

A III-4 Microscopic Observation of Thin Sections

Sample No.	Rock Name	Principal minerals	Accessory minerals	Observation
S-1	Sandstone	Quartz Sericate	Plagioclase Biotite chlorite(?) Ore mineral	Sand particle (0.1 – 0.3mm) are angular-shaped quartz, tabular sericite, angular-shaped plagioclase and tabular biotite. Matrix consists of fine-grained sericite, chlorite (?) and iron minerals.
S-2	Rhyolite or Welded Tuff	Quartz Plagioclase Biotite	Apatite Pyroxene (?) Ore mineral	Phenocrysts (1 – 3mm) are sub-hedral and crushed quartz, sub-hedral plagioclase and tabular biotite. Fragments (max. 10mm) of rhyolite, altered groundmass of volcanic rock, mudstone, and sandstone are contained. Ground mass is glassy, and contain fine-grained crystals of the above-mentioned minerals, monoclinic pyroxene(?) apatite and ore mineral.
S-3	Sandstone	Quartz Sericate	Biotite(?) Chlorite(?) Ore mineral	Sand particles (0.1 – 0.3mm) are angular-shaped quartz, tabular sericite (muscovite), and altered biotite(?). Matrix consists of fine-grained sericite, chlorite(?), quartz, and ore mineral.
S-4	Rhyolite	Quartz Sericate	Yellow mineral Kaolin(?) Ore mineral	Phenocrysts (1 – 3mm) are euhedral or corroded quartz, plagioclase(?), biotite(?), and other mafic mineral(?). The latter minerals are replaced by sericite, quartz, unknown yellow mineral, Kaolin(?) and opaque mineral. Groundmass consists of fine-grained sericite, quartz and ore mineral (0.01 – 0.1mm).
S-5	Siltstone	Quartz Sericate Ore mineral	Feldspar Chlorite	Sand particles (0.03 – 0.08mm) are angular-shaped quartz and sericite. Feldspar grain is rare. Ore mineral spots (0.5mm) are aggregates of cubic crystal (0.03mm). Matrix consist of fine-grained sericite, quartz and chlorite.

Sample No.	Rock Name	Principal Mineral	Accessory Mineral	Observation
S-6	Rhyolite	Plagioclase Biotite Quartz	Apatite Ore mineral	Phenocrysts (1 – 4mm) are euhedral plagioclase, tabular biotite, and corroded quartz. Groundmass consists of glass showing pearly texture and micro-crystals of plagioclase biotite, apatite, and ore minerals.
S-7	Sandstone	Quartz Sericite	Cassiterite(?) Ore mineral	Sand particles (0.2mm) are angular-shaped quartz and tabular sericite, and they form mosaic aggregates. Ground-mass of fine-grained sericite, fragmental quartz and silicification quartz. A few opaque mineral and cassiterite(?) are contained.
S-8	Quartz porphyry	Quartz sericite Kaslin(?)	Ore mineral	Phenocrysts (1 – 3mm) are sub-hedral and corroded quartz, biotite(?) altered to fibrous mineral. Groundmass consists of fine-grained fibrous mineral, Kaolin (?), irregular-shaped quartz, and ore mineral. Fragments (5mm) of sandstone and chert(?) are contained
S-9	Siltstone	Quartz Sericite Carbonate	Hematite(?) Chlorite Ore mineral	Sand particles (0.03 – 0.08mm) are angular-shaped quartz and tabular sericite. Matrix consists of irregular-shaped carbonate, fine-grained hematite aggregate, and opaque mineral.
S-10	Sandstone	Quartz Sericite Chlorite	Brown mineral Ore mineral	Sand particle (0.03mm – 0.1mm) are angular-shaped quartz, tabular sericite, aggregates of fibrous chlorite. Matrix consists of these minerals. Brown mineral aggregates and ore mineral are scattered.
S-11	Rhyolite or Welded Tuff	Quartz Plagioclase Biotite Muscovite	Apatite Ore mineral	Phenocryst (1 – 3mm) are sub-hedral or crashed quartz, subhedral plagioclase, tabular muscovite, Groundmass consists of glass, the above-mentioned minerals, and ore mineral. Apatite is contained in phenocryst and groundmass.

Sample No.	Rock Name	Principal Mineral	Accessory Mineral	Observation
S-12	Sandstone	Quartz Sericitc	Brown mineral Chlorite Ore mineral	Sand particles (0.2 – 0.8mm) is rounded quartz. Matrix consists of fine-grained quartz, tabular or fibrous sericite, yellow or brown mineral aggregates, fibrous chlorite, and ore mineral.
S-13	Sandstone	Quartz Sericitc	Ore mineral	Sand particles (0.2 – 0.4mm) is angular-shaped quartz rimmed by diagenetic enlargement. Matrix consists of fine-grained quartz and sericite. Ore mineral and fragment of sericitized rock are contained.
S-14	Sandstone	Quartz Sericitc	Ore mineral	Sand particles are angular or rounded quartz of poor-sorting of (0.05 – 0.3mm) and tabular sericite. Matrix is abundant, and it consists of silicification of recrystallization quartz and sericite. Cubic ore mineral, may be pyrite, are spotted and chained.
S-15	Rhyolite	Quartz Plagioclase Biotite	Apatite Ore mineral	Phenocrysts (1 – 3mm) are sub-hedral and crashed quartz, plagioclase, and tabular biotite, Biotite is warped Grounmass is glassy. Apatite, ore mineral and rock-fragments are contained in the glass
S-16	Sandstone	Quartz Sericitc	Cassiterite(?) ore mineral	Sand particles (0.2 – 0.6mm) are angular or rounded quartz and tabular sericite. This rock is somewhat foliated and sheared. Matrix consists of fine-grained sericite and quartz which is recrystallized. Ore mineral, may be cubic pyrite, and a few cassiferite(?) are scattered. Fragments of silicified siltstone and cherty rock are contained.
S-17	Quartz porphyry	Quartz Sericitc	Epidote Ore mineral	Phenocrysts (1 – 4mm) are corroded quartz, plagioclase(?) altered to epidote, sericite and quartz, and biotite(?) replaced by sericite and ore mineral. Groundmass is microcrystalline.

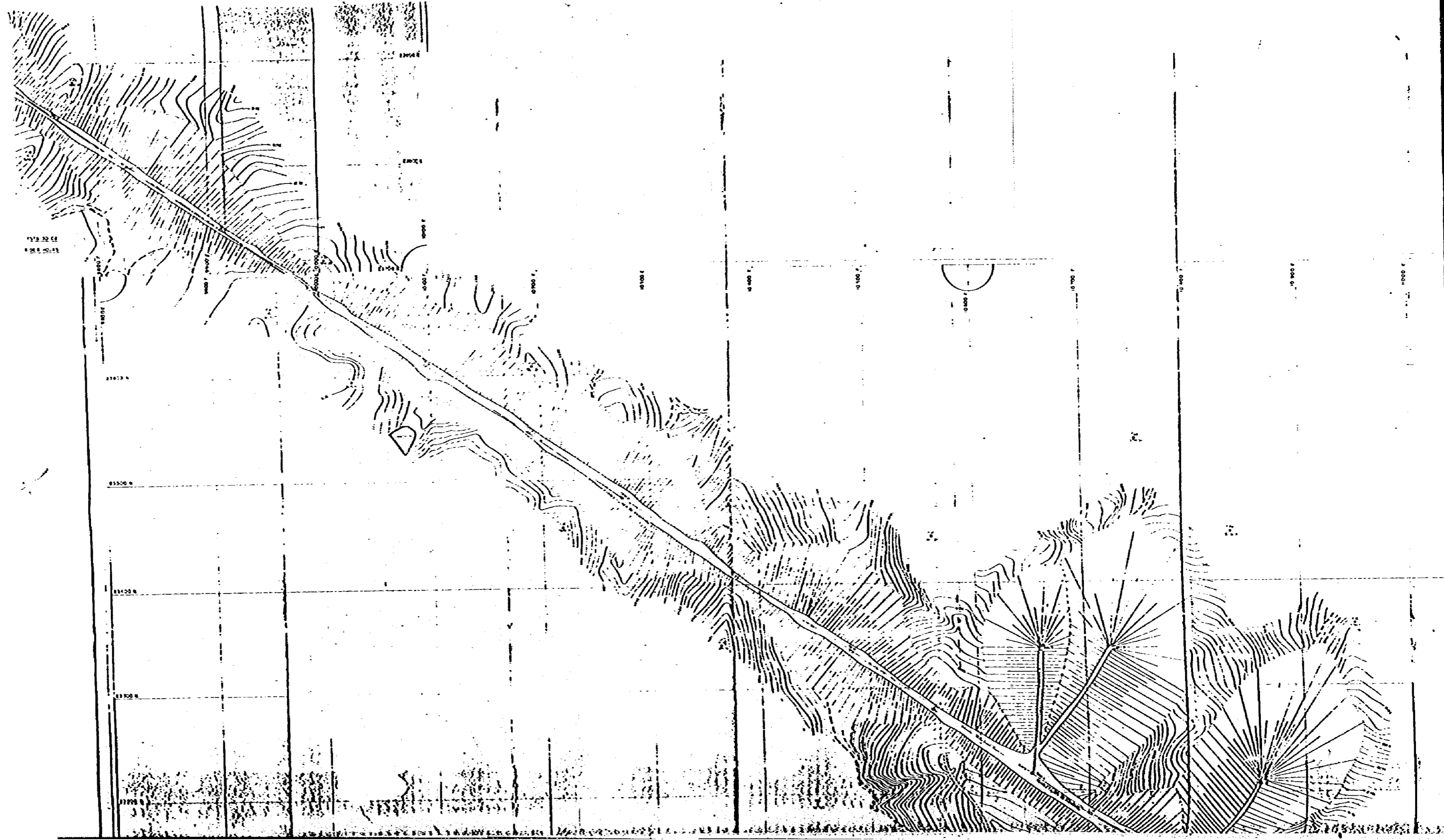
Sample No.	Rock Name	Principal Mineral	Accessory Mineral	Observation
S-18	Sandstone	Quartz Sericite	Feldspar Goethite(?)	Sand particles (0.1 – 0.3mm) are angular quartz and tabular sericite. Feldspar is few. Matrix consists of fine-grained sericite, quartz, goethite(?), and ore mineral.
S-19	Slate	Sericite Quartz Graphite(?)	Ore mineral	Foliation is distinct. It consists of angular-shaped quartz (0.03 – 0.05mm), film-like aggregates of fine-grained graphite(?), lenticular aggregates of fine-grained sericite and quartz, and ore mineral. It is veined by quartz veinlet.
S-20	Sandstone	Quartz Sericite	Goethite chlorite Ore mineral	Sand particles (0.1 – 0.4mm) are angular-shaped or rounded quartz and tabular sericite. Matrix consists of those fine grained crystals, goethite, chlorite, and opaque mineral.

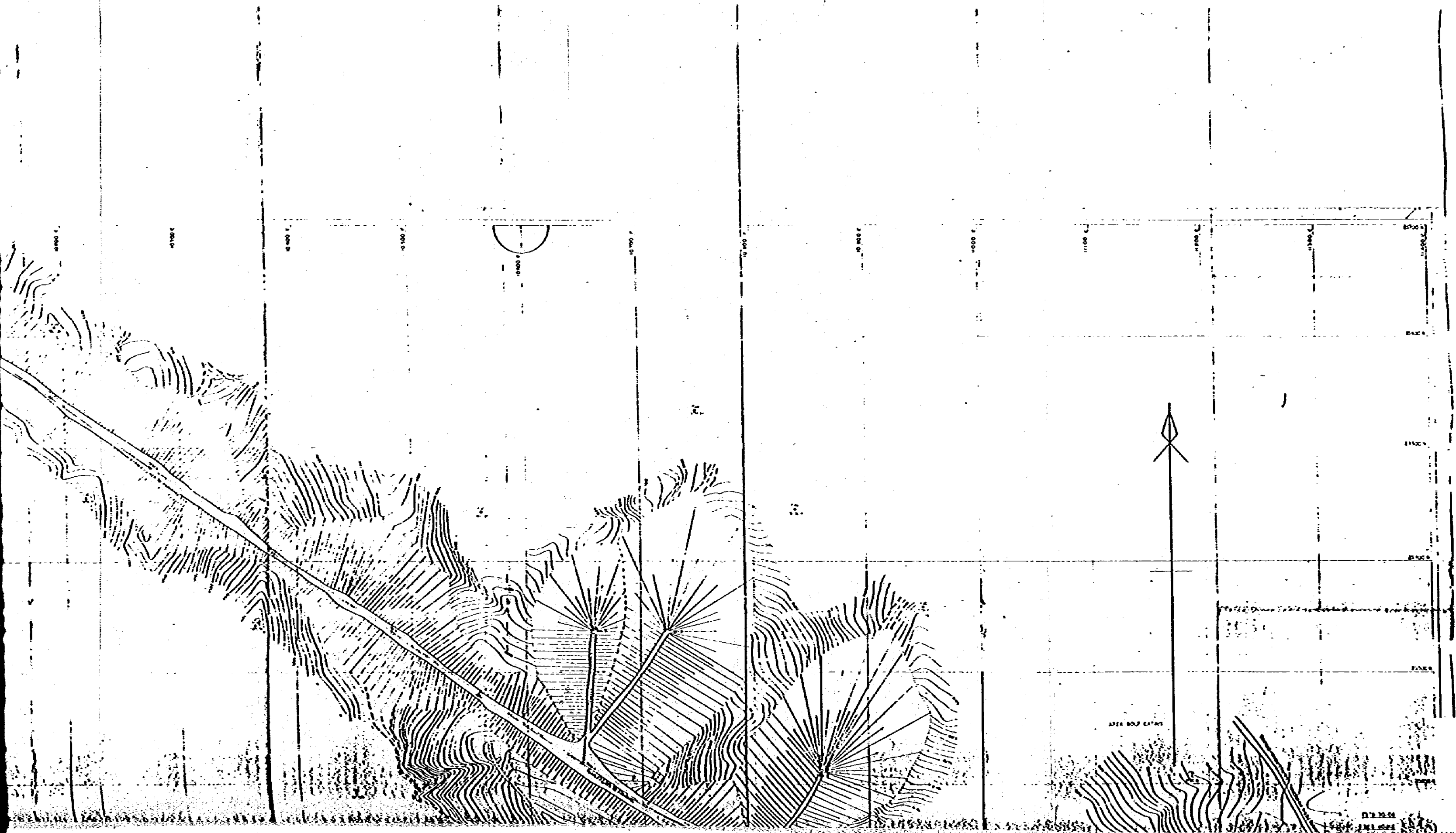
A III-5 Sample List

Sample No.	Sample Name	Location	Note	Section	Polish	Chemical Analysis	Density	Ultrasonic wave velocity	Resistivity	I. P.	Magnetic Susceptibility	Residual Magnetization
1	Ore	San Plonencio mine	Zn, Cu, Py.									
2	Sandstone	"	Llallagua I, mass green									
3	Rhyolite	"	mass tuffaceous Ore rich									
4	Sandstone	Huanuni mine	Llallagua I, mass green-grey									
5	Qu. sp.	"	dark pale-grey									
6	Sandy slate	"	Unola I, mass pale-green									
7	Rhyolite	"	mass dark-grey granitic									
8	Ore	" L160	Cu, Py, Qu.									
9	Sandstone	"	mass grey siliceous									
10	Ore	"	Cu, Qu, Py.									
11	Ore	"	Cu, Qu.									
12	Quip	Cafan mine	La Salvadora									
13	Sandstone	Andernivelque	Crystalline reddish-brown									
14	"	"	Unola I, mass grey-green									
15	"	Road to Morococula	Unola I, mass grey									
16	Rhyolite	"	mass grey									
17	Sandstone	"	Cancin I, mass grey									
18	"	"	Llallagua I, ore, mass grey									
19	Ore	San Luis mine	Qu. Sb, Py									
20	Oxide ore	Morococula mine	Cravo Santa rosa									
21	Ore	"	Zn.									
22	Oxide ore	"	Cravo Emma									
23	"	Vilaobello mine										
24	Ore	Morococula mine	Zn, Cu, Cruera vein									
25	"	"	Zn, Py, Cu.									
26	Sandstone	"	Country rock grey									
27	Ore	Santa Fe mine	Py, Zn, Cu, Rhyolite vein									
28	Rhyolite	"	Grey tuffaceous									
29	Gneiss	"	Country rock									
30	Quip	Japo mine	Quero San Pablo									
31	Sandstone	"	Llallagua I, mass pale-grey									
32	Oxide ore	"	Alt. Py. L20									
33	"	"	Py, Cu, L20									
34	Ore	Vilaobello mine	Concentrated ore									
35	"	Huanuni mine	Cu.									
36	"	"	Py, Cu									
37	"	"	Zn, Cu									
38	"	Chaurin	Lim.									
39	Slate	"	Black facality									
40	Sandstone	Agua caliente	Llallagua I.									
41	Ore	San Plonencio mine	Applized pale-grey									
42	"	Huanuni mine	Zn, Cu									
43	"	"	"									
44	"	"	"									

