.00	163,304			48.70	7,332		
Argon	39.95	0.90	2,678			0.56	120		
Oxygen	32.00	20.82	49,797			0.00	0		
Ammonia	17.03	0.00	0			0.02	2		
Hydrogen Sulfide	34.08	0.00	0			0.00	0		
Carbonyl Sulfide	60.08	0.00	0			0.00	0		
Sulfur Dioxide	64.06	0.00	0			0.00	0		
Water Vapor	18.02	0.29	385	100.00	196	5.43	526		
Hydrogen Chloride	36.46	0.00	0			0.00	0		
TOTAL GASES		100.00	216,164	100.00	196	100	13,144		
Gas Flow, Lb Moles/Hr			7,474		11		538		
Molecular Weight, Gases			28.92		18.02		24.45		
Gas Volume, ACFM			4912.8		1.4		232.3		
Gas Volume, SCFM			47,255		69		3,398		
LIQUIDS:									
Water	18.02								
SOLIDS:									
Carbon	12.01							2.35	53
Hydrogen	1.01							0.00	0
Oxygen	16.00							1.52	34
Nitrogen	14.01							0.88	20
Sulfur	32.06							0.01	0
Chlorides	35.45							0.00	0
Ash								95.24	2,156
Moisture	18.02							0.00	0
TOTAL SOLIDS								100	2,264
SORBENT:									
CaO	56.08							74.50	539
CaCO3	100.09							0.00	0
CaS	72.14							12.44	90
CaSO4	136.14							0.00	0
MgO	40.31							3.26	24
MgCO3	84.32							0.00	0
Inerts								9.79	71
TOTAL SORBENT								100	724
TOTAL FLOW, Lb/Hr			216,164		196		13,144		2,988
HEATING VALUE:									
Gas LHV, Btu/SCF							129		
Gaseous Fuel LHV, MMBtu/hr							26.3		
TEMPERATURE, F			110		553		350		(3) 350
PRESSURE, PSIA			155		1,075		335		14

HEAT AND MATERIAL BALANCE - BASE CASE
UNDRIED SUFCO COAL WITH TRANSPORT DESULFURIZER

IDENTIFICATION	Molecular Weight	65 (3) Cooled Product Gas To Desulfurizer		66 (Note 1) (3) Sorbent Recirculation to Desulfurizer		67 (3) Spent Sorbent To Regenerator		68 (3) Sorbent Regenerant Gas	
		Vol%	Lb/Hr	Wt%	Lb/Hr	Wt%	Lb/Hr	Vol%	Lb/Hr
GASES:									
Carbon Monoxide	28.01	23.89	82,996					0.00	0
Hydrogen	2.02	14.57	3,643					0.00	0
Carbon Dioxide	44.01	5.44	29,708					0.00	0
Methane	16.04	1.35	2,679					0.00	0
Nitrogen	28.01	48.65	169,052					83.81	626
Argon	39.95	0.56	2,760					0.96	10
Oxygen	32.00	0.00	0					0.00	0
Ammonia	17.03	0.02	40					0.00	0
Hydrogen Sulfide	34.08	0.03	127					0.00	0
Carbonyl Sulfide	60.08	0.00	30					0.00	0
Sulfur Dioxide	64.06	0.00	0					14.91	255
Water Vapor	18.02	5.50	12,284					0.31	1
Hydrogen Chloride	36.46	0.00	0					0.00	0
TOTAL GASES		100.00	303,319					99.99	892
Gas Flow, Lb Moles/Hr			12,404						26.65
Molecular Weight, Gases			24						33.47
Gas Volume, ACFM			11989.2						32.1
Gas Volume, SCFM			78,425						168
LIQUIDS:									
Water	18.02								
		Wt%							
SOLIDS:									
Carbon	12.01	54.20	2,531						
Hydrogen	1.01	0.33	15						
Oxygen	16.00	0.70	33						
Nitrogen	14.01	0.41	19						
Sulfur	32.06	0.36	17						
Chlorides	35.45	0.00	0						
Ash		44.00	2,054						
Moisture	18.02	0.00	0						
TOTAL SOLIDS		100.00	4,669						
SORBENT:									
CaO	56.08	74.50	514						
CaCO3	100.09	0.00	0						
CaS	72.14	12.44	86						
CaSO4	136.14	0.00	0						
MgO	40.31	3.26	23						
MgCO3	84.32	0.00	0						
Inerts		9.79	68						
TOTAL SORBENT		100.00	690		694,000		9,064		
TOTAL FLOW, Lb/Hr			308,678		694,000		9,064		892
HEATING VALUE:									
Gas LHV, Btu/SCF			129						
Gaseous Fuel LHV, MMBtu/hr			607.4						
TEMPERATURE, F			1,032		1,013		1,013		1,368
PRESSURE, PSIA			276		274		278		272

Note 1: Sorbent referred to in streams 66, 67, and 69 is the external desulfurizer sorbent.

