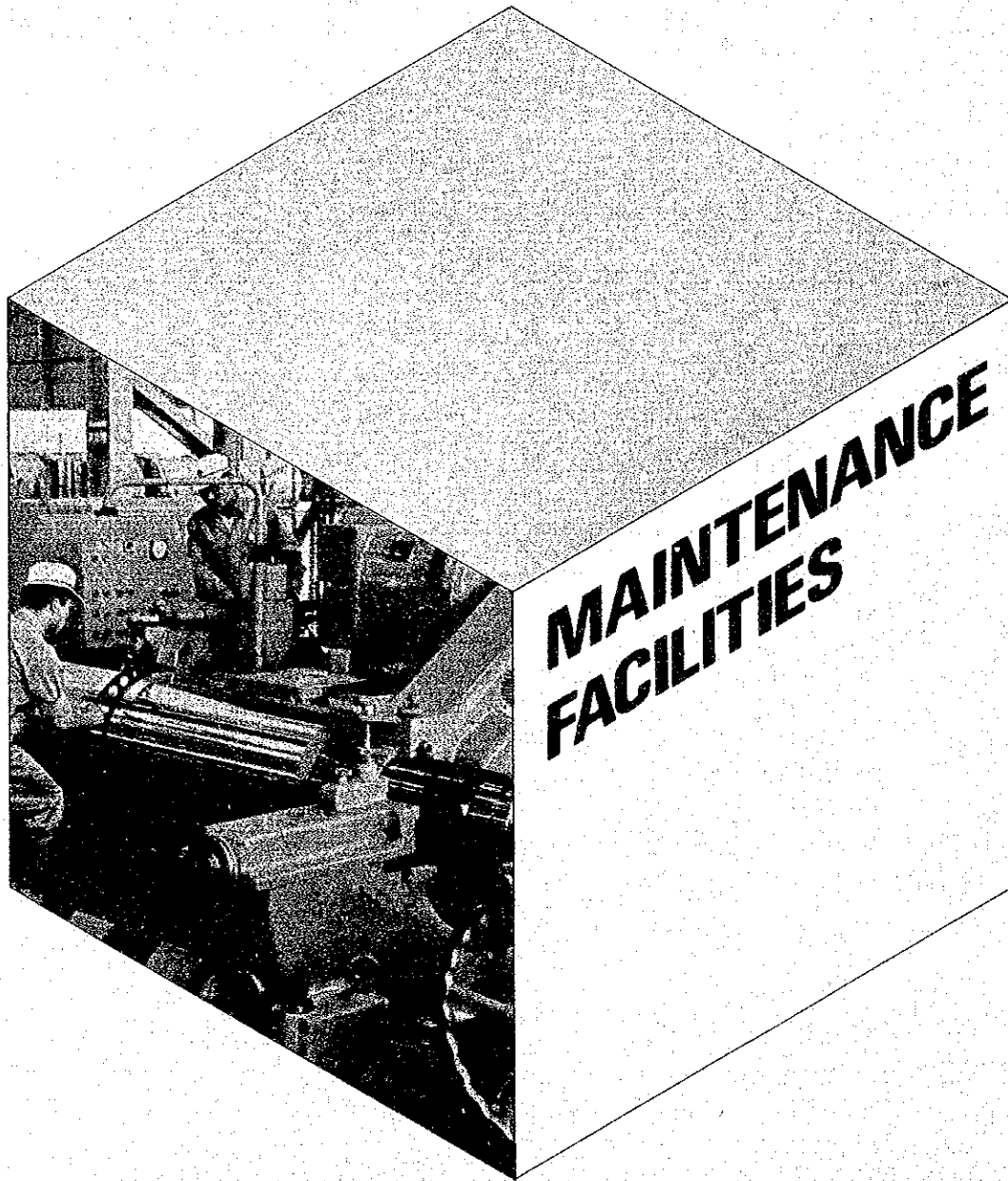
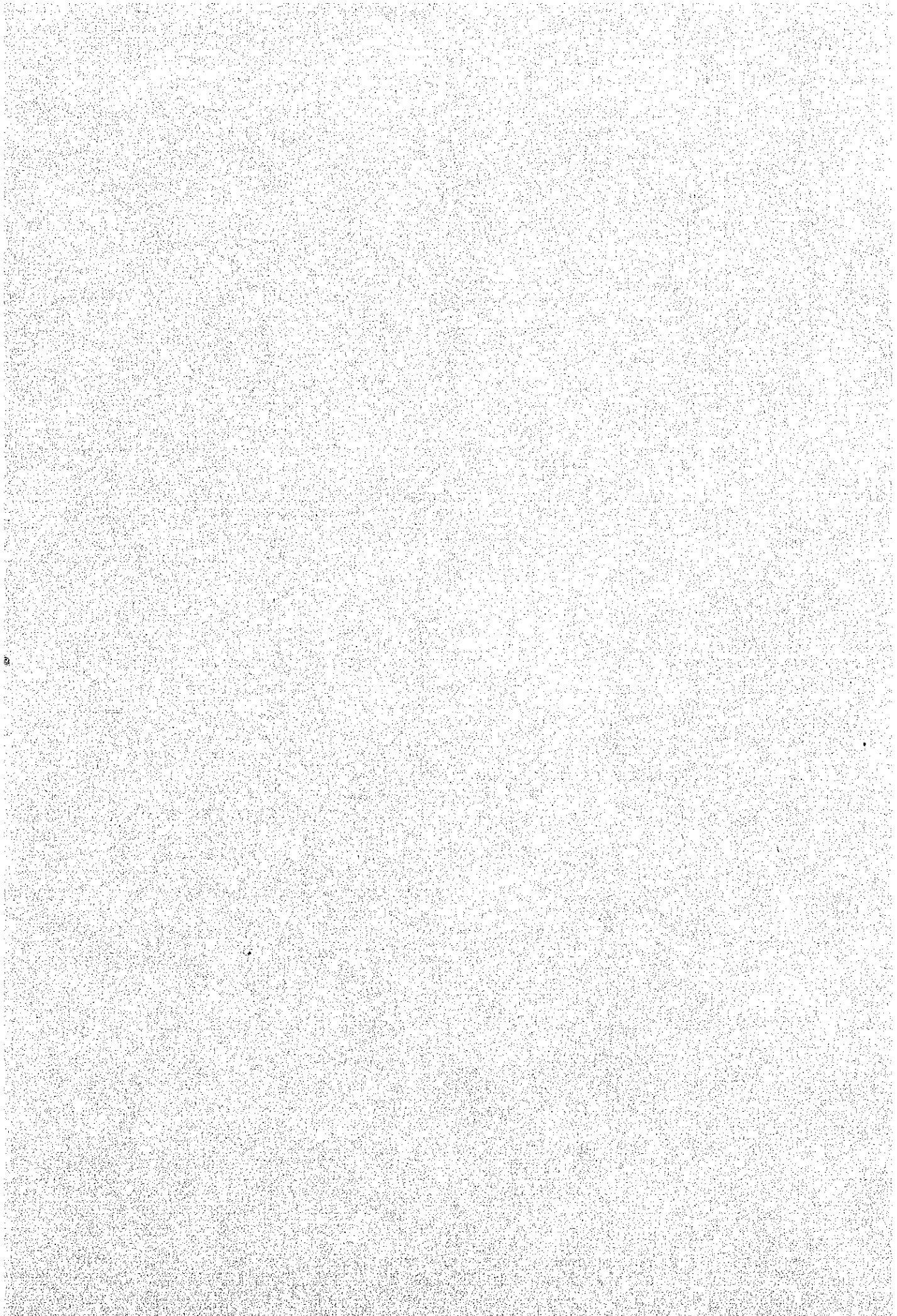


CHAPTER 13-20





13-20 Maintenance facilities**13-20-1 General**

This chapter describes the maintenance facilities that will be constructed for the maintenance of the main plants and auxiliary facilities in the new steelworks.