A III-6 List of Result of Chemical Analysis

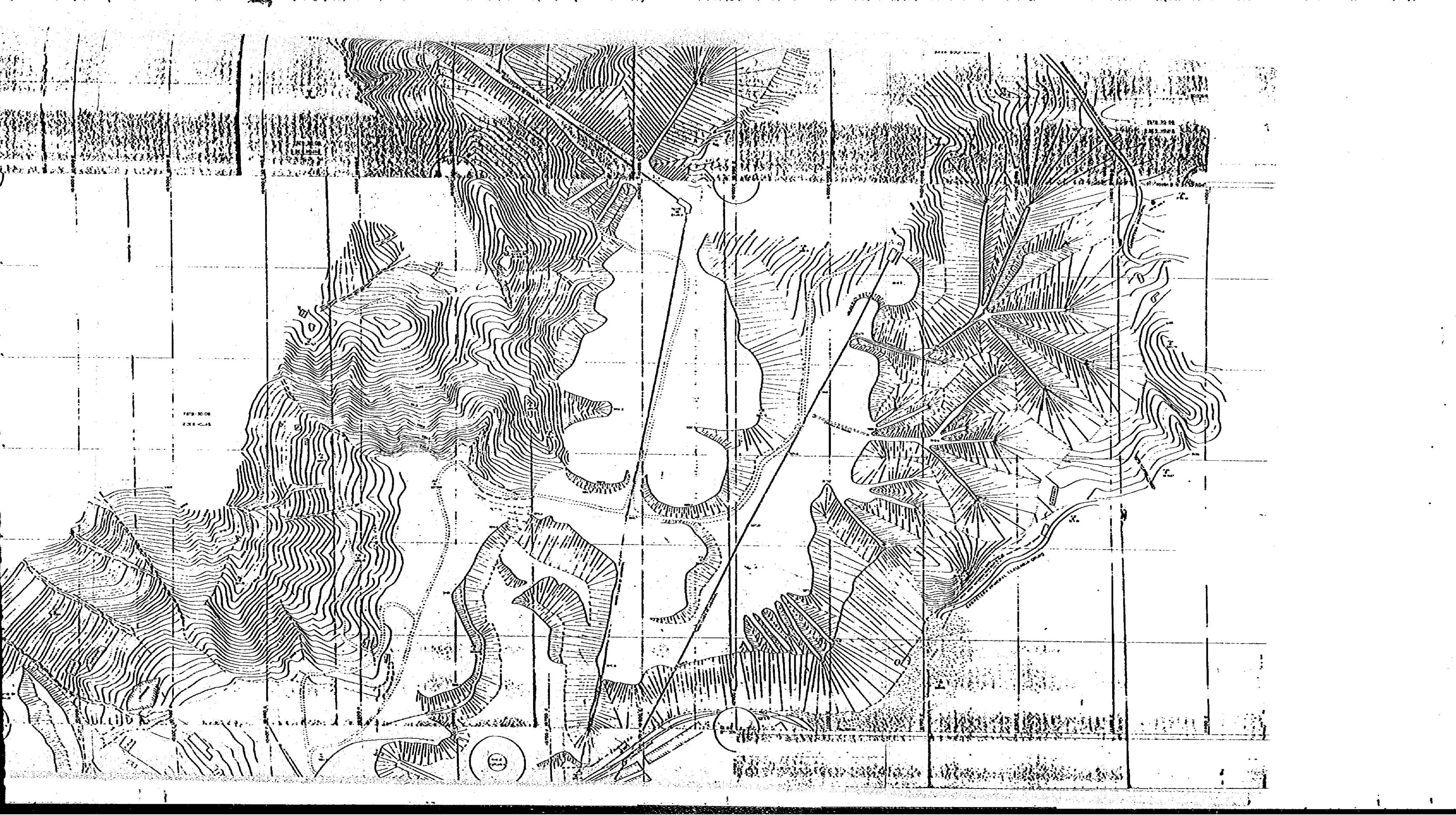
No.	No.	Sample name	Location	Sn %	WO <sub>3</sub> %	As %	Cu %	Pb %	Zn %	Bi %	Sb %	Note
1	1	Cs, Sp, Py	San Florencio mine	0.12	Tr	30	Tr	—	Tr	—	—	
2	8	Cs, Py, Qu,	Huanuni mine	33.22	Tr	9	—	—	0.29	0.02	—	
3	10	Cs, Qu, Py	"	21.25	Tr	10	—	Tr	0.43	—	—	
4	11	Cs, Qu,	"	5.11	Tr	0	—	Tr	Tr	—	—	
5	19	Qu, Sb, Py	San Luis mine	0.04	Tr	0	Tr	—	—	—	0.82	
6	20	Oxide ore	Morococala mine	0.53	Tr	70	—	—	Tr	Tr	—	
7	21	Sp.	"	0.56	Tr	107	—	—	42.52	—	0.05	
8	22	Oxide ore	"	0.11	Tr	24	—	Tr	0.19	—	—	
9	23	"	Vilacollo mine	1.22	Tr	0	—	Tr	0.02	—	—	
10	24	Zn, Cs	Morococala mine L250	34.53	Tr	647	0.06	—	22.88	—	—	
11	25	Zn Py, Cs,	"	0.13	Tr	0	Tr	—	5.74	—	—	
12	27	Py, Zn, Cs,	Santa Fé mine	0.18	Tr	254	0.02	—	24.83	—	—	
13	32	Oxide ore	Japo mine L-30	0.20	Tr	477	0.07	—	0.05	—	—	
14	33	"	" L-70	0.58	Tr	8	0.02	—	0.03	—	—	
15	34	Cs,	Vilacollo mine	7.72	Tr	49	—	—	0.02	—	0.05	
16	35	"	Huanuni mine L160	31.43	Tr	29	—	—	0.04	—	0.04	
17	36	Cs, Py,	"	7.45	Tr	40	0.09	—	0.96	—	—	
18	37	Cs, Sp,	"	12.75	Tr	0	—	—	6.84	0.74	—	
19	38	Oxide ore	Chauriri	0.08	Tr	19	0.28	—	0.05	—	—	
20	41	Powder ore	San Florencio mine	0.56	Tr	10	Tr	—	Tr	—	—	