HEAT AND MATERIAL BALANCE - BASE CASE
UNDRIED SUFCO COAL WITH TRANSPORT DESULFURIZER

IDENTIFICATION	Molecular Weight	69 (3) Regenerated Sorbent To Desulfurizer		70 (3) Desulf Standpipe Aeration Gas		71 (3) Natural Gas to Fines Combustor		72 (3) Steam From Pri. Solids Cooler	
		Wt%	Lb/Hr	Vol%	Lb/Hr	Vol%	Lb/Hr	Vol%	Lb/Hr
GASES:									
Carbon Monoxide	28.01			23.91	644				
Hydrogen	2.02			14.58	28				
Carbon Dioxide	44.01			5.45	231				
Methane	16.04			1.35	21				
Nitrogen	28.01			48.70	1,312				
Argon	39.95			0.56	21				
Oxygen	32.00			0.00	0				
Ammonia	17.03			0.02	0				
Hydrogen Sulfide	34.08			0.00	0				
Carbonyl Sulfide	60.08			0.00	0				
Sulfur Dioxide	64.06			0.00	0				
Water Vapor	18.02			5.43	94			100.00	18,518
Hydrogen Chloride	36.46			0.00	0				
TOTAL GASES		--		100.00	2,352		146	100.00	18,518
Gas Flow, Lb Moles/Hr					96		8		1,028
Molecular Weight, Gases					24.45		17.20		18.02
Gas Volume, ACFM					41.6		10.71		129.9
Gas Volume, SCFM					608		54		6,500
LIQUIDS:									
Water	18.02								
SOLIDS:									
Carbon	12.01								
Hydrogen	1.01								
Oxygen	16.00								
Nitrogen	14.01								
Sulfur	32.06								
Chlorides	35.45								
Ash									
Moisture	18.02								
TOTAL SOLIDS									
SORBENT:									
CaO	56.08								
CaCO3	100.09								
CaS	72.14								
CaSO4	136.14								
MgO	40.31								
MgCO3	84.32								
Inerts									
TOTAL SORBENT			9,000						
TOTAL FLOW, Lb/Hr			9,000		2,352		146		18,518
HEATING VALUE:									
Gas LHV, Btu/SCF					129		936		
Gaseous Fuel LHV, MMBtu/hr					4.7		3.0		
TEMPERATURE, F			1,368		350		52		553
PRESSURE, PSIA			277		335		73		1,075

HEAT AND MATERIAL BALANCE - BASE CASE
UNDRIED SUFCO COAL WITH TRANSPORT DESULFURIZER

IDENTIFICATION	Molecular Weight	73 Aeration Rec. Gas to HGF Bottom Cone		74 Desulfurizer Aeration Gas	
		Vol%	Lb/Hr	Vol%	Lb/Hr
GASES:					
Carbon Monoxide	28.01	23.91	27	23.91	1,833
Hydrogen	2.02	14.58	1	14.58	80
Carbon Dioxide	44.01	5.45	10	5.45	657
Methane	16.04	1.35	1	1.35	59
Nitrogen	28.01	48.70	56	48.70	3,733
Argon	39.95	0.56	1	0.56	61
Oxygen	32.00	0.00	0	0.00	0
Ammonia	17.03	0.02	0	0.02	1
Hydrogen Sulfide	34.08	0.00	0	0.00	0
Carbonyl Sulfide	60.08	0.00	0	0.00	0
Sulfur Dioxide	64.06	0.00	0	0.00	0
Water Vapor	18.02	5.43	4	5.43	268
Hydrogen Chloride	36.46	0.00	0	0.00	0
TOTAL GASES		100	100	100.00	6,692
Gas Flow, Lb Moles/Hr			4.09		274
Molecular Weight, Gases			24.45		24.45
Gas Volume, ACFM			1.77		118.3
Gas Volume, SCFM			25.85		1,730
LIQUIDS:					
Water	18.02				
SOLIDS:					
Carbon	12.01				
Hydrogen	1.01				
Oxygen	16.00				
Nitrogen	14.01				
Sulfur	32.06				
Chlorides	35.45				
Ash					
Moisture	18.02				
TOTAL SOLIDS					
SORBENT:					
CaO	56.08				
CaCO3	100.09				
CaS	72.14				
CaSO4	136.14				
MgO	40.31				
MgCO3	84.32				
Inerts					
TOTAL SORBENT					
TOTAL FLOW, Lb/Hr			100		6,692
HEATING VALUE:					
Gas LHV, Btu/SCF			129		129
Gaseous Fuel LHV, MMBtu/hr			0.2		13.4
TEMPERATURE, F			350		350
PRESSURE, PSIA			335		335