The maintenance facilities consist of a central maintenance station and local maintenance shops.

The central maintenance station will provide general maintenance work which includes the parts manufacturing and equipment repairing for the machining, steel-fabrication and forging products.

Foundry will be excluded from the facilities because casting products are available in the Philippines.

In accordance with the previous feasibility study, the central maintenance station will be installed in the most convenient place outside the steelworks site.

13-20-2 Preconditions

- (1) The scale of production facilities to be maintained

The production based on crude steel is 1,500,000^{ty} in stage I and 3,000,000^{ty} in stage II.

- (2) The scale of maintenance facilities

The scale of maintenance facilities will be as large as to provide general maintenance work and not include the facilities necessary for the manufacturing and repairing of high quality or large-sized products. Though spare parts will basically be purchased from outside sources, surplus capacity, if any, of the central maintenance station will be assigned to the manufacture of these spare parts.

- 1) Manufacturing coverage of spare parts

(a) Machining of spare parts and spare parts reused

(b) Manufacturing of steel-fabricated products

(c) Manufacturing of small-forging products

(d) Plating of mold used for continuous casting machine.

- 2) Spare parts not to be manufactured

(a) All kinds of casting products made of casting steel, casting iron, colored metal and so on and large-forging products.

(b) The spare parts that require high level technology or skill, high accuracy and high production costs in manufacturing.

(c) Electrical equipment and instruments

(d) Rubber and materials containing high-molecular weight substances.

CHAPTER 13

(3) Maintenance system

The maintenance system will be an independent, centralized organization incorporating maintenance-related sections, which performs maintenance work in cooperation with personnel and by using these facilities.

However, the people in charge of the operation of each main plant have to carry out daily inspection as a part of production activities. The working time of maintenance personnel will be daytime duty as a general rule, but a specific maintenance work will require 2 shifts or 3 shifts.

(4) Main duties of location of central maintenance station and local maintenance shops.

1) Central maintenance station

The central maintenance station will support the activities of the local maintenance shops, as a main duty, and carry out the manufacturing and repairing of the parts for mechanical equipment, electrical equipment, and instrumentation.

The maintenances in civil building and water supply services will be executed if they can be done simply. The central maintenance station shall be installed in the most convenient place outside the steelworks site, as mentioned before.

2) Local maintenance shop

The local maintenance shops will be installed in the vicinity of each main plant to perform dismantlings, repairs, and assemblies of damaged mechanicals, electricals and instrumentation in the local maintenance shop's assigned territory.

3) Warehouse for maintenance

The warehouses for maintenance shall consist of spare parts warehouse, oil/grease warehouse and refractories warehouse.

13-20-3 Maintenance facilities plan

(1) Maintenance facilities specifications

The maintenance facilities will include the office, the maintenance shops and the warehouses. *Table 13-20-1* shows the respective specification of the maintenance facilities.

1) Central maintenance station

① Maintenance facilities to be centralized.

a. Central maintenance office

b. Machine repair shop

c. Machining shop

d. Steel-fabrication shop

e. Plating shop

- f. Forging shop
- g. Electrical equipment and instrumentation repair shop
- h. Civil, building and waterworks service shop.
- i. Spare-parts warehouses
- ② Maintenance facilities to be installed locally.
 - a. Rolling-stock repair shop
 - b. Motor vehicle repair shop
 - c. Oil/grease warehouse
 - d. Refractories warehouse
- 2) Local maintenance shop
 - a. Raw material maintenance shop
 - b. Coke oven maintenance shop
 - c. Blast furnace maintenance shop
 - d. B.O.F and C.C maintenance shop
 - e. Hot strip mill maintenance shop
 - f. Billet mill maintenance shop (to be expanded in stage II)
 - g. Power plant maintenance shop
- 3) Warehouse
 - a. General material and supplies warehouse.

Table 13-20-1 Specification

No.	Item	Specifications	
		Stage I	Stage II
1	Central maintenance office	Building area: 20 m x 75 m x 2 F = 3,000 m ² Drafting machine: 1 set Duplicator: 1 set Mini-computer: 1 set Typewriter: 1 set Microfilming equipment: 1 set Measuring instruments: 1 set	
2	Machine repair shop	Building area: 30 m x 120 m = 3,600 m ² Crane 10 t: 2 units 30 t: 1 unit Hydraulic press: 2 units Balancing machine: 1 unit Tools and instruments: 1 set	
3	Machining shop	Building area: 30 m x 120 m = 3,600 m ² Crane 2 t: 2 units 10 t: 1 unit 25 t: 1 unit Lathe: 13 units Drilling machine: 4 units Milling machine: 4 units Other machine tools: 15 units Tools: 1 set	
4	Steel-fabrication shop	Building area: 30 m x 120 m = 3,600 m ² Crane 7.5 t: 1 unit 10 t: 2 units 30 t: 1 unit Hydraulic press: 3 units Shearing machine: 1 unit Bending roller: 2 units Heat treatment furnace: 2 units Tools and instruments: 1 set	

No.	Item	Specifications	
		Stage I	Stage II
5	Plating shop	Building area: 25 m x 75 m = 1,750 m ² Crane 10 t: 1 unit Plating equipment: 1 set Tools and instruments: 1 unit	
6	Forging shop	Building area: 20 m x 50 m = 1,000 m ² Crane 10 t: 1 unit Air hammer: 2 units Furnace: 2 units Tools and instruments: 1 set	
7	Electrical equipment and instrumentation repair shop	Building area: 30 m x 150 m = 4,500 m ² Crane 3 t: 5 t: 15 t Other equipment: 1 set Tools and instruments: 1 set	
8	Civil construction and waterworks service shop	Building area: Part of machine repair shop Tools and instruments: 1 set	
9	Rolling stock repair shop	Building area: 36 m x 150 m = 5,400 m ² Crane 55 t: 10 t: 5 t: Testing equipments Machine tools: Torpedo relining equipments: 2 units 1 unit 2 units 1 set 1 set 1 set 1 set	Building area: 20 m x 50 m = 1,000 m ²
10	Motor vehicle repair shop	Building area: 15 m x 150 m = 2,250 m ² Crane 3 t: Testing equipments: Maintenance tools: 1 unit 1 set 1 set	

No.	Item	Specifications	
		Stage I	Stage II
11	Spare parts warehouse	Building area: 40 m x 150 m = 6,000 m ² Crane 2 t: 10 t: Forklift: Shelves: Measuring instrument:	Building area: 40 m x 50 m = 2,000 m ² Forklift: 2 units
12	Oil/grease warehouse	Building area: 10 m x 50 m = 500 m ² Forklift: Instruments:	Building area: 10 m x 30 m = 300 m ² Forklift: 2 units
13	Refractories warehouse	Building area: 75 m x 100 m = 7,500 m ² Forklift:	Building area: 30 m x 100 m = 3,000 m ² Forklift: 2 units
14	Local maintenance shops	Building area: 20 m x 50 m x 7 shops = 7,000 m ² Crane 3 t: 5 t: Machine tools: Tools:	Building area: 20 m x 50 m = 1,000 m ² Crane 3 t: 5 t: Machine tools: Tools:
15	General materials and supplies warehouse	Building area: 20 m x 100 m = 2,000 m ² Forklift: Shelves:	Building area: 20 m x 100 m = 2,000 m ² Shelves: 1 set