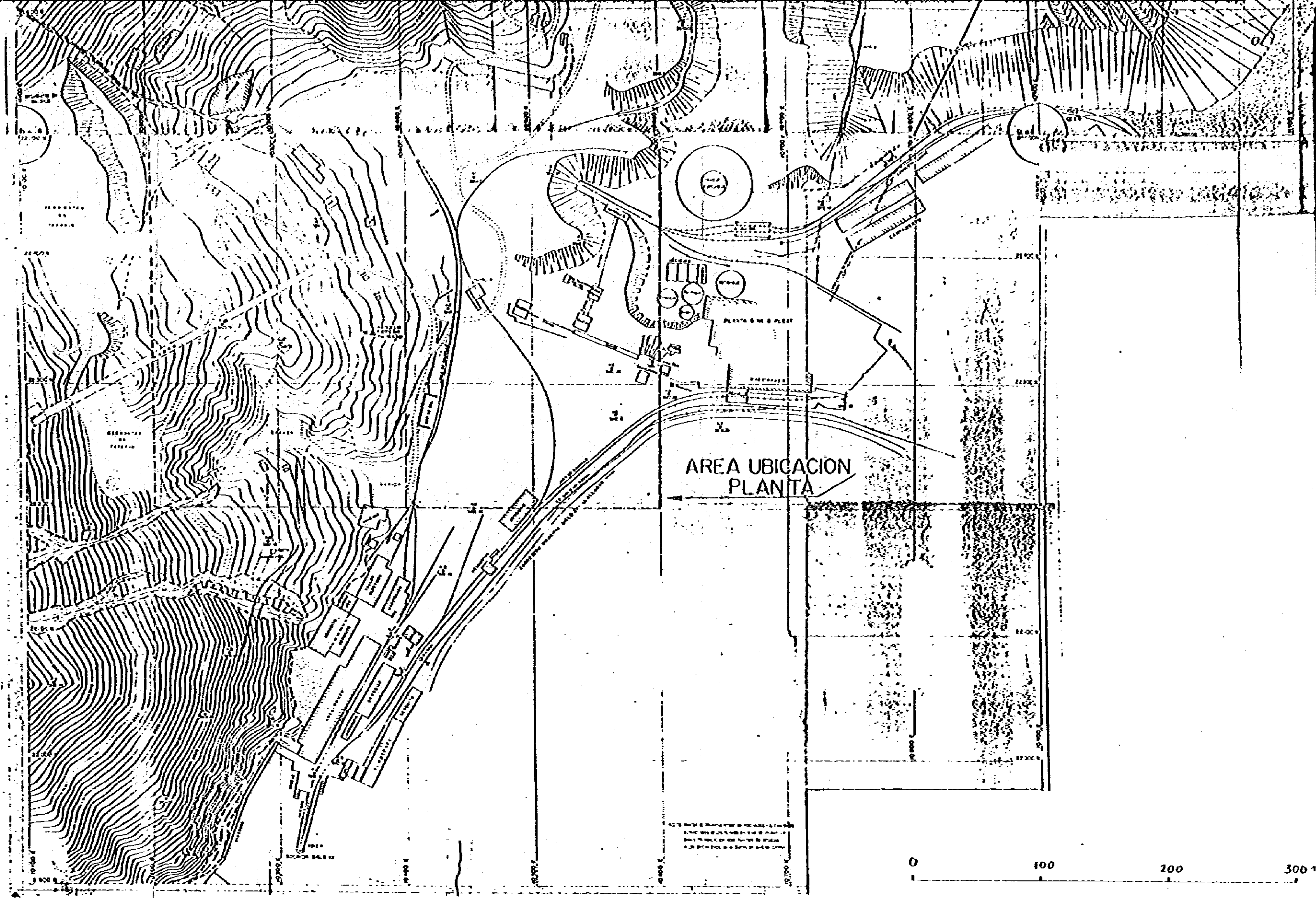


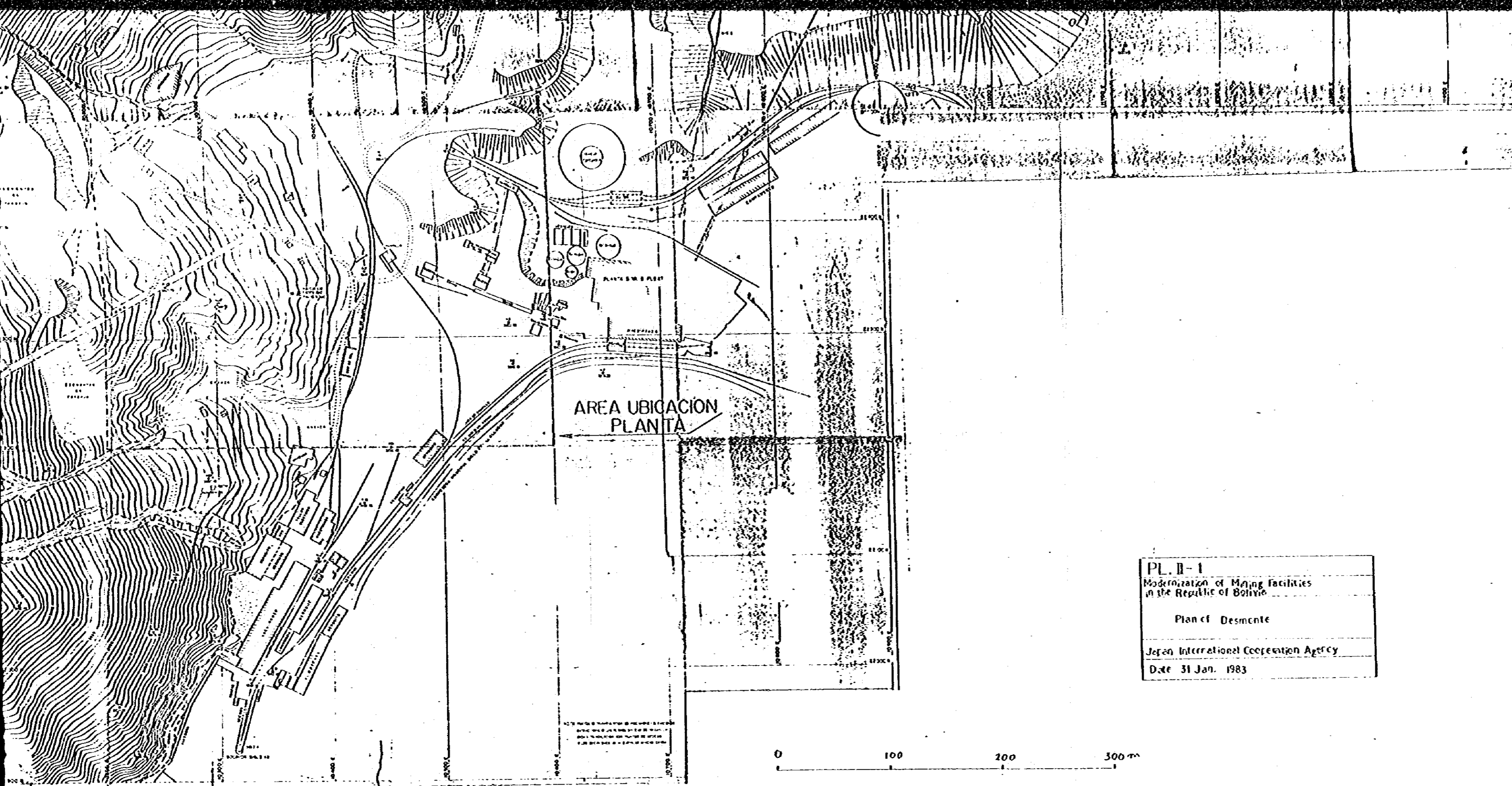




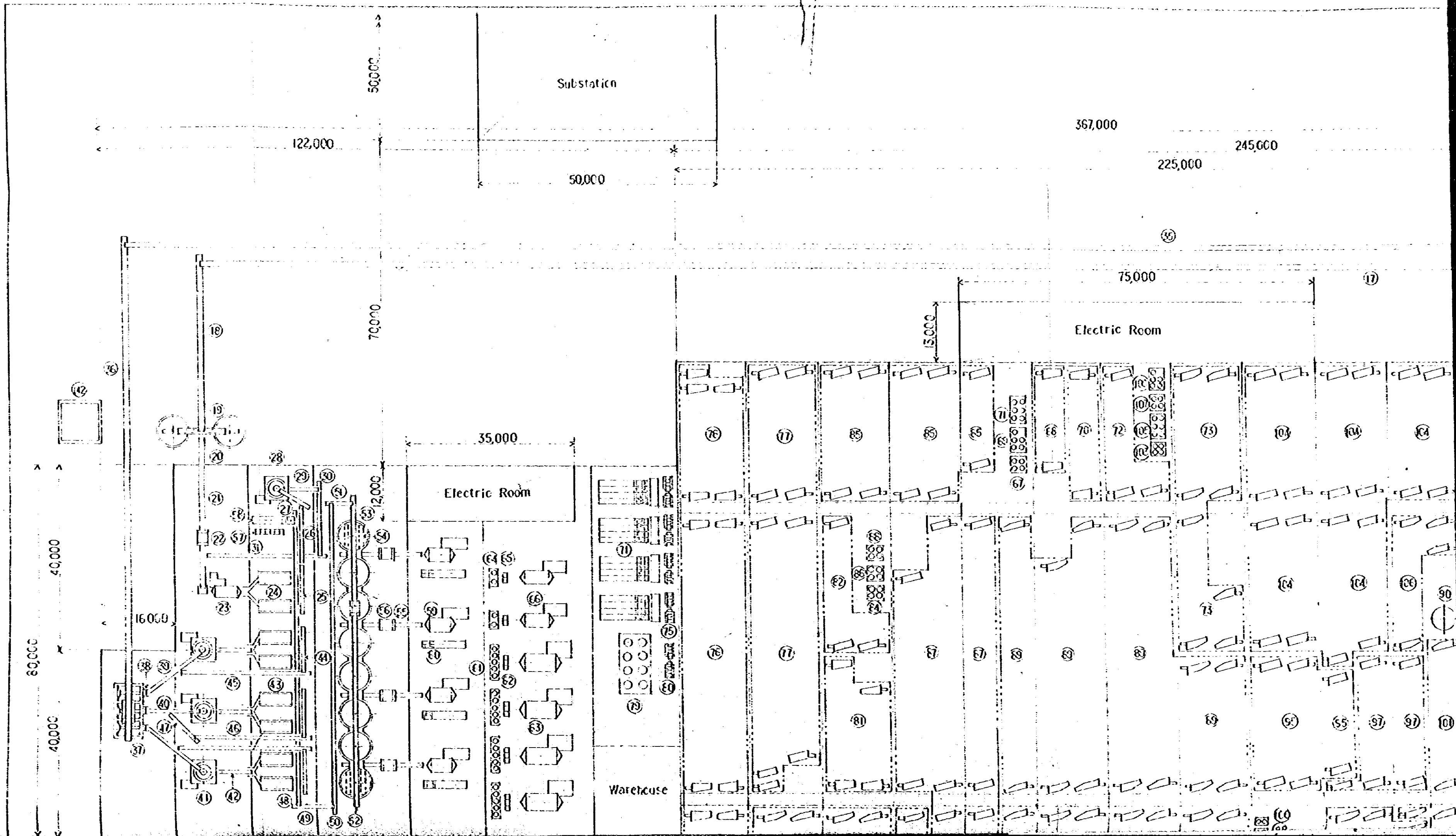








PL. II-1  
 Modernization of Mining Facilities  
 in the Republic of Bolivia  
  
 Plan of Desmonte  
  
 Japan International Cooperation Agency  
 Date 31 Jan. 1983



Substation

367,000

245,000

225,000

122,000

50,000

75,000

Electric Room

Electric Room

Warehouse

50,000

70,000

35,000

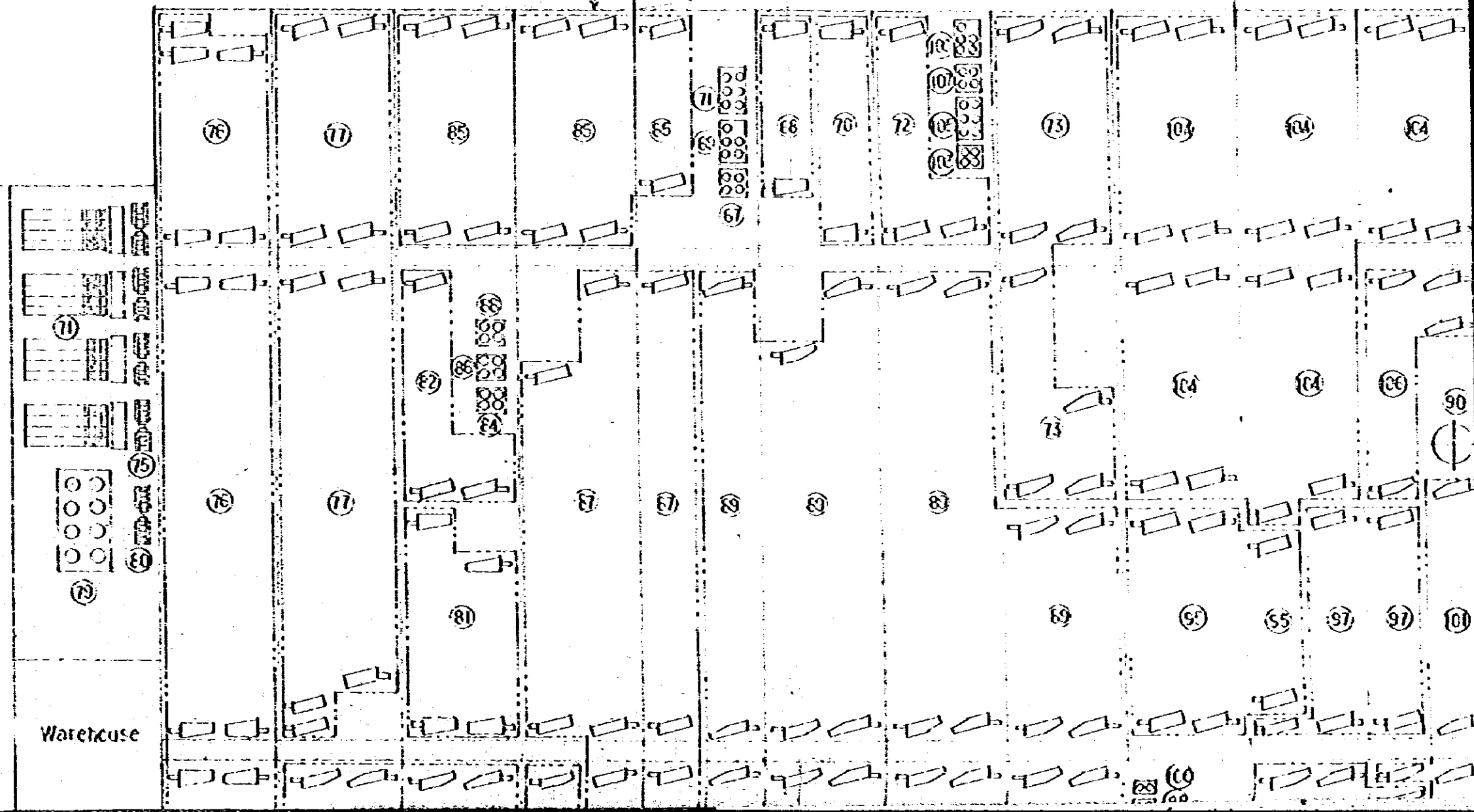
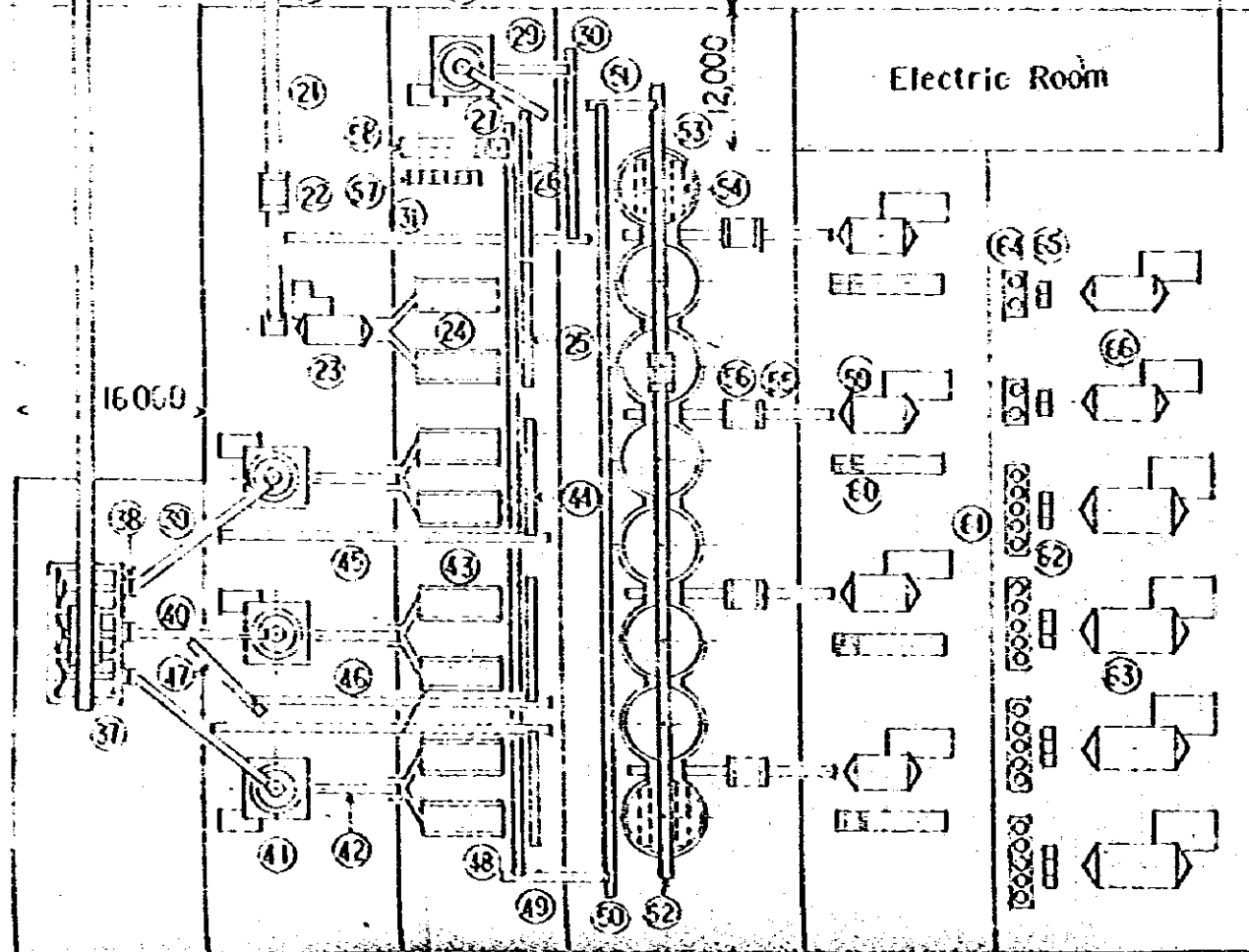
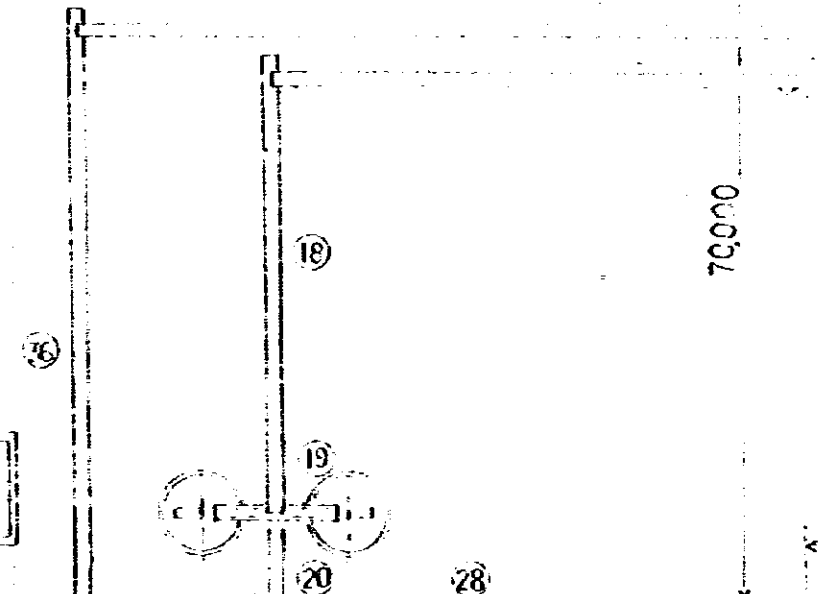
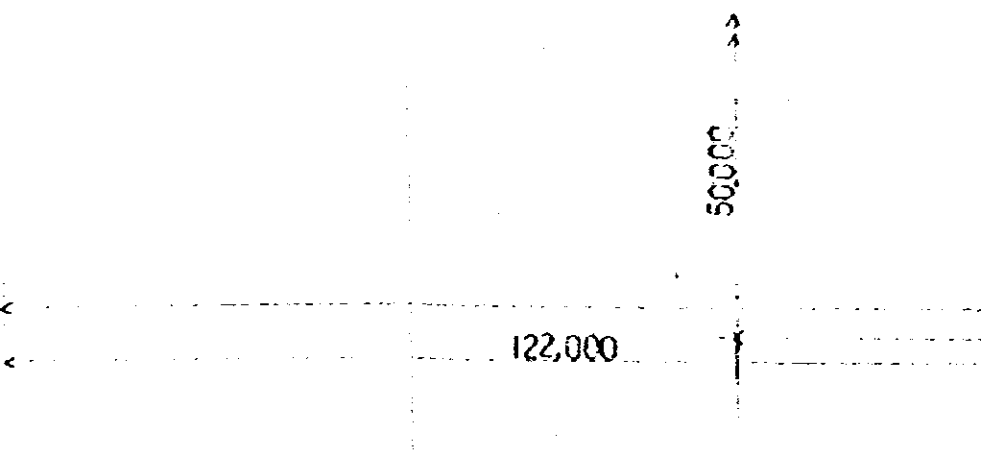
12,000

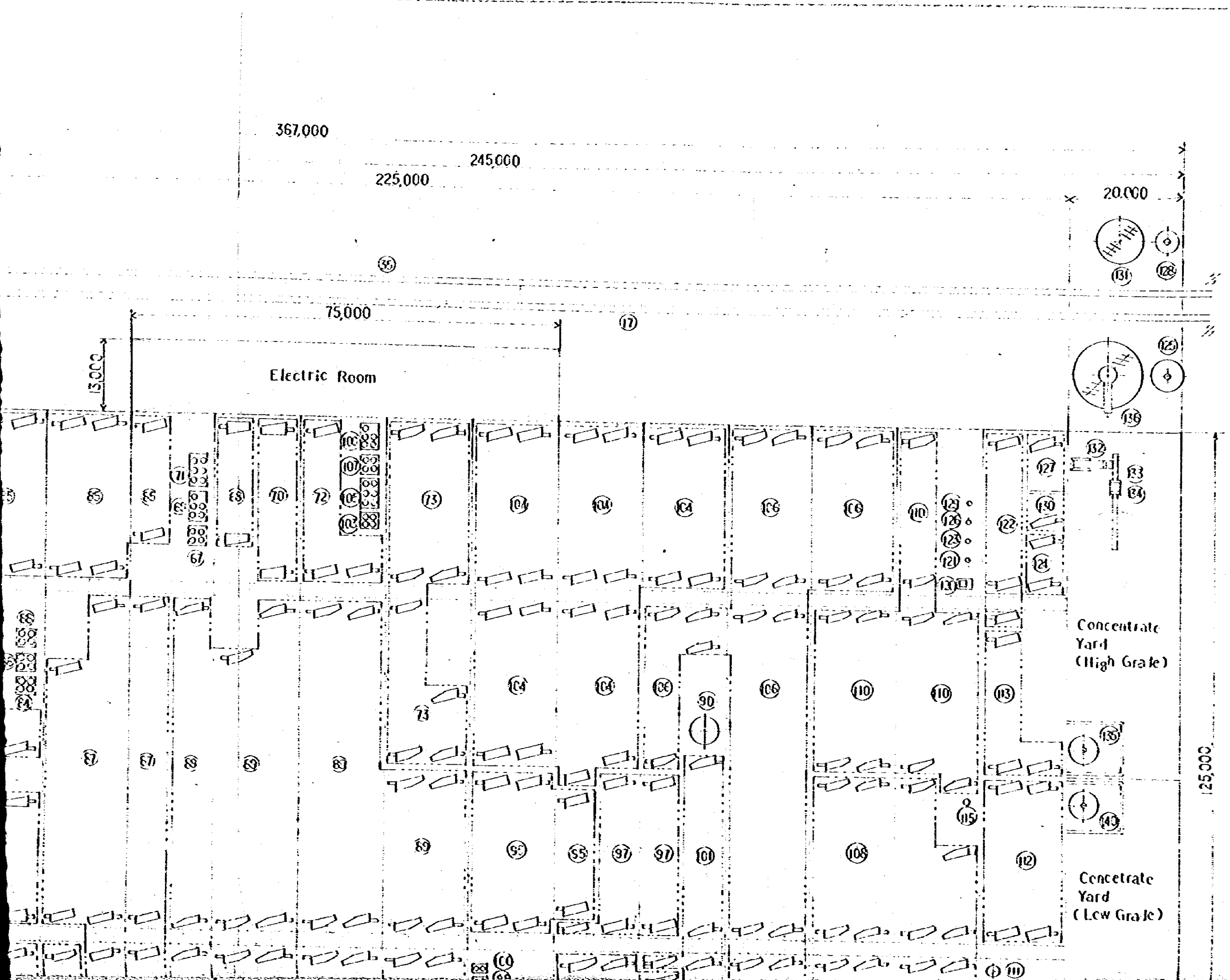
16,000

40,000

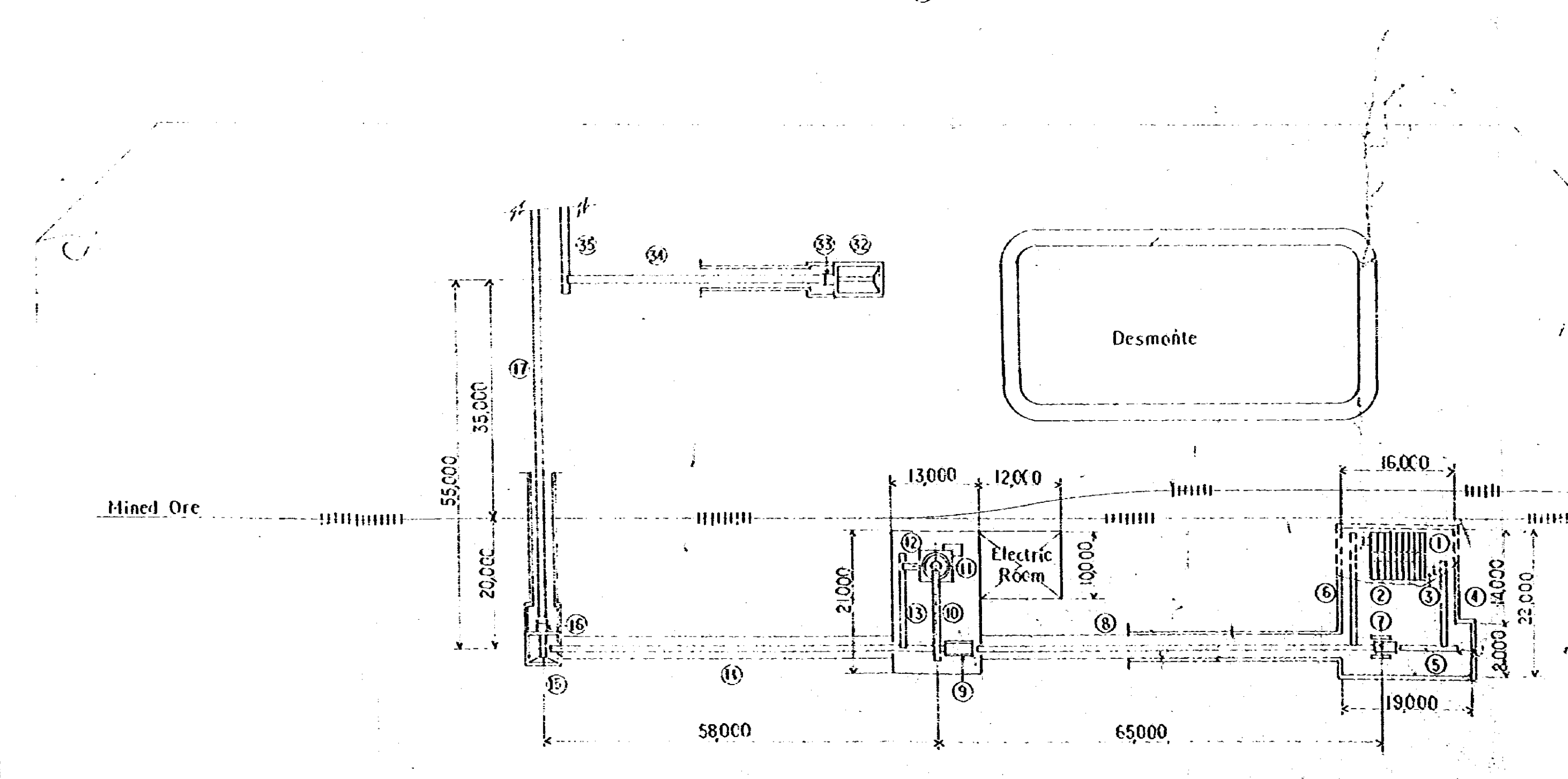
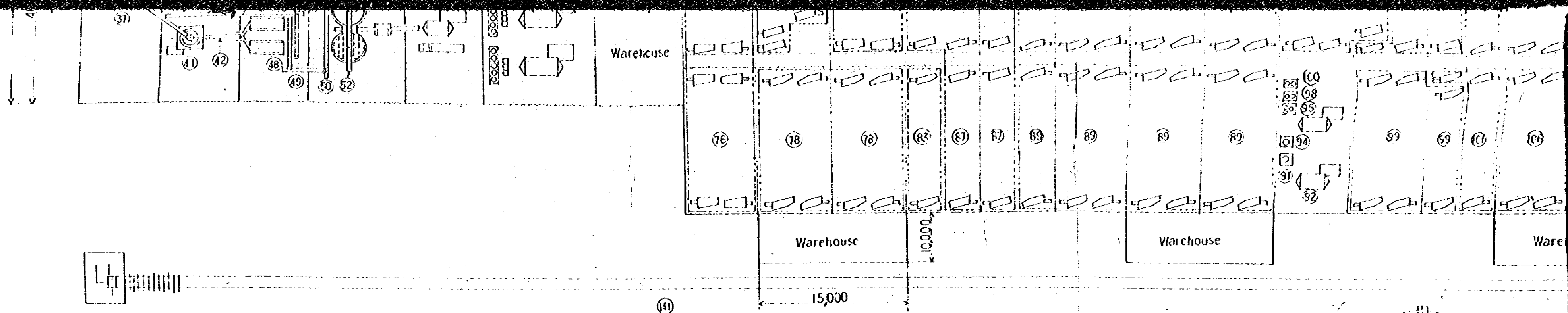
40,000

15,000

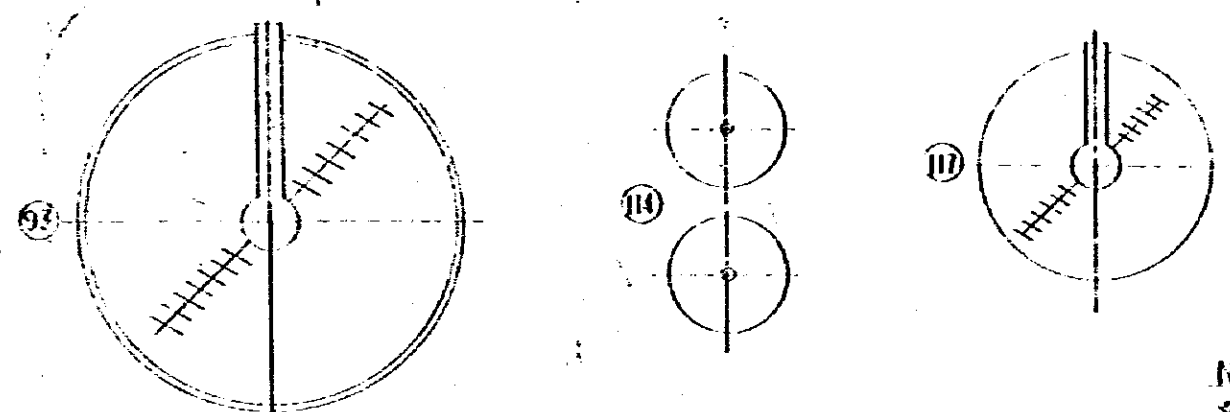
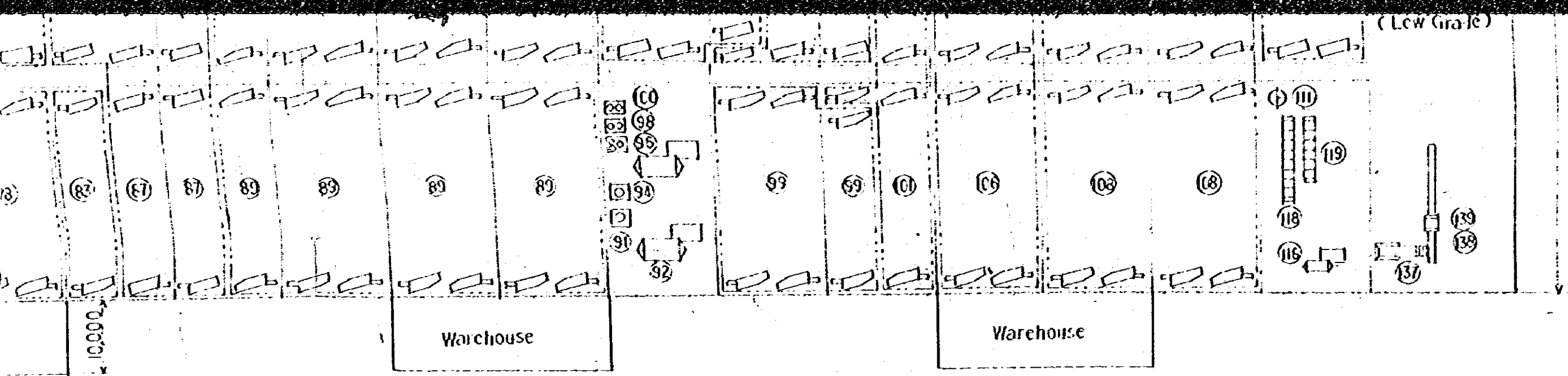




No	Name	Qty	Size	Kw
1	Hopper(with Grizzly)	1	50t	
2	Do.	1	2t	
3	Apron Feeder	2	0.9m x 8m	7.5kw x 2
4	Belt Conveyor	1	1m x 14m	7.5kw
5	Do.	1	1m x 10m	5.5kw
6	Do.	1	1m x 17m	7.5kw
7	Break Crusher	1	25' x 35'	95kw
8	Belt Conveyor	1	0.75m x 30m	7.5kw
9	Vibrating Screen	1	6' x 16'	2.2kw
10	Belt Conveyor	1	0.75m x 15m	7.5kw
11	Cone Crusher	1	9' x 45'	110kw
12	Belt Conveyor	1	0.75m x 7m	3.7kw
13	Do.	1	0.75m x 15m	7.5kw
14	Do.	1	0.75m x 10m	11kw
15	Bin	1	100t	
16	Apron Feeder	1	0.9m x 6m	7.5kw
17	Belt Conveyor	1	1m x 44m	45kw
18	Do.	1	1m x 39m	11kw
19	Bin	2	300t	
20	Apron Feeder	2	0.9m x 6m	7.5kw x 2
21	Belt Conveyor	1	1m x 35m	11kw
22	Constant Feed Weigher	1	170t/h	
23	Drum Washer	1	8' x 16'	110kw
24	Vibrating Screen	2	10' x 24'	45kw x 2
25	Belt Conveyor	1	0.75m x 10m	1.5kw
26	Do.	1	0.75m x 15m	7.5kw
27	Do.	1	0.75m x 6m	3.7kw
28	Cone Crusher	1	7'	300kw
29	Belt Conveyor	1	0.75m x 10m	2.2kw
30	Do.	1	0.75m x 17m	5.5kw
31	Do.	1	0.75m x 27m	7.5kw
32	Hopper	1	50t	
33	Apron Feeder	1	0.9m x 7m	7.5kw
34	Belt Conveyor	1	1m x 40m	11kw
35	Do.	1	1m x 40.5m	45kw
36	Do.	1	1m x 11.5m	26kw
37	Hopper	3	50t	
38	Apron Feeder	3	0.9m x 6m	5.5kw x 3
39	Belt Conveyor	2	0.75m x 11m	11kw x 2
40	Do.	1	0.75m x 19m	7.5kw
41	Cone Crusher	3	7'	300kw x 3
42	Belt Conveyor	3	0.75m x 13m	5.5kw x 3
43	Vibrating Screen	6	10' x 24'	45kw x 6
44	Belt Conveyor	3	0.6m x 10m	15kw x 3
45	Do.	2	0.6m x 30m	7.5kw x 2



125	Cone Tank	1	6m <sup>2</sup>		103	Cyclone
126	Cyclone	1	6'φ		104	Table (S-Duty)
127	Table (James)	4	4.6m x 18m	1.5kW, 4	105	Cyclone
128	Cone Tank	1	4m <sup>2</sup>		106	Table (James)
129	Cyclone	1	3'φ		107	Cyclone
130	Table (James)	2	4.5m x 18m	1.5kW, 2	108	Table (James)
131	Thickener	1	8m <sup>2</sup>		109	Cyclone
132	Drag Classifier	1	0.5m <sup>2</sup> 3m <sup>2</sup>	1.5kW	110	Table (James)
133	Belt Conveyor	1	0.6m <sup>2</sup> 18m	2.2kW	111	Tank
134	Conveyor Scale	1	1.13h		112	Table (S-Duty)
135	Cone Tank	1	5m <sup>2</sup>		113	Do. (S-Duty)
136	Thickener	1	12m <sup>2</sup>		114	Cone Tank
137	Drag Classifier	1	0.9m <sup>2</sup> 5m <sup>2</sup>	1.5kW	115	Cyclone
138	Belt Conveyor	1	0.6m <sup>2</sup> 18m	2.2kW	116	Ball Mill
139	Conveyor Scale	1	1.33h		117	Thickener
140	Cone Tank	1	5.5m <sup>2</sup>		118	Flotation Machine
141	Incline	1		75kW	119	Co.
142	Water Tank	1	200l		120	Magnetic Separator
* 143	Cyclone	9	36'φ		121	Cyclone
* 144	Thickener	1	95m <sup>2</sup>	3.7kW, 3	122	Table (S-Duty)
* 145	Water Tank	1	2000l		123	Cyclone
* 146	Recovery Water Tank	1	5000l		124	Table (S-Duty)

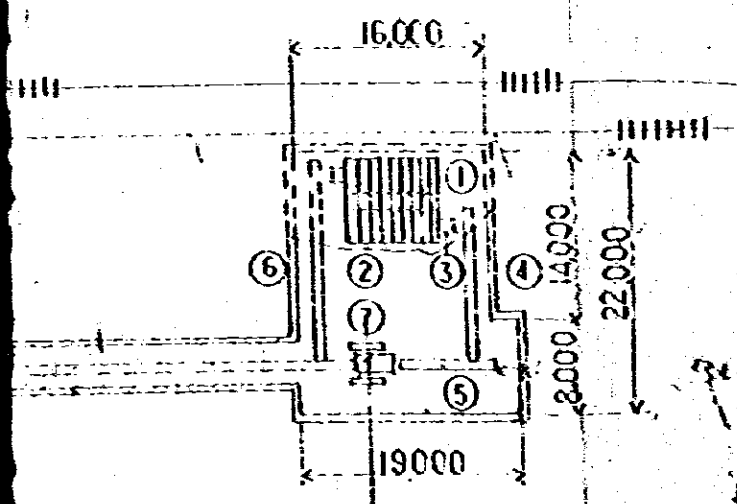


Note  
 \* Reference Drawing PL II-4

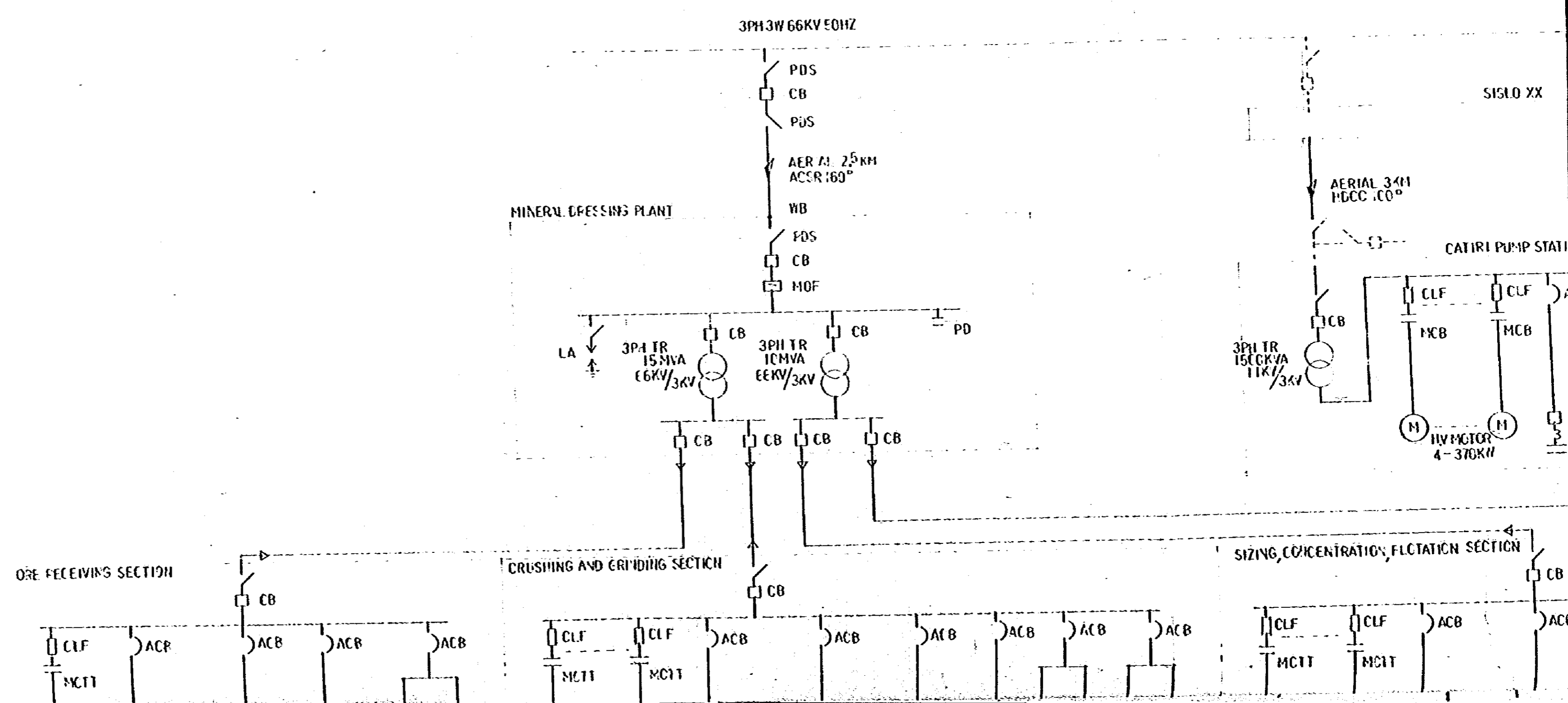
125	Cone Tank	1	6m <sup>3</sup>		103	Cyclone	28	6"φ		81	Table (Plat-O)	18	4.6m x 2.1m	15kw x 18
126	Cyclone	1	6"φ		104	Table (S-Duty)	101	4.6m x 2.3m	15kw x 101	82	Do. (S-Duty)	13	4.6m x 2.3m	15kw x 13
127	Table (James)	4	4.6m x 1.8m	15kw x 4	105	Cyclone	24	6"φ		83	Do. (James)	10	4.6m x 1.8m	15kw x 10
128	Cone Tank	1	4m <sup>3</sup>		106	Table (James)	113	4.6m x 1.8m	15kw x 113	84	Cyclone	20	9"φ	
129	Cyclone	1	3"φ		107	Cyclone	22	6"φ		85	Table (S-Duty)	48	4.6m x 2.3m	15kw x 48
130	Table (James)	2	4.6m x 1.8m	15kw x 2	108	Table (James)	76	4.6m x 1.8m	15kw x 76	86	Cyclone	44	6"φ	
131	Thickener	1	8m <sup>2</sup>		109	Cyclone	10	6"φ		87	Table (S-Duty)	76	4.6m x 2.3m	15kw x 76
132	Drag Classifier	1	0.6mw x 3mL	1.5kw	110	Table (James)	51	4.6m x 1.8m	15kw x 51	88	Cyclone	40	6"φ	
133	Belt Conveyor	1	0.6mw x 18mL	2.2kw	111	Tank	1	10m <sup>3</sup>		89	Table (James)	187	4.6m x 1.8m	15kw x 187
134	Conveyor Scale	1	1.33h		112	Table (S-Duty)	20	4.6m x 2.3m	15kw x 20	90	Tank	1	70m <sup>3</sup>	
135	Cone Tank	1	5m <sup>3</sup>		113	Do. (S-Duty)	11	4.6m x 2.3m	15kw x 11	91	Cyclone	12	9"φ	
136	Thickener	1	12m <sup>2</sup>		114	Cone Tank	2	9.5m <sup>2</sup>		92	Ball Mill	2	10' x 16'	520kw x 2
137	Drag Classifier	1	0.9mw x 5mL	1.5kw	115	Cyclone	1	6"φ		93	Thickener	1	30m <sup>2</sup>	15kw
138	Belt Conveyor	1	0.6mw x 18mL	2.2kw	116	Ball Mill	1	3' x 6'	30kw	94	Cyclone	5	9"φ	
139	Conveyor Scale	1	1.33h		117	Thickener	1	20m <sup>2</sup>	2.2kw	95	Table (S-Duty)	28	4.6m x 2.3m	15kw x 28
140	Cone Tank	1	5.5m <sup>3</sup>		118	Flotation Machine	8	1.2m <sup>3</sup> Cell	15kw x 8	96	Cyclone	9	6"φ	
141	Incline	1		75kw	119	Do.	6	1.1m <sup>3</sup> Cell	11kw x 3	97	Table (S-Duty)	21	4.6m x 2.3m	15kw x 21
142	Water Tank	1	200t		120	Magnetic Separator	1	0.76m <sup>2</sup>	1.5kw	98	Cyclone	8	6"φ	
143	Cyclone	9	36"φ		121	Cyclone	1	6"φ		99	Table (James)	29	4.6m x 1.8m	15kw x 29
144	Thickener	1	96m <sup>2</sup>	3.7kw x 3	122	Table (S-Duty)	10	4.6m x 2.3m	15kw x 10	100	Cyclone	8	6"φ	
145	Water Tank	1	2000t		123	Cyclone	1	6"φ		101	Table (James)	22	4.6m x 1.8m	15kw x 22
146	Recovery Water Tank	1	5000t		124	Table (S-Duty)	5	4.6m x 2.3m	15kw x 5	102	Thickener	1	55m <sup>2</sup>	3.7kw x 2