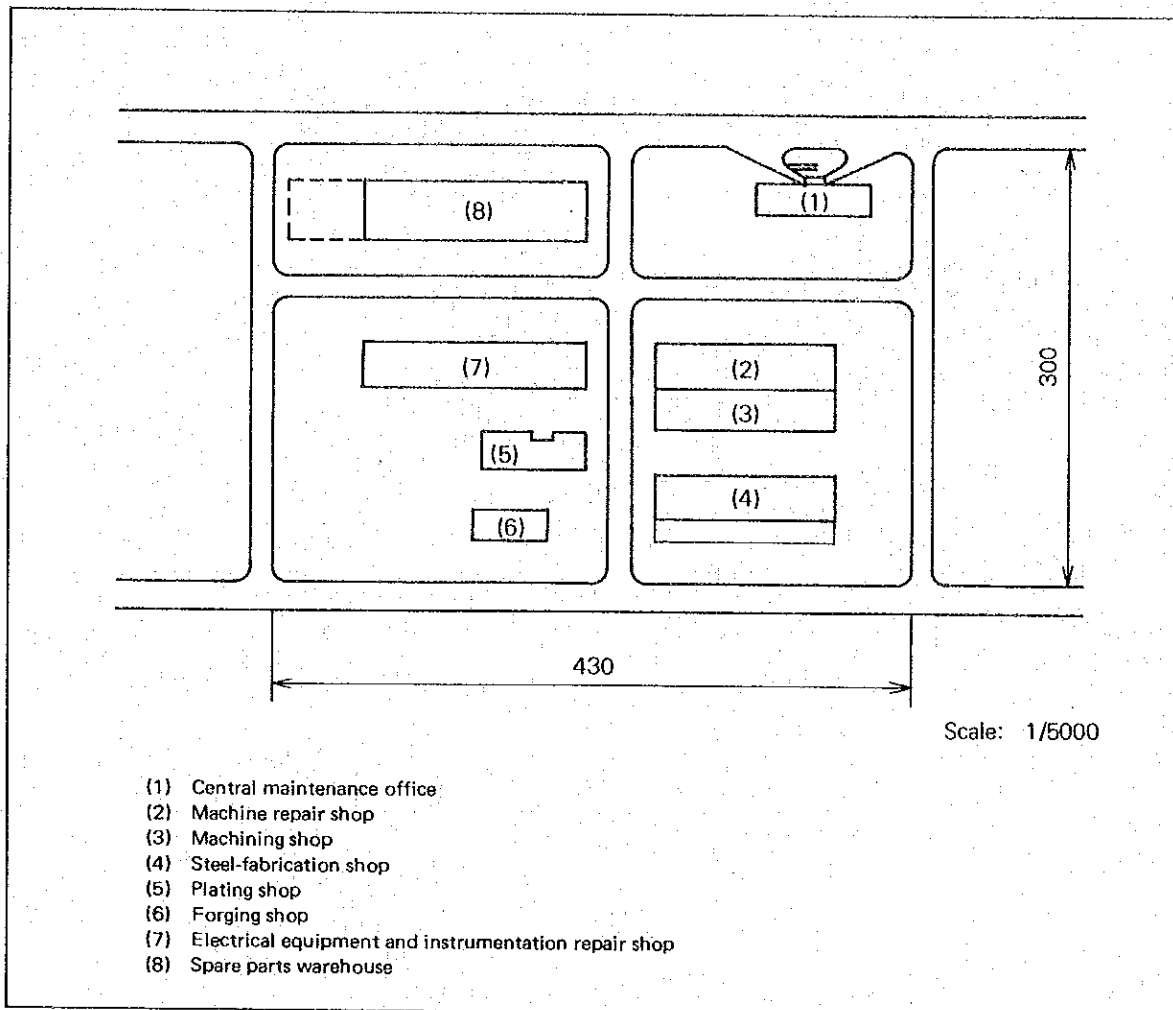
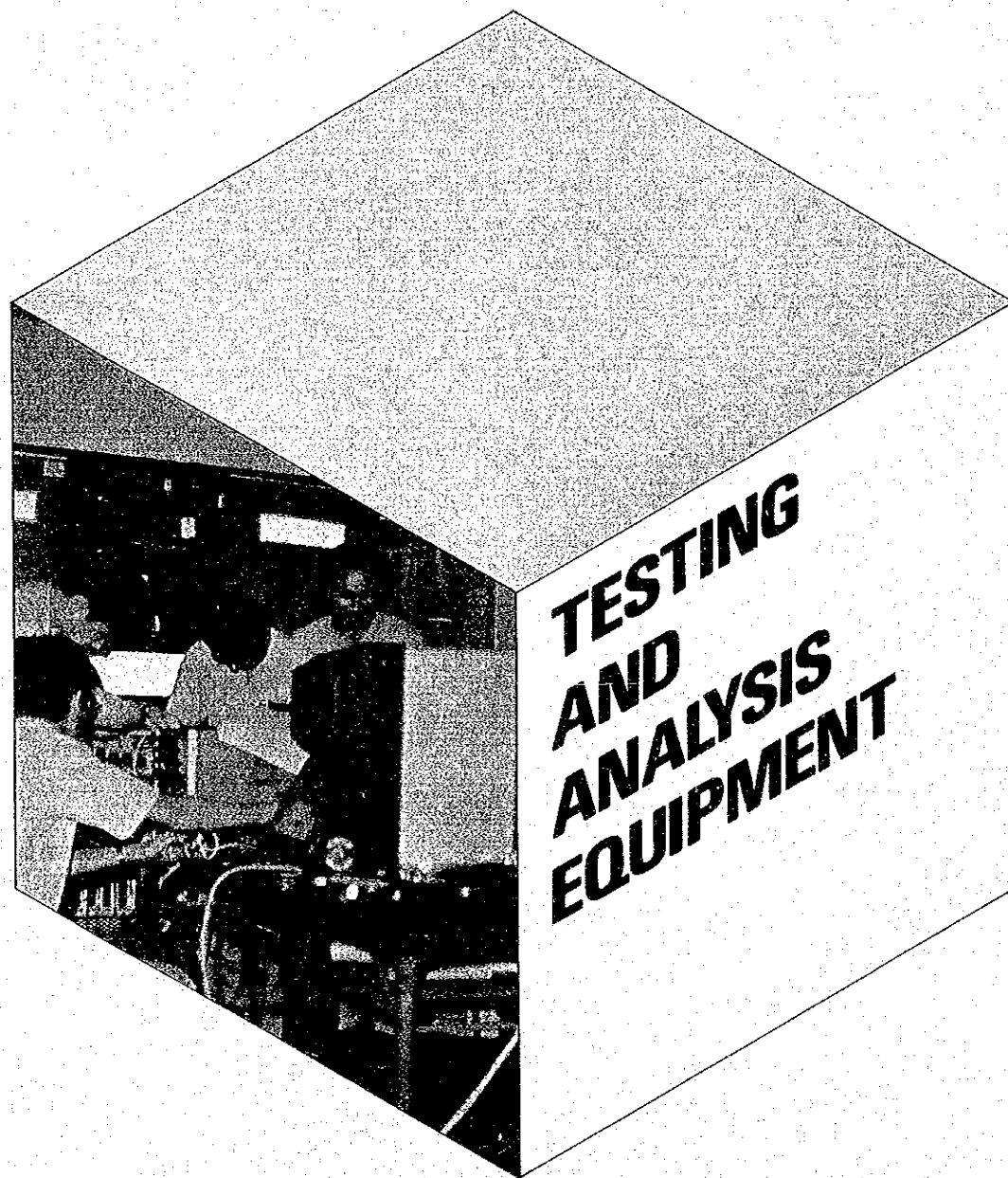