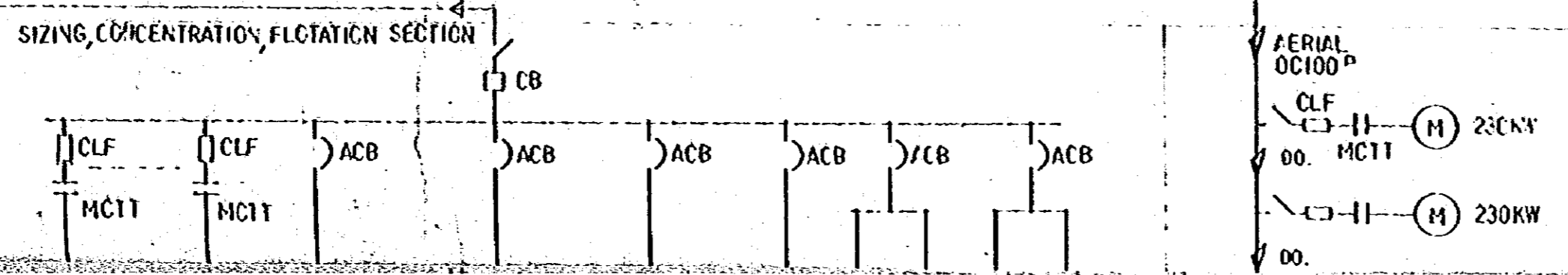
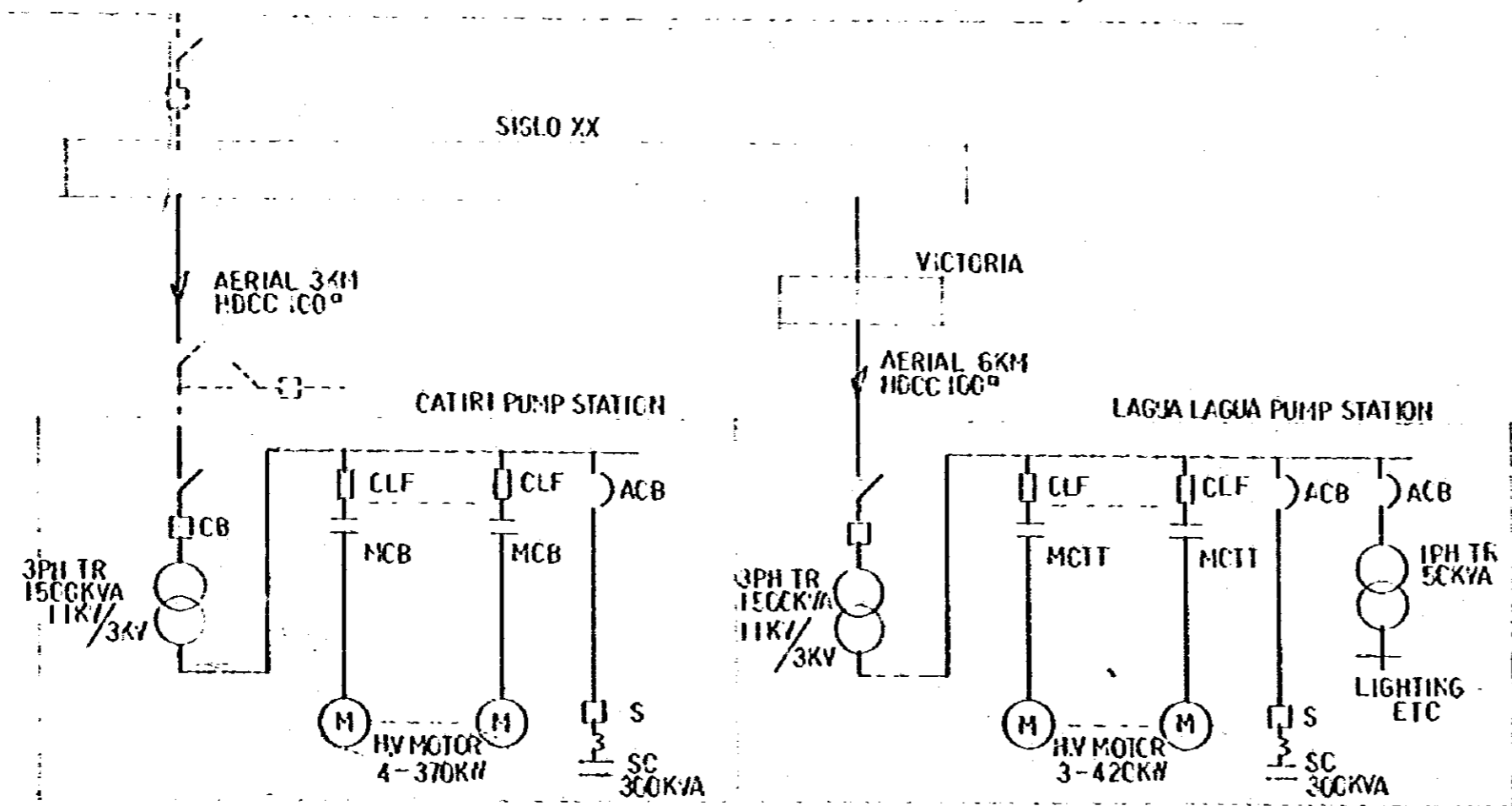
43	Vibrating Screen	6	10' x 24'	45kw x 6
44	Belt Conveyor	3	0.6mw x 10mL	15kw x 3
45	Do.	2	0.6mw x 30mL	7.5kw x 2
46	Do.	1	0.6mw x 25mL	5.5kw
47	Do.	1	0.6mw x 12mL	3.7kw
48	Do.	1	1mw x 65mL	22kw
49	Do.	1	1mw x 10mL	1.5kw
50	Do.	1	1mw x 70mL	22kw
51	Do.	1	1mw x 6mL	1.5kw
52	Do.	1	1mw x 65mL	22kw
53	Mill Bin	8	500t	
54	Belt Feeder	16	1mw x 7mL	7.5kw x 16
55	Belt Conveyor	4	0.6mw x 15mL	5.5kw x 4
56	Constant Feed Weigher	4	100 t/h	
57	Sieve Bend	6	0.6mw	
58	Rake Classifier	1	1.5mw x 9mL	7.5kw
59	Rod Mill	4	10' x 14'	520kw x 4
60	Rake Classifier	4	1.5mw x 9mL	7.5kw x 4
61	Cyclone	20	9"φ	
62	Sieve Bend	12	0.6mw	
63	Ball Mill	4	12' x 20'	1100kw x 4
64	Cyclone	8	9"φ	
65	Sieve Bend	4	0.6mw	
66	Ball Mill	2	10' x 18'	600kw x 2
67	Cyclone	4	9"φ	
68	Table (Plat-O)	8	4.6m x 2.1m	15kw x 8
69	Cyclone	5	9"φ	
70	Table (Plat-O)	10	4.6m x 2.1m	15kw x 10
71	Cyclone	6	9"φ	
72	Table (S-Duty)	13	4.6m x 2.3m	15kw x 13
73	Table (James)	35	4.6m x 1.8m	15kw x 35
74	Rake Classifier	4	4.6mw x 10mL	15kw x 4
75	Hydraulic Classifier	8	0.87mw x 3.2mL	
76	Table (Plat-O)	79	4.6m x 2.1m	15kw x 79
77	Do. (S-Duty)	58	4.6m x 2.3m	15kw x 58
78	Do. (James)	40	4.6m x 1.8m	15kw x 40
79	Cyclone	24	9"φ	
80	Hydraulic Classifier	2	0.87mw x 3.2mL	

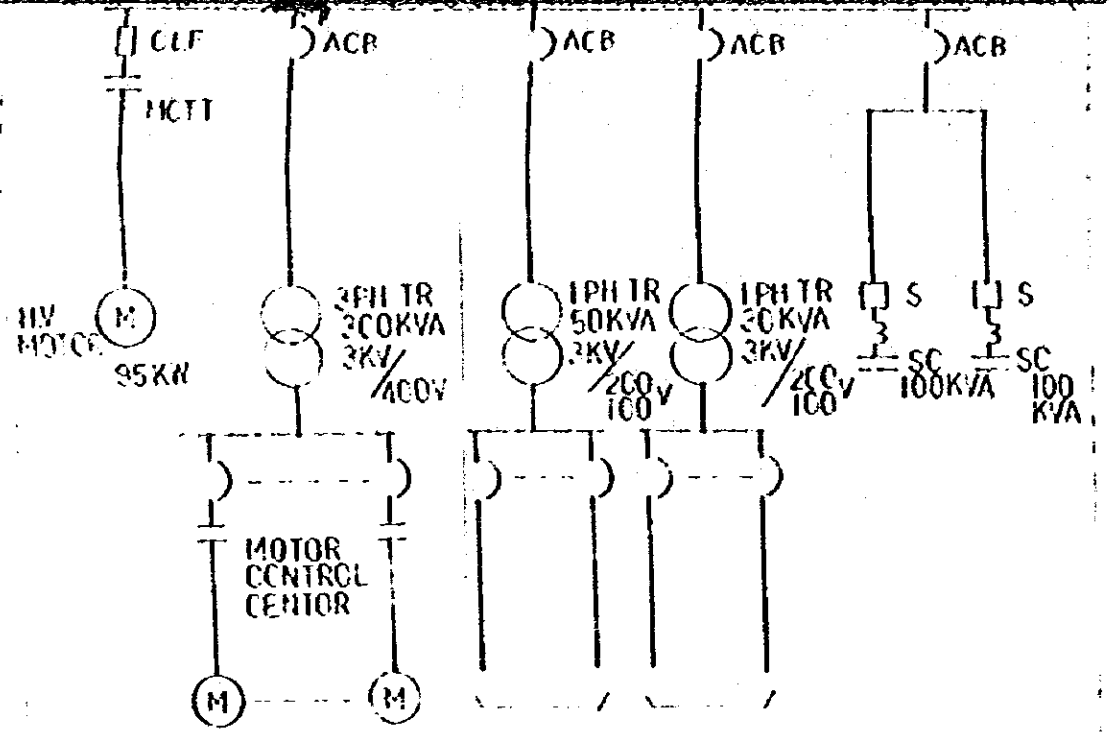
PL. II-2  
 Modernization of Mining Facilities  
 in the Republic of Bolivia  
 Lay Out of New Mill Plant  
 Japan International Cooperation Agency  
 Date 5. Dec. 1982 Scale 1:600





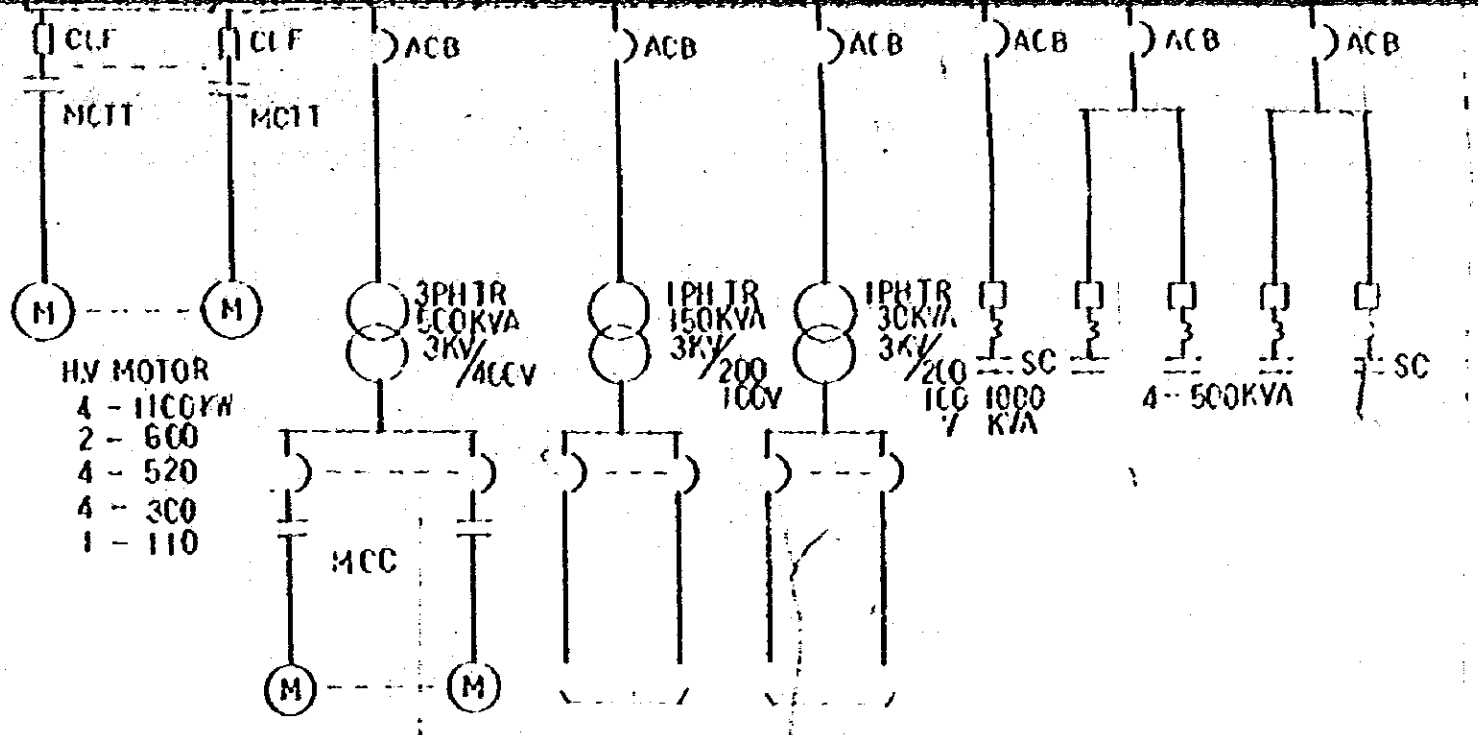






- LV MOTOR
- 1 - 75
  - 1 - 45
  - 2 - 22
  - 4 - 11
  - 6 - 7.5
  - 1 - 5.5
  - 1 - 3.7

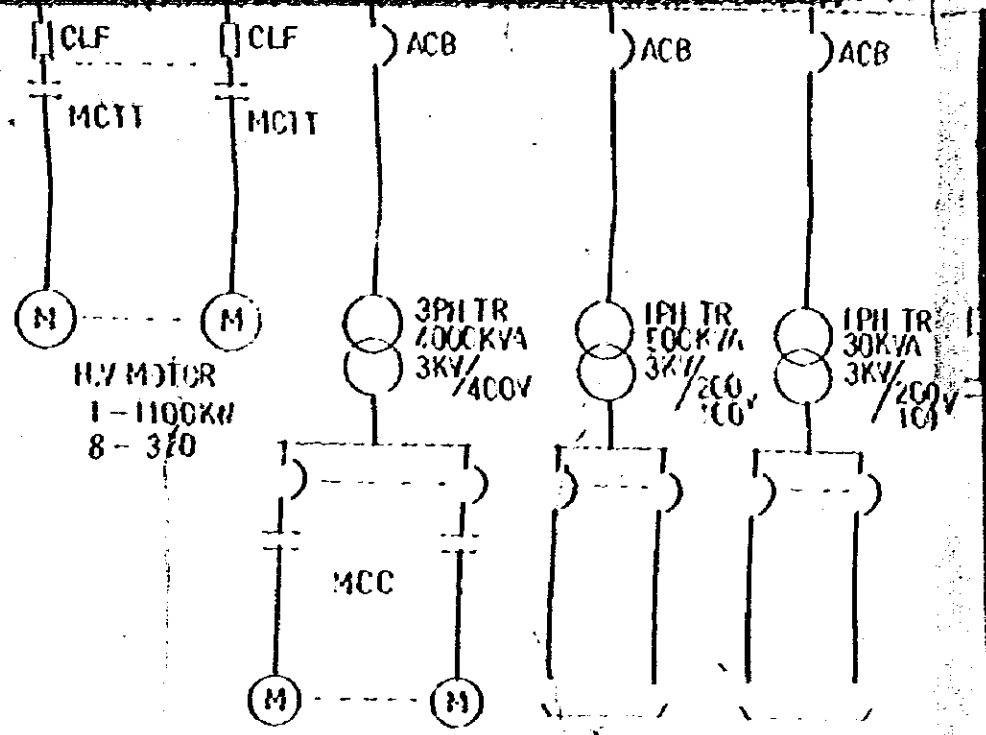
LIGHTING INSTRUMENTS ETC



- HV MOTOR
- 4 - 1100KW
  - 2 - 600
  - 4 - 520
  - 4 - 300
  - 1 - 110

- LV MOTOR
- 1 - 55
  - 8 - 45
  - 7 - 37
  - 3 - 25
  - 11 - 22
  - 2 - 15
  - 14 - 7.5
  - 25 - 5.5
  - 6 - 2.2
  - 73 - 1.5

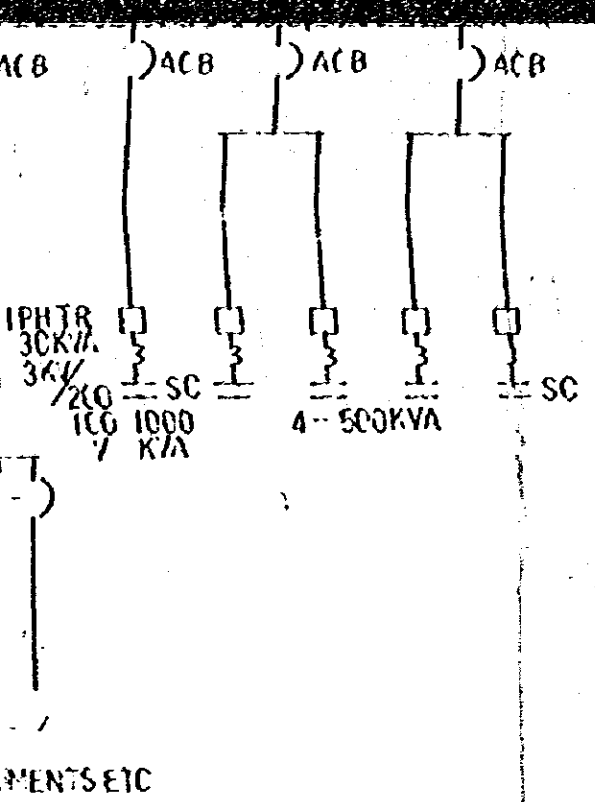
LIGHTING INSTRUMENTS ETC



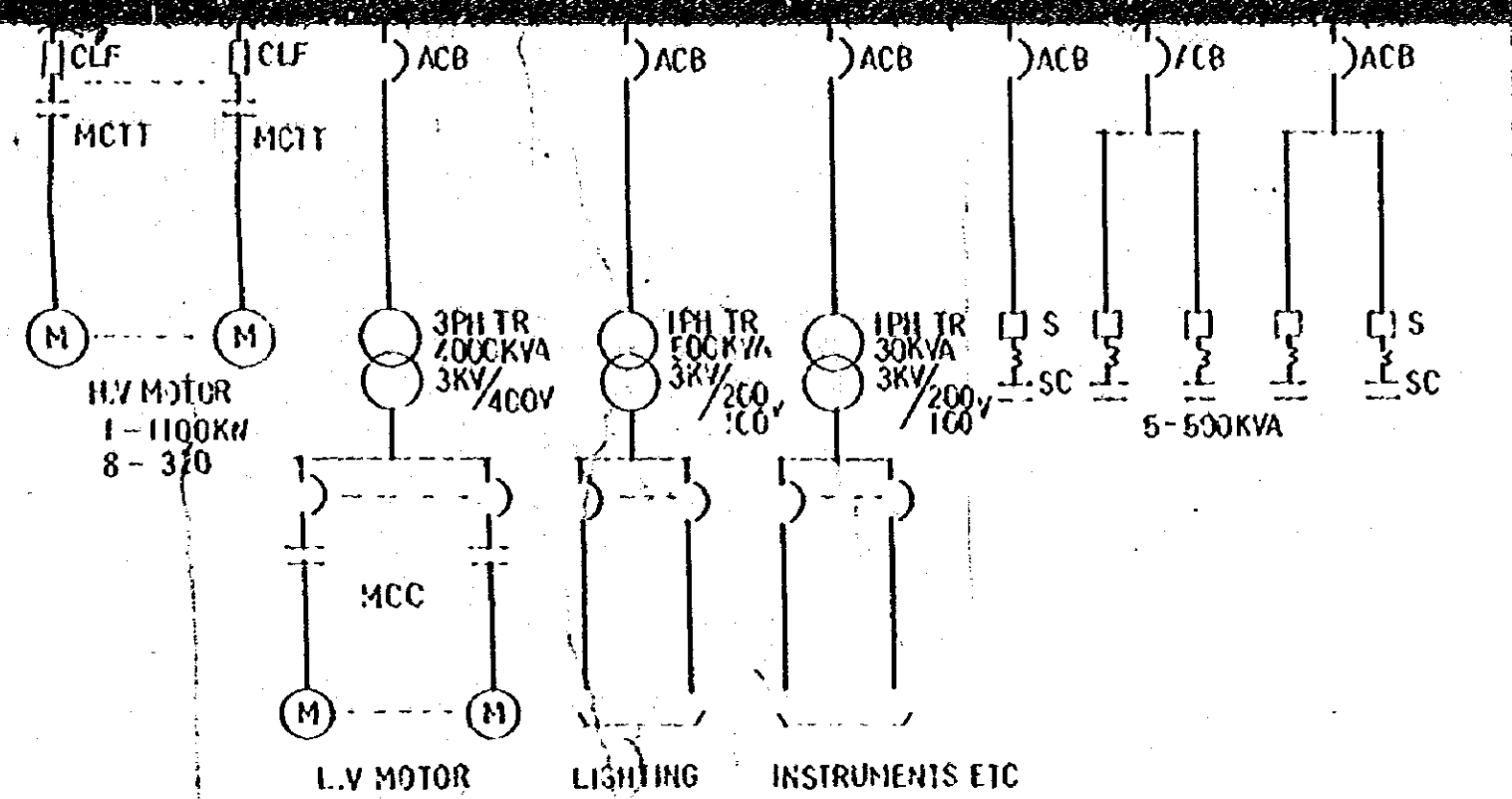
- HV MOTOR
- 1 - 1100KW
  - 8 - 370

- LV MOTOR
- 6 - 75
  - 5 - 55
  - 5 - 37
  - 7 - 22
  - 1 - 19
  - 15 - 15
  - 7 - 11
  - 3 - 7.5
  - 6 - 5.5
  - 15 - 3.7
  - 11 - 2.2
  - 2 - 1.9
  - 1029 - 1.5

LIGHTING INSTRUMENTS ETC

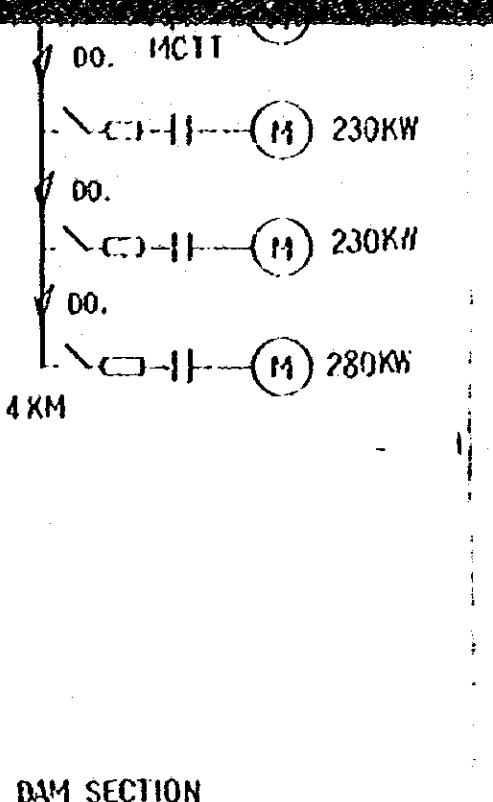


MENTS ETC



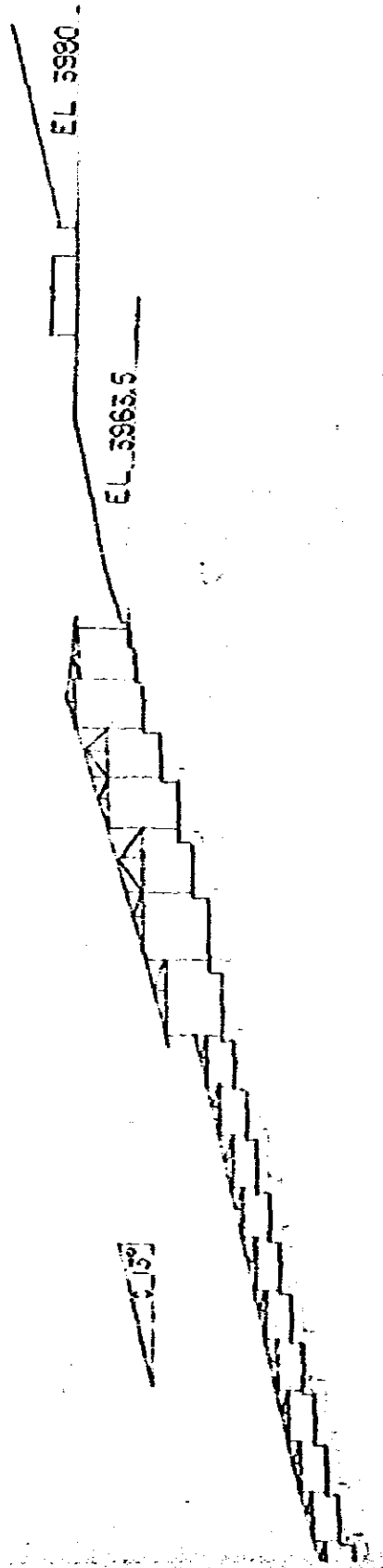
L.V MOTOR

6	75
5	55
5	37
7	22
1	19
15	15
7	11
3	7.5
6	5.5
15	3.7
11	2.2
2	1.9
1029	1.5

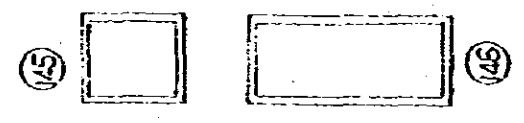
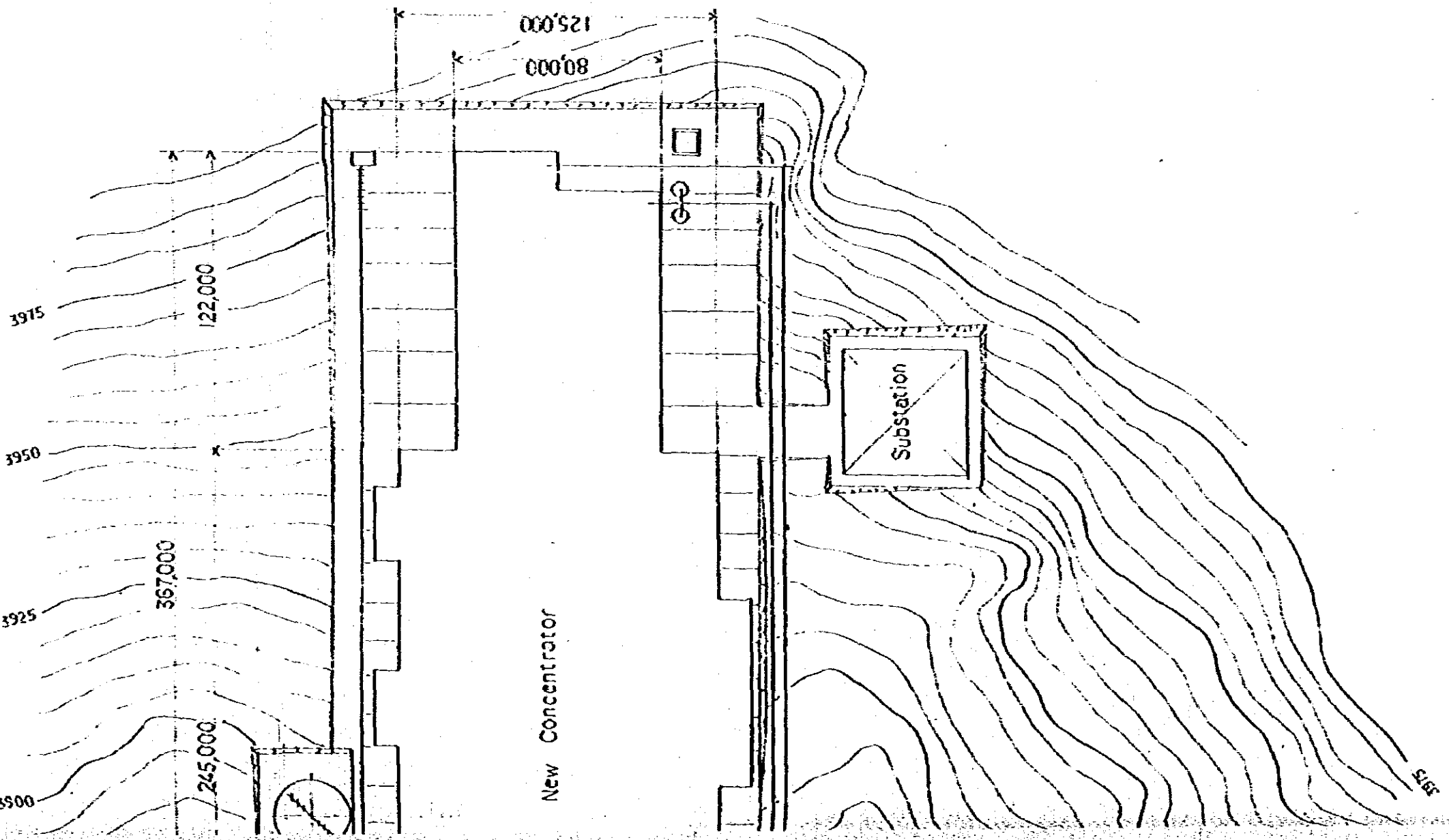


DAM SECTION

PL. II-3  
 Modernization of Mining Facilities  
 in the Republic of Bolivia  
 Single Line Diagram of New Mill Plant  
 Japan International Cooperation Agency  
 Date 5. Dec. 1982



EL 3880



No	Name	Qty	Size	Kw
102	Thickener	1	55mφ	5.7Kw x 2
143	Cyclone	5	36"φ	
144	Thickener	1	96mφ	5.7Kw x 3
145	Water Tank	1	2000'	
146	Recovery Water Tank	1	5000'	

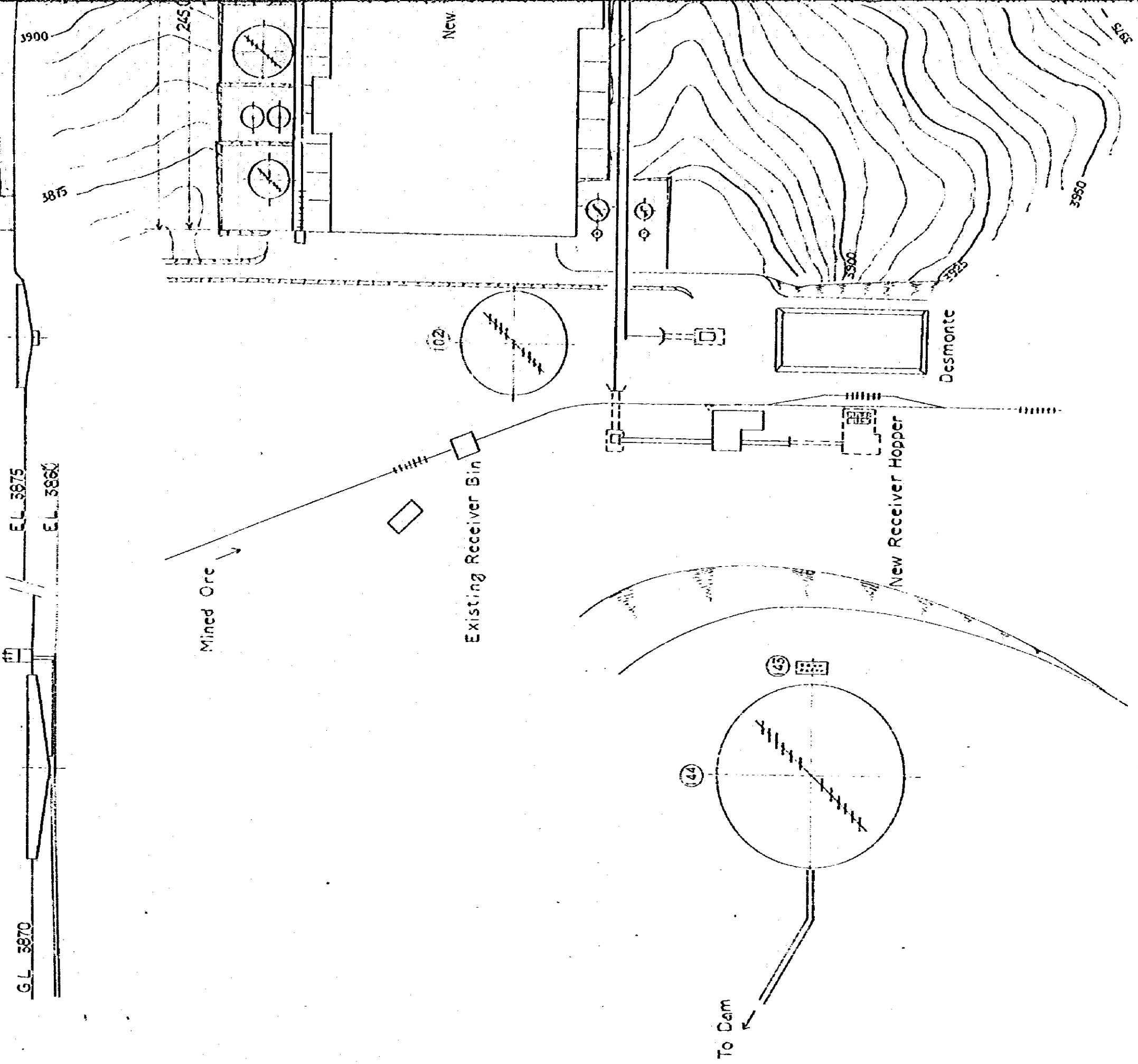
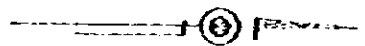
PL. II-4