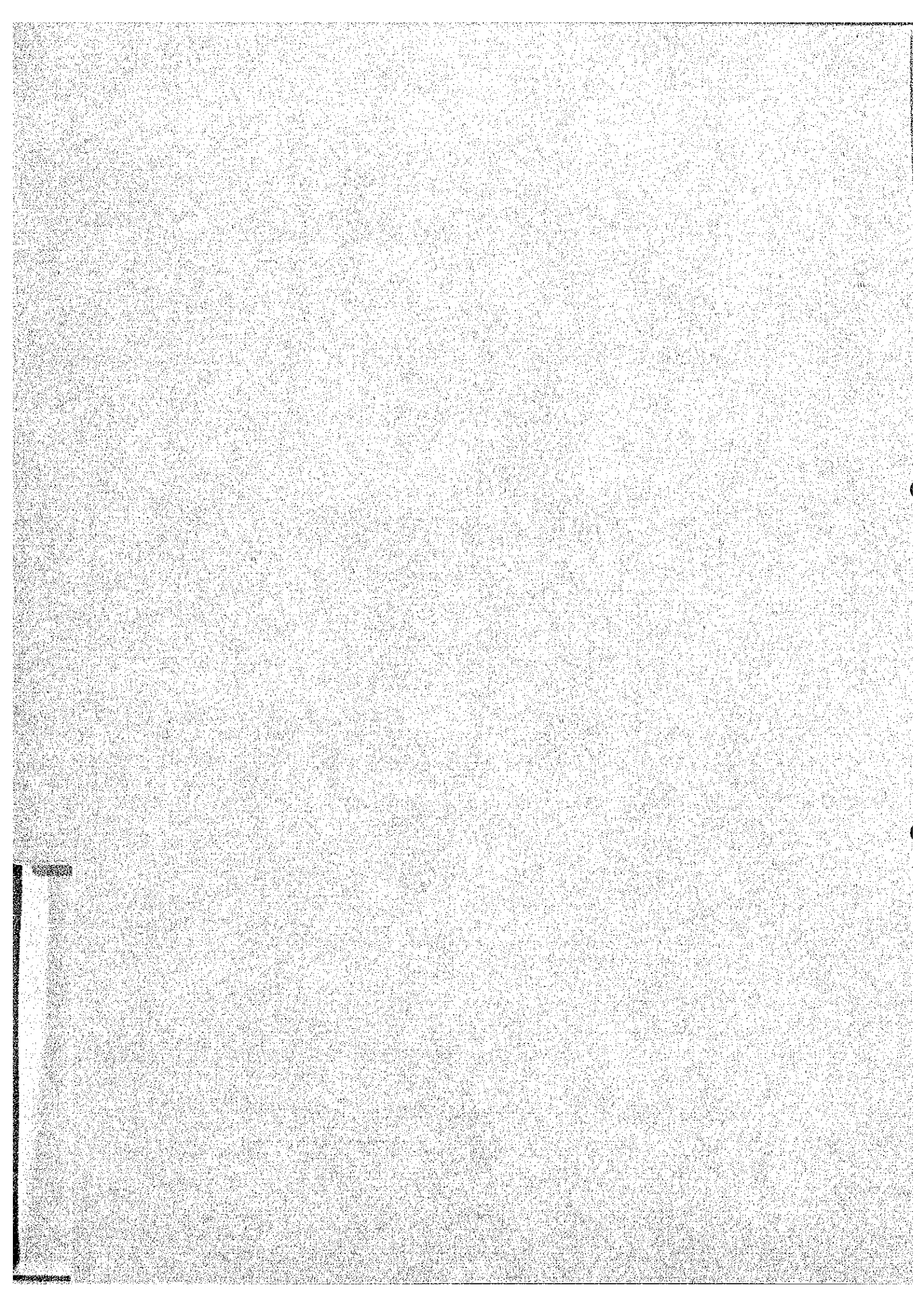
Fig. 13-20-1 Layout of maintenance facilities

(3) Maintenance facilities for stage I and for stage II

The maintenance facilities for stage I will cover the necessary facilities for stage II, except the rolling stock repair shop, the medium section mill maintenance shop and the warehouses. However, the maintenance facilities plan for stage II must be studied according to the operation results of the maintenance facilities for stage I.

CHAPTER 13-21





13-21 Testing and analysis equipment**13-21-1 General**

The testing and analysis equipment shall include the following equipments, which are needed for general operations of the new steelworks, but not involve the types of equipment for the objective of development of new products, or improvement of product quality.

(1) Testing and analysis equipment for raw materials

- 1) This testing and analysis equipment shall be used for the acceptance test for raw materials to be used in blast furnace and converter, such as iron ore, sintered ore, limestone and fluorite and ferro alloy, and for the management of such raw material preparation operations as crushing and blending for these raw materials.
- 2) Various types of testing equipment is needed for the acceptance test for coals and the operation of coke ovens.
- 3) Analysis equipment is used for the analysis of the hot metal and slag that is necessary for blast furnace operations.
- 4) Analysis equipment is needed for the operation control for the coke oven plant and by-product plant.
- 5) Other testing and analysis equipment is used to check semi-finished product necessary for the operation control of by-product plant (hot strip mill and billet mill)

(2) Analysis facility in front of converter.

- 1) Rapid analysis equipment for the hot metal, molten steel, slag and C.C powder, which are necessary for the operations of C.C plant and B.O.F plant.

(3) Mechanical testing equipment

- 1) The mechanical testing equipment is needed for the delivery inspection of slab, hot rolled steel and billet and bloom (semi-finished products) and for the operation management of the rolling plants for these materials.

The testing and analysis equipment has a capacity of meeting the requirement for 1.5^{mi.t} of annual crude steel production in stage I and shall be installed in the raw material testing and analysis center, the analysis room in front of the converter and the mechanical testing center. When the crude steel production shall increase to 2.0^{mi.t/y} in stage II, these equipment will be extended in only quantity but the facility itself shall remain the same.

13-21-2 Preconditions**(1) The plan's scope**

As for the testing and analysis equipment, the plan's scope is described as below.

- 1) Testing and analysis equipment for raw materials
 - a) Equipment needed for the acceptance inspection of materials to be imported or purchased.

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- b) Testing and analysis equipment needed for the process control of raw material preparation.
 - c) Testing equipment needed for the acceptance inspection of coals and the operation management of coke ovens.
 - d) Testing and analysis equipment needed for the operation management of blast furnace.
 - e) Analysis equipment needed for the operation management of rolling plant (hot mill plant, billet mill plant, etc.) and others.
 - f) Inspection equipment needed for by-products
- 2) Analysis equipment in front of the converter
 - a) Equipment used for analysing quickly the machinery which is needed for the operation control of converter and C.C
 - 3) Mechanical testing equipment
 - a) Inspection equipment used for the delivery inspection of such semi-finished products as hot rolled steel, slab, billet and bloom.
 - b) Testing and inspection equipment used for the operation management of hot mill plant and C.C plant.
 - 4) Buildings
 - a) Buildings of the raw material testing and analysis center include equipment, foundations, water supply and drainage facility, and air-conditioning facility.
 - b) Analysis room in front of the converter includes equipment, foundation, water supply and drainage facility, and air-conditioning facility.
 - c) Mechanical testing center include equipment foundation, water supply and drainage facility, and air-conditioning facility.
 - 5) Auxiliary equipment
 - a) Electrical facility includes all the electrical equipment installed in each center mentioned above, such as transformer, distribution board, wiring for power supply, lights and so on.
 - b) Gas supply equipment
Gas supply equipment is used for the testing and analysis equipment in each center, as mentioned above.
 - c) Water supply and drainage facility
This facility is used for each center mentioned above.
 - d) Pneumatic tube
The pneumatic tube shall be installed inside the B.O.F plant and the C.C plant, and between the two plants and the analysis room in front of the converter. The

pneumatic tube shall be installed between the blast furnace plant and the raw material testing and analysis center.

(2) Equipment layout and capacity

The testing and analysis equipment is so designed as to suit for the production level which is planned in stage I. The equipment is laid out to permit future expansions without suspending the present testing and analysis operations.

(3) Installation location in each center

- a) Raw material testing and analysis center shall be constructed near the blast furnace.
- b) The analysis room in front of the converter shall be installed inside the B.O.F plant (beside the operation room and at the operation floor level of the converter front).
- c) Mechanical testing center
This center shall be constructed inside the site of the hot mill plant.

(4) Equipment selection standard

The following items are considered as necessary for selecting testing and analysis equipment.

1) Automation of equipment

Automated machinery and equipment will be introduced as much as possible so that even inexperienced personal can perform testing or sample preparation without individual differences.

2) Stand-by equipment

If the troubles of equipment causes a testing operation to stop entirely, the equipment may need a stand-by equipment. However, equipment may not have a stand-by if another equipment can perform as a substitute.

3) Sample transportation

a) Testing and analysis center for raw materials.

The pneumatic tube equipment shall be used to transport samples to be analyzed from the blast furnace plant to the testing and analysis center for raw materials. Other types of samples shall be transported by truck.

b) Converter analysis center

The pneumatic tube shall be used for the transportation necessary for the center.

c) Mechanical testing center

Truck shall be used for the transportation purposes.

4) Operating conditions

In general, the testing and analysis operations shall be carried out with 3-shift system.

13-21-3 Equipment specifications

	Equipment classification	Outline	
		Stage I	Stage II (Newly installed equipment)
(1) Raw material testing and analysis center	1. Building (1) Main building (2) Auxiliary building	18 m x 58 m = 1,044 m ² 8 m x 15 m = 120 m ² (Locker room, bath, room) 5 m x 8 m = 40 m ² (Oil storehouse)	18 m x 11 m = 198 m ²
	2. Testing and analysis equipment (1) Sample preparing equipment	Jaw crusher (4) Top grinder (5) Vibration mill (3) Others (1)	Jaw crusher (1) Top grinder (3) Vibration mill (1) Others (1)
	(2) Testing equipment	Tumbler tester (1) Drying oven (2) Reducibility testing equipment (1) Others (1)	Tumbler tester Drying oven (1) Reducibility testing equipment (1) Others (1)
	(3) Analysis equipment	Fluorescent X-ray spectrometer (1) Gas chromatograph (1) Others	Gas chromatograph (1) Other (1)
	3. Auxiliary equipment	Electrical equipment (1) Water supply and drainage equipment (1) Pneumatic carrier (1 set) (From No. 1 blast furnace to testing and analysis center) Others (1 set)	Pneumatic carrier (1) (From No. 2 blast furnace to testing and analysis center) Others (1 set)

		Outline	
		Stage I	Stage II (Newly installed equipment)
(2) Analysis center in front of the converter	1. Building	8 m x 25 m = 200 m ² In front of the converter, the building shall be built next to the operations room, keeping the operational floor level.	(No extension is planned.)
	2. Analysis equipment	High-speed cutting and grinding machine (1) Manual cutting machine (1) Vibration mill (1) Others (1)	Manual cutting machine (1) Vibration mill (1)
	(2) Analysis equipment	Vacuum-type emission spectrometers (2) Fluorescent X-ray spectrometer (1) Carbon and sulfur analyzer (1) Others (1)	(Installation not planned.)
	3. Auxiliary equipment	Electrical equipment (1) Water supply and drainage equipment (1) Pneumatic carrier (1 set) (From No. 1 furnace to testing and analysis center) Others	Pneumatic carrier (1) (From No. 2 furnace to testing and analysis center) Others (1)

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	Equipment classification	Outline	
		Stage I	Stage II (if provided additionally)
(3) Mechanical testing center	1. Building (1) Main building (2) Auxiliary building	18 m x 52 m = 936 m ² 8 m x 15 m = 120 m ² (Locker room, bath, room) 5 m x 8 m = 40 m ² (Oil store house)	18 m x 20 m = 360 m ²
	2. Testing equipment (1) Sample preparing equipment	Cut-off machine (1) Band saw (1) Vertical milling machine (1) Precision surface grinder (1) Others (1)	Cut-off machine (1) Others (1)
	(2) Testing equipment	Universal testing machine (1) Tensile strength testing machine (1) Metallographical microscope (1) Others (1)	Tensile strength testing machine (1) Metallographical microscope (1) Others (1)
	3. Auxiliary equipment	D.P.E apparatus (1) Electrical equipment (1) Water supply and drainage equipment (1) Others (1)	Same as left

13-21-4 Layout

Fig. 13-21-1 shows raw material testing and analysis center, and Fig. 13-21-2 shows mechanical testing center.

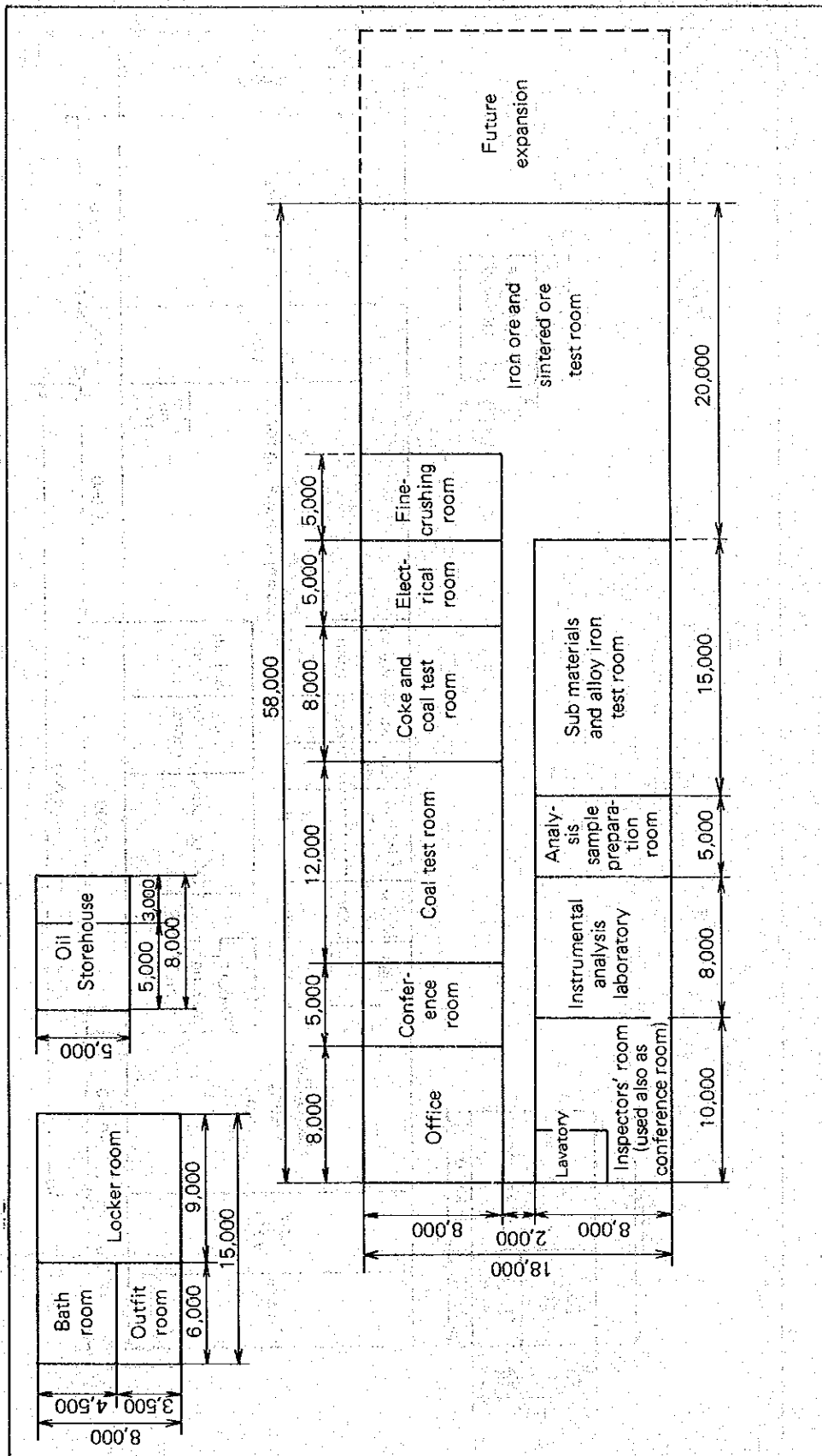


Fig. 13-21-1 Raw material testing & analysis center

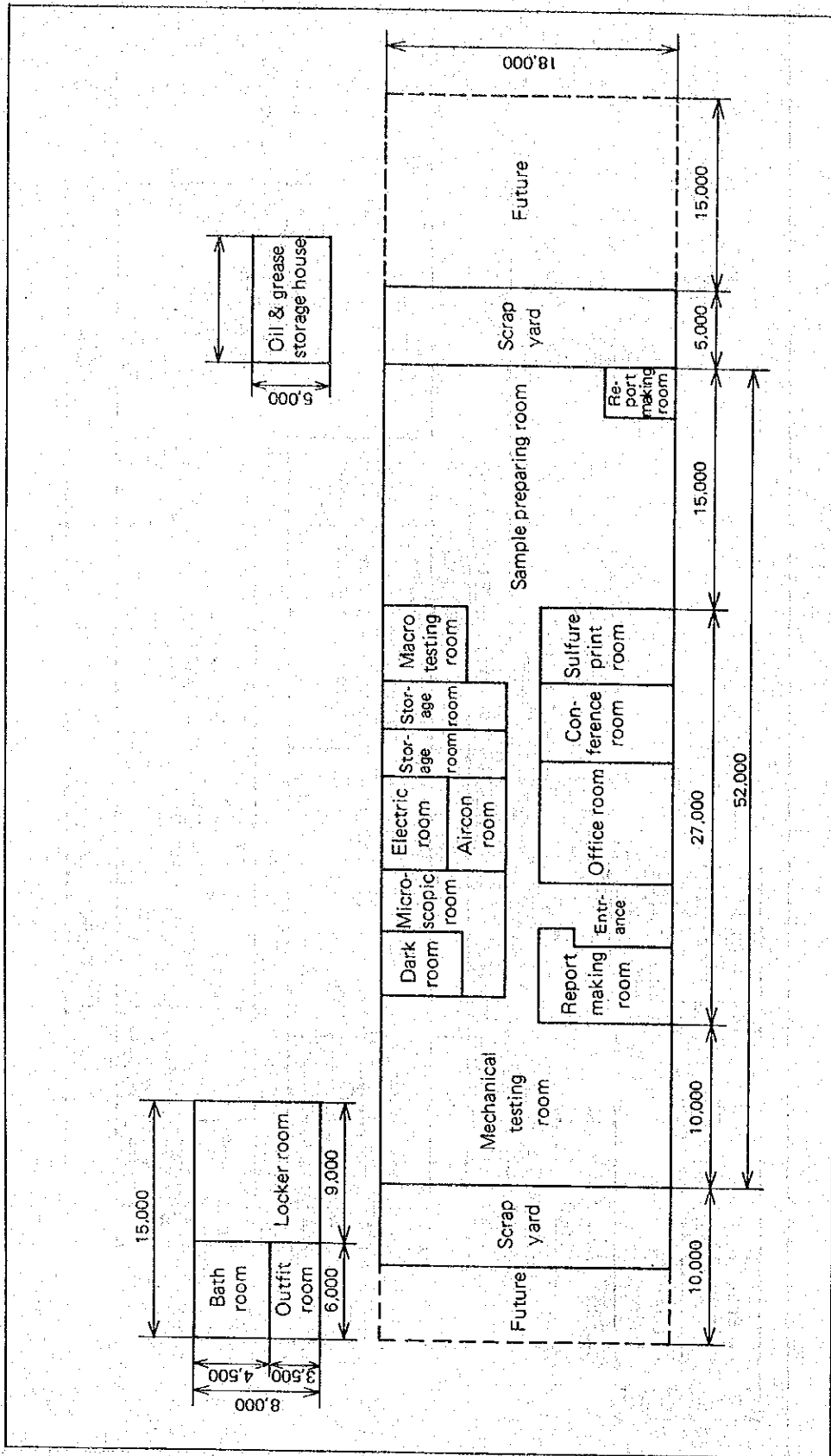


Fig. 13-21-2 Mechanical testing center

13-21-5 Sampling point of analysis and testing

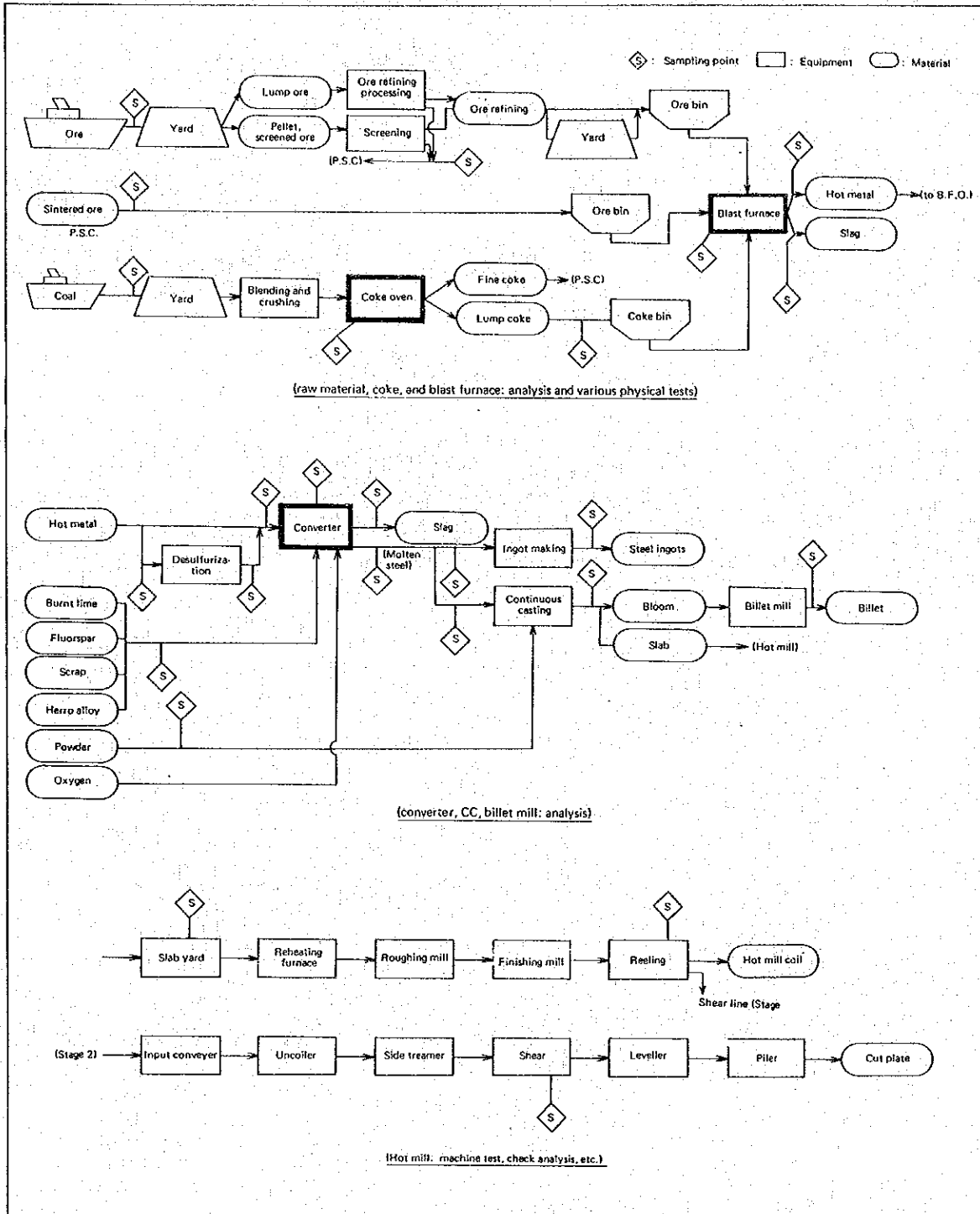


Fig. 13-21-3 Sampling points

CHAPTER 13-APPENDIX



COLD STRIP 13-APPENDIX
MILL PLANT

Appendix: Cold rolling and surface treatment equipment

1. Inspection purpose

Regarding the equipment for stage I and II cold rolling, the projects are conducted with the supplied equipment (including the expansion plan) and the present capacity. Hot coil supplied from a new steel mill is used for the process. Regarding the equipment for the surface treatment process, the supplied equipment will not be sufficient for stage I and stage II.

Since the surface treatment process is the final production process, the installation location of the surface treatment equipment shall be as close to the buyer as possible. The equipment is compact and the installation location can be easily selected. Therefore, the equipment for the cold rolling and surface treatment process for stage I and II are not described in this report. The site required to the facility of stage III in the future will be investigated because the cold rolling and surface treatment mill may be constructed on this steel mill site.

2. The equipment capacity of the cold rolling mill, type of the processed products and quantities can not be determined at this stage; however, they are assumed as follows:

- (1) Cold rolling capacity: 1.3^{mil.t/y}
- (2) Types and quantity of the products:

Tin plate (produced in 1 line)	: 12,000 ^{t/month}
G.I. sheet (produced in 1 line)	: 20,000 ^{t/month}
Cold rolled steel sheet	: 76,000 ^{t/month}

(3) Production flow in the cold rolling mill

The treatment process from pickling the hot rolled coil with acid solution through cutting process after ET for tin plate material and CGL for GI material are assumed. Generally, cold rolled steel sheet is shipped as coils or cut sheets.

3. Necessary equipment

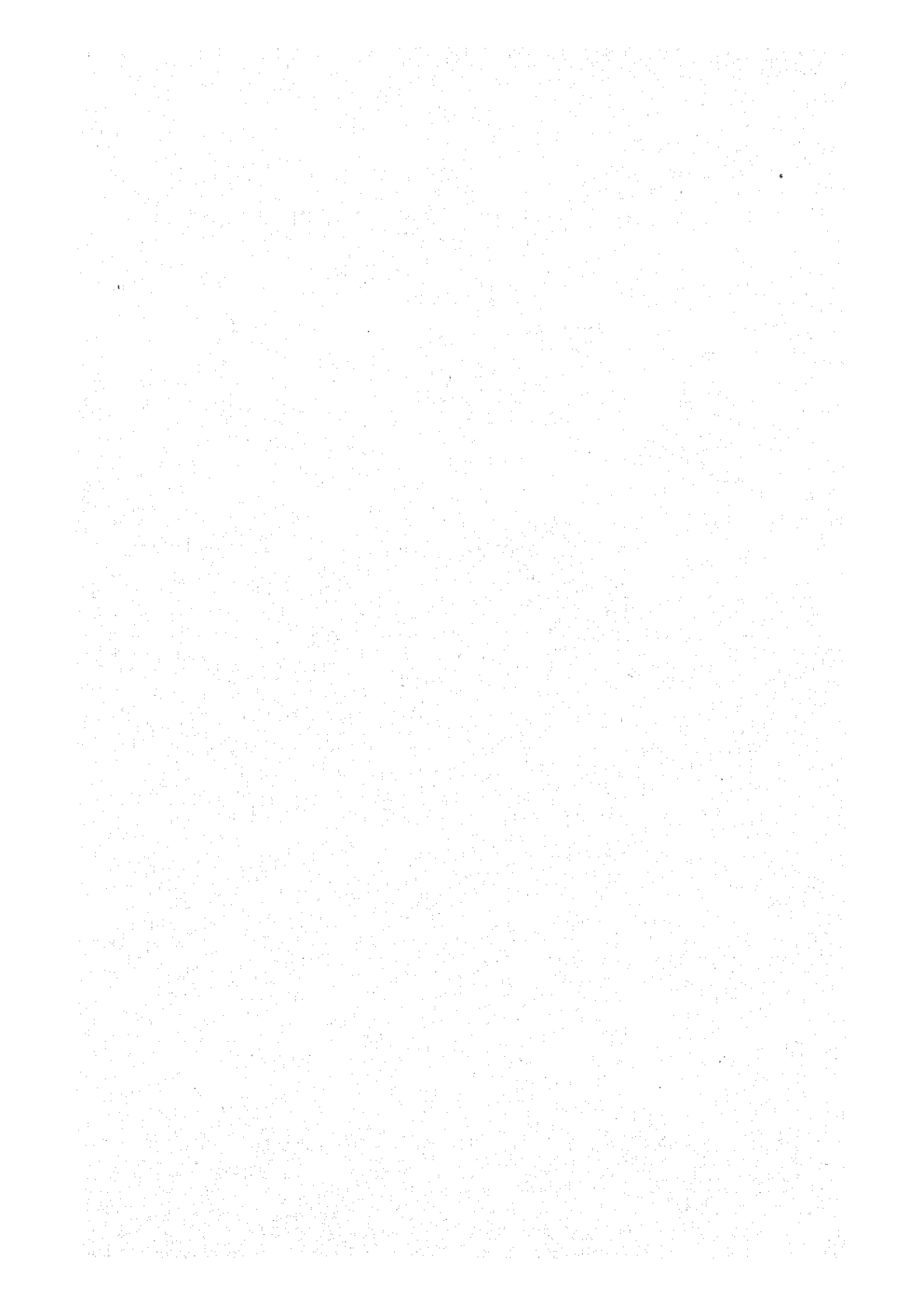
The average gauge is specified as approximately 0.23^{mm} for tin plate, 0.6^{mm} for G.I. sheet and 1.0^{mm} for cold rolled steel sheet. Table A shows the specifications of the necessary equipment determined by the production capacity (tons/hr) and its required time of each equipment.

4. Layout of the cold rolling mill

Figure A shows an example of necessary equipment layout when the site on the south side of the stage I hot rolling mill is assumed to be used for the cold rolling mill. The cold rolling mill including the supplemental equipment can be constructed on the site of 300^m × 1,000^m.

Table A. 1.3 mil. t/y Cold mill plan with ETL & CGL

Product	Production t/month	Pickler	TCM	ECL	BAF	TPM	CPL	SH	CGL	ETL
Tin Plate	12,000 100 t/hr 120 hr/month	12,000 80 t/hr 150 hr	12,000 50 t/hr 240 hr	12,000 2 t/hr F'ces	12,000 50 t/hr 240 hr	12,000 40 t/hr 300 hr	12,000	-	-	12,000 t
GI	20,000	20,000 100 t/hr 200 hr/month	20,000 80 t/hr 250 hr	-	-	-	-	-	20,000 t	
CR	76,000	76,000 150 t/hr 507 hr/month	76,000 150 t/hr 507 hr	40,000 100 t/hr 400 hr	76,000 2 t/hr F'ces	76,000 100 t/hr 1,250 hr	50,000 40 t/hr 1,300 hr	26,000 20 t/hr		
Total	108,000 t (1,300,000 t/y)	108,000 t 827 hr/month	108,000 t 907 hr	52,000 t 640 hr	88,000 t	88,000 t 1,000 hr	62,000 t 1,560 hr	26,000 t 1,300 hr	20,000 t	12,000 t
Equipment		2 lines	2 x 5 std. mill	1	Single stack 63 F'ces & 190 stacks	1 x single std. 1 x 2 std.	2 x CPL 1 x SH 1 x combination		1 x 150 MPM	1 x 300 MPM
Yard length		300 m	30 m	80 m	15 m x 40 spans	15 m	CPL SH Comb.	50 m 80 m 80 m	500 m	200 m



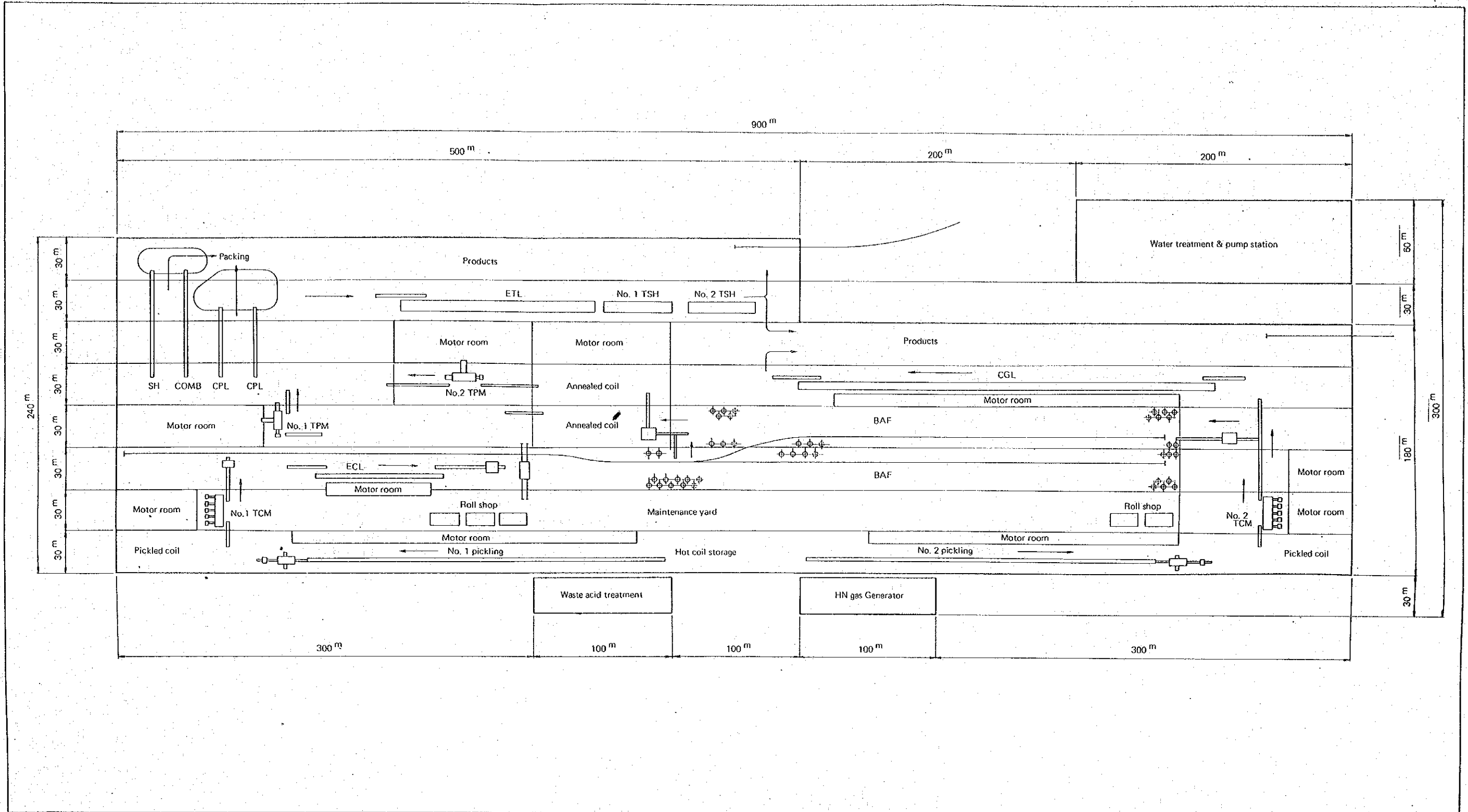