Modernization of Mining Facilities  
in the Republic of Bolivia

Plot Plan of New Mill Plant

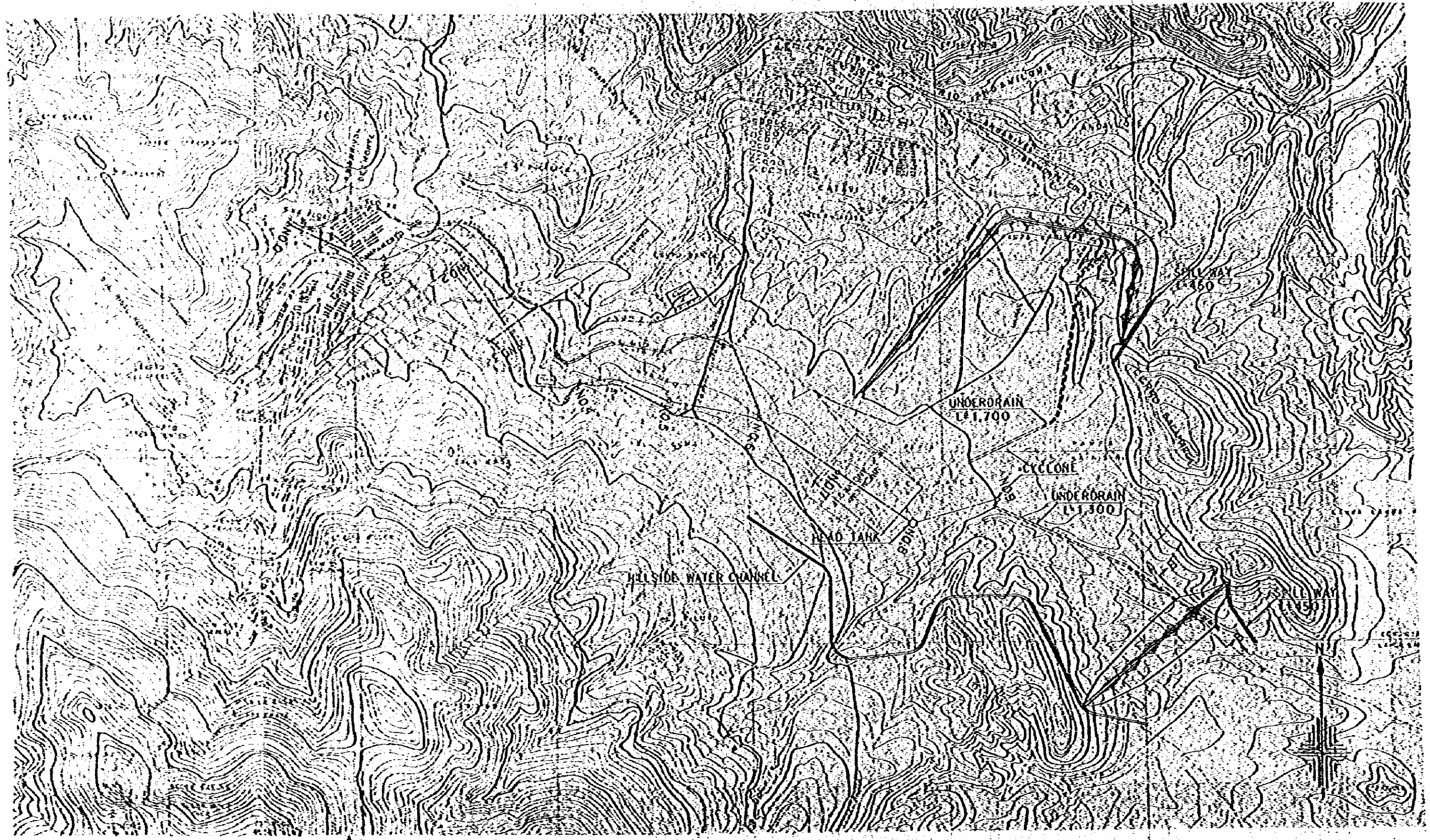
Japan International Cooperation Agency

Date 3. Dec. 1982 Scale 1:2000



P L A N

S = 1/20,000



4,000.00

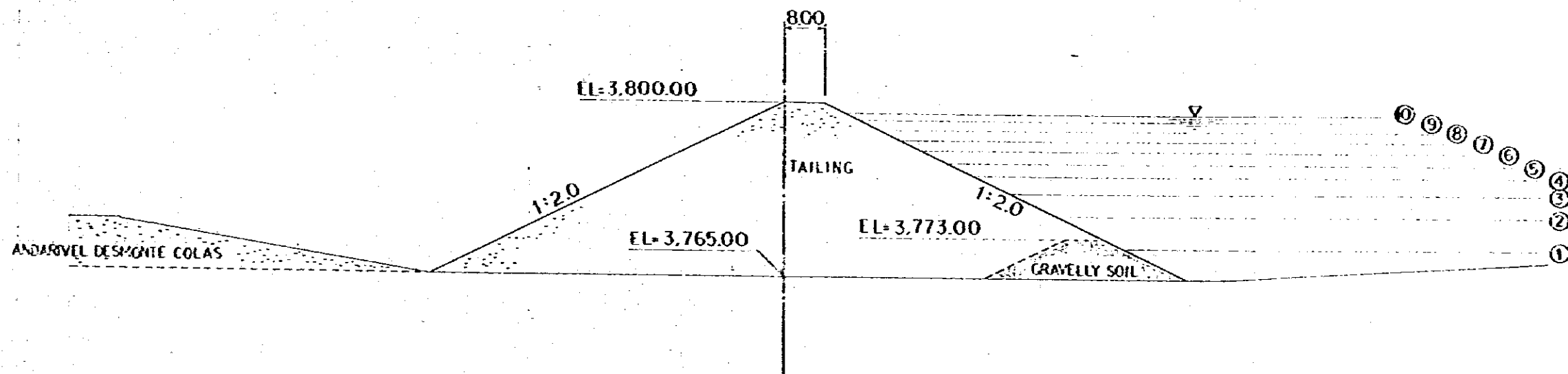
IRRIGATION TANK  
EL. 3,800.00

LONGITUDINAL SECTION

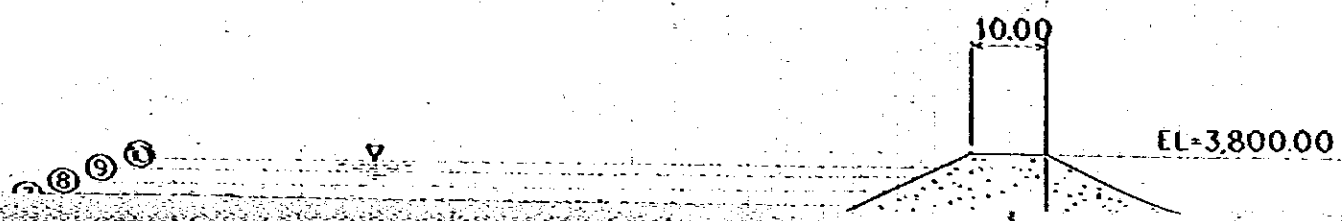
TYPICAL SECTION OF DAM

S = 1/1,000

A-A SECTION

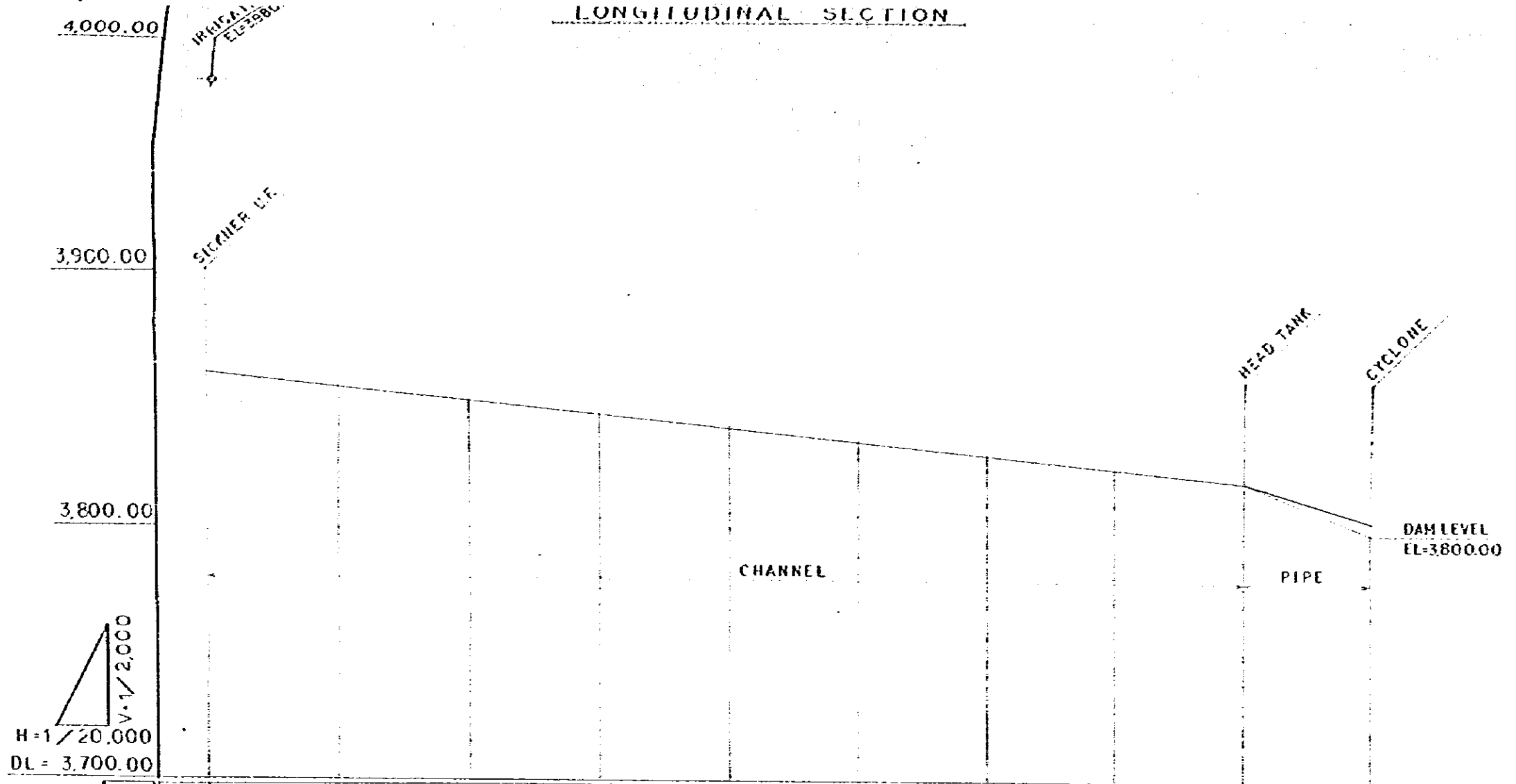


B-B SECTION





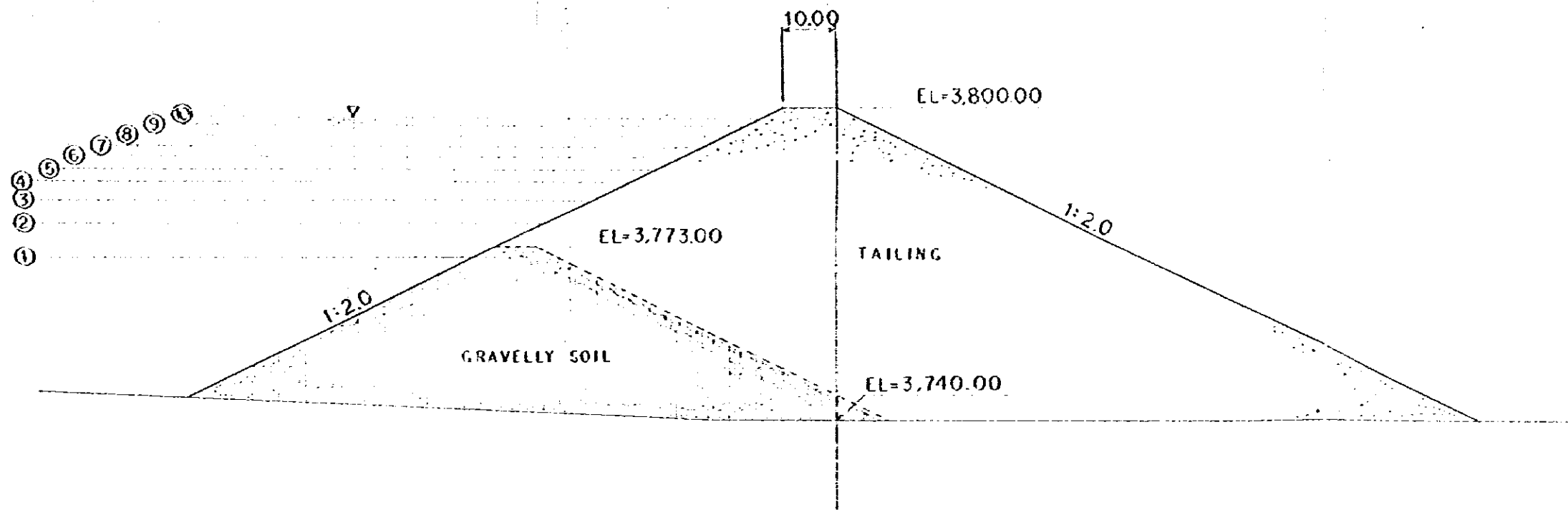
LONGITUDINAL SECTION



STATION	DISTANCE	ACCUMULATED DISTANCE	GROUND HEIGHT	PROPOSED HEIGHT	GRADE
NO. 0	0.00	0.00	3.860.00	3.860.00	3.860.00
NO. 1	500.00	500.00	3.855.00	3.855.00	
NO. 2	500.00	1,000.00	3.850.00	3.850.00	
NO. 3	500.00	1,500.00	3.845.00	3.845.00	
NO. 4	500.00	2,000.00	3.840.00	3.840.00	
NO. 5	500.00	2,500.00	3.835.00	3.835.00	
NO. 6	500.00	3,000.00	3.830.00	3.830.00	
NO. 7	500.00	3,500.00	3.825.00	3.825.00	
NO. 8	500.00	4,000.00	3.820.00	3.820.00	3.820.00
NO. 9	500.00	4,500.00	3.800.00	3.805.00	3.805.00

$i = 1.00\%$   
 $L = 4,000.00$

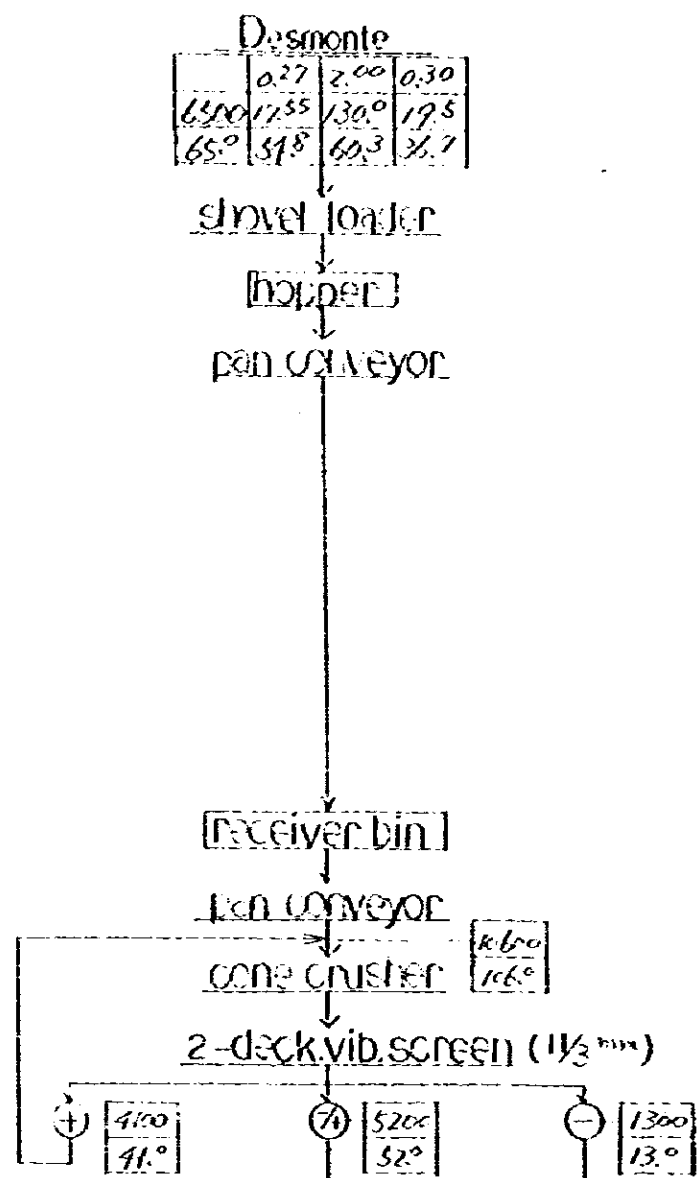
$i = 3.00\%$   
 $L = 500.00$



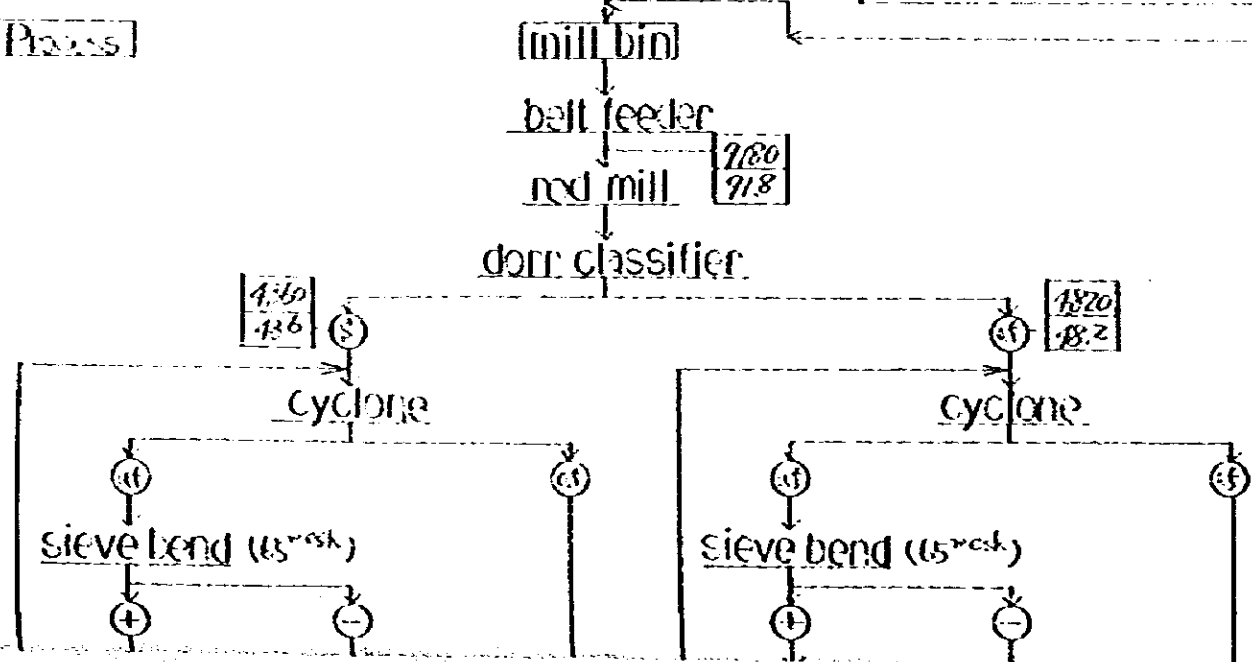
YEAR	ELEVATION LEVEL OF TAILING DAM
①	3.771.00
②	3.777.50
③	3.782.00
④	3.785.50
⑤	3.788.00
⑥	3.790.50
⑦	3.792.50
⑧	3.794.50
⑨	3.796.50
⑩	3.798.00

PL. II-5  
 Modernization of Mining Facilities  
 in the Republic of Bolivia  
 Plan of Tailings Disposal  
 Japan International Cooperation Agency  
 Date 31 Jan. 1983

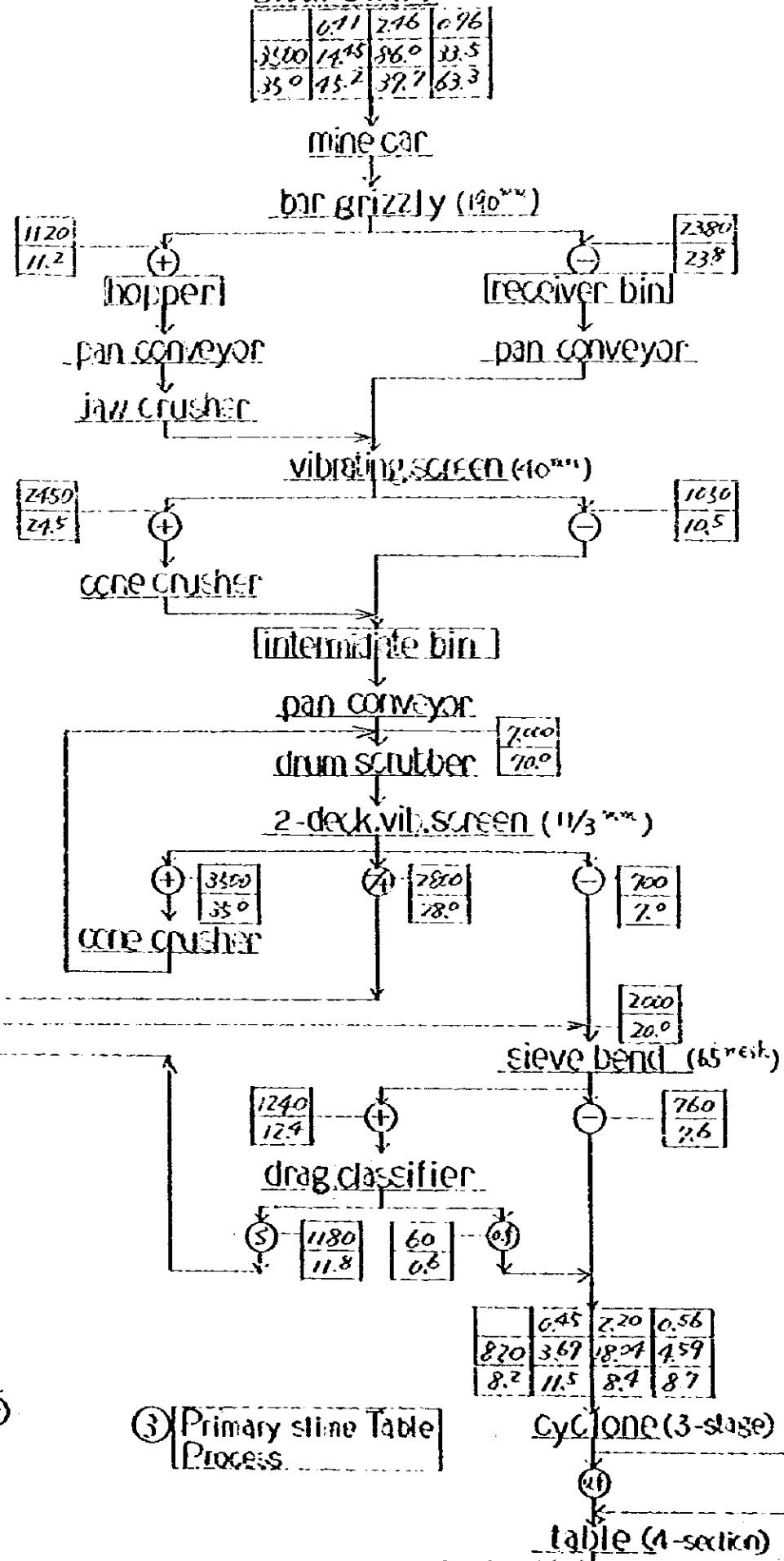
① Receiver and Crushing Process



② Grinding Process



Block Central



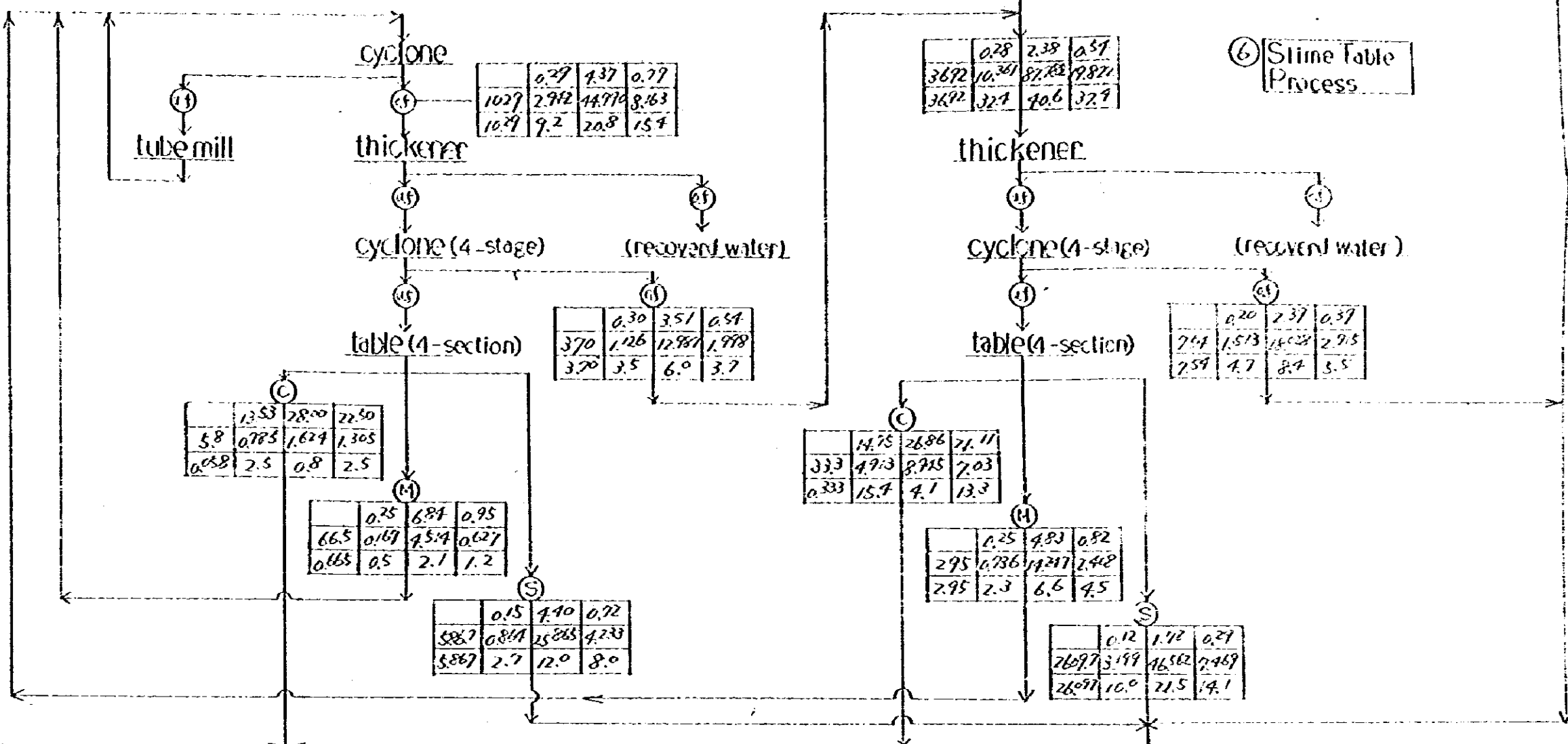
③ Primary slime Table Process

⑤ Mudding Tail Process

⑦ Sulphide Magnetic Process

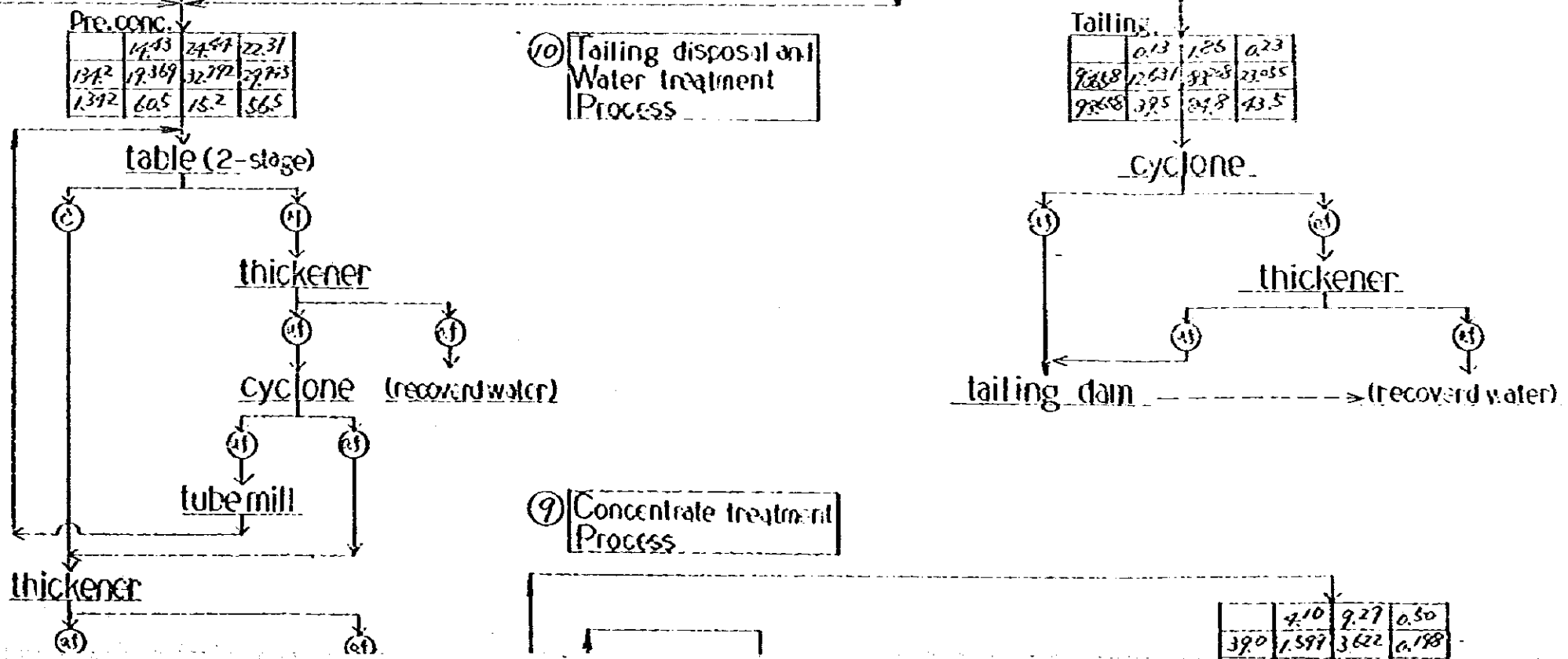
⑤ Mudding Table Process

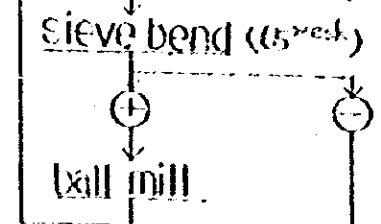
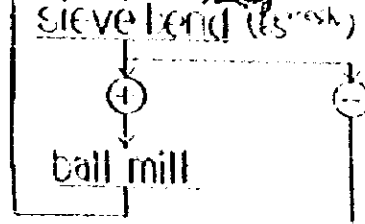
⑥ Slime Table Process



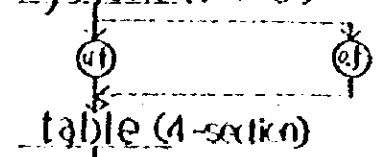
⑦ Sulphide Flotation and Magnetic separation Process

⑩ Tailing disposal and Water treatment Process





Process



① Reaching Table Process

(course) (S)

	0.23	1.95	0.44
17.9	1.371	2.587	2.079
27.9	20.0	24.8	22.8

hydraulic classifier

table (4-section)

	11.77	24.15	25.40
26.7	3.52	1.99	1.82
0.207	7.7	5.0	12.7

	1.21	3.12	0.52
14.6	0.50	7.624	1.447
2.06	1.6	3.5	2.7

	0.10	1.53	0.11
72.33	7.111	33.182	7.452
12.33	6.6	15.6	9.7

(at)

	0.22	2.11	0.98
27.7	2.618	5.243	1.330
2.77	2.0	2.7	2.5

	0.31	2.16	0.53
91.80	28.31	177.76	12.41
91.8	88.5	91.6	91.3

rake classifier

(fine)

	0.34	2.25	0.57
64.6	71.783	44.235	38.331
11.8	6.5	66.8	68.5

cyclone

hydraulic classifier

table (4-section)

	15.61	29.52	21.97
53.0	2.221	12.78	12.75
0.53	25.9	6.0	23.0

cyclone (3-stage)

table (3-section)

	0.35	4.41	0.90
33.92	1.195	11.752	3.052
33.92	5.8	6.9	5.7

(C)

	0.28	2.26	0.54
30.45	8.617	69.93	16.991
30.45	26.7	31.9	31.1

	0.13	1.59	0.15
2.708	3.312	17.323	4.610
27.88	11.9	22.0	8.7

	14.63	17.75	17.01
15.2	2.229	2.729	2.595
0.152	7.0	1.3	4.9

	0.41	1.10	0.78
81.7	0.334	3.573	0.635
0.817	1.0	1.7	1.2

	0.16	1.62	0.19
723.1	1.132	11.718	1.370
7.231	3.5	5.9	2.6

⑧ Cleaning Table Process

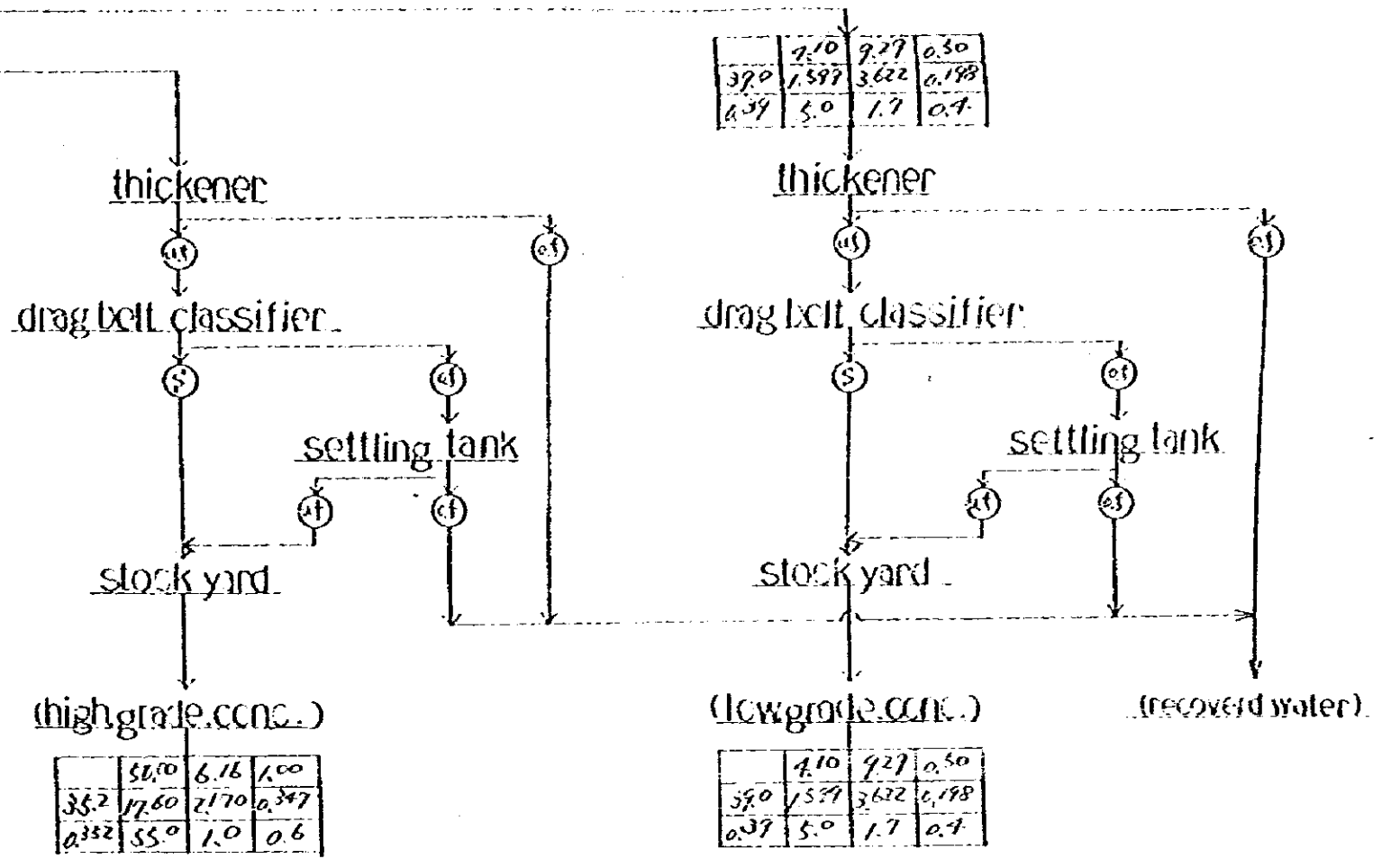
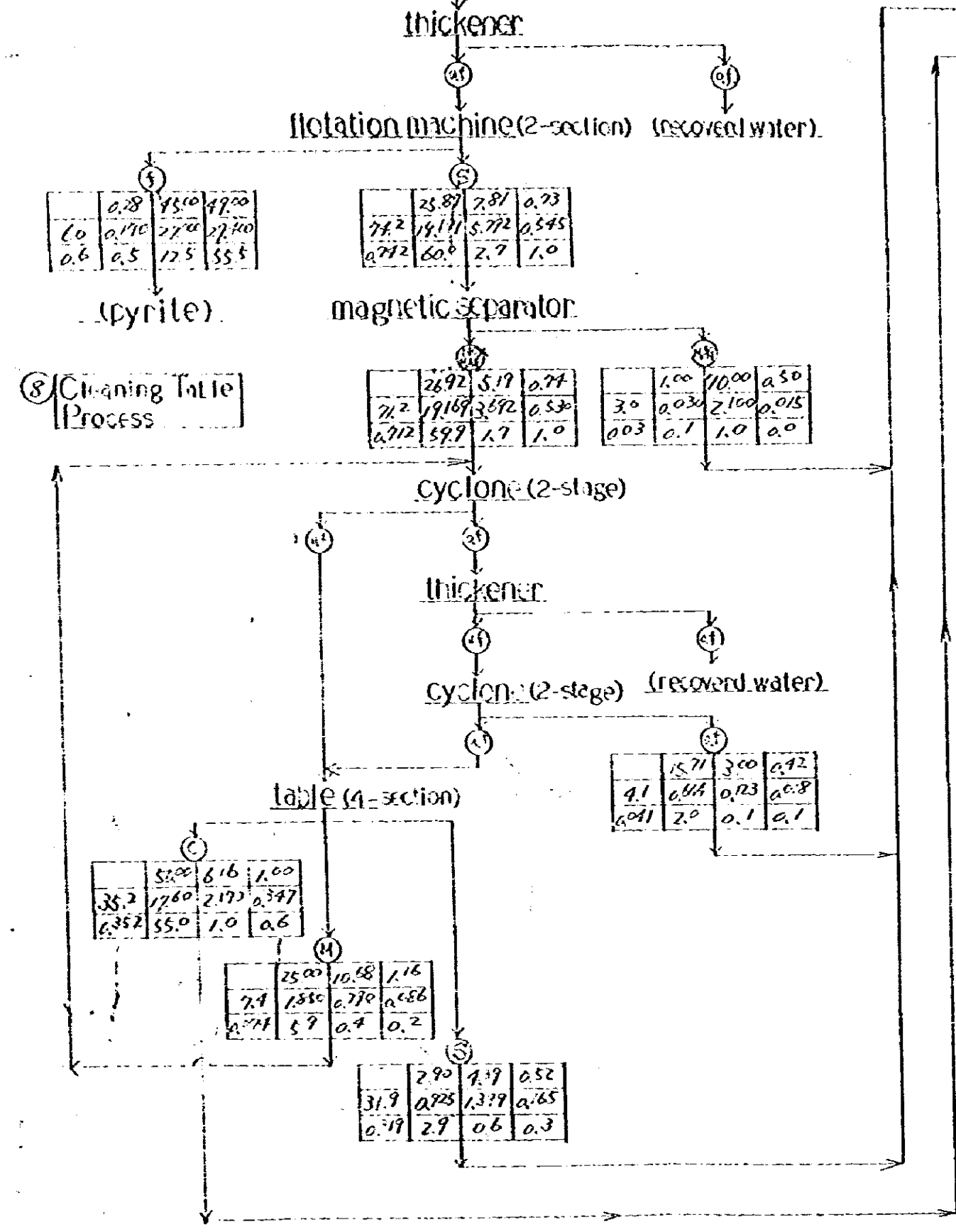
	0.8	1.5
6.0	0.170	2.7
0.6	0.5	1.2

(pyrite)

(C)

	5.2	6
35.2	17.60	2
1.352	55.0	1

Process



	Sr.	Fe	S	%
	Grade			
M.Q.	meal quantity			%
w.%	distribution			%

PL II-6

Modernization of Mining Facilities in the Republic of Bolivia

Flow Sheet of New Mill Plant

Japan International Cooperation Agency

Date: 5. Dec. 1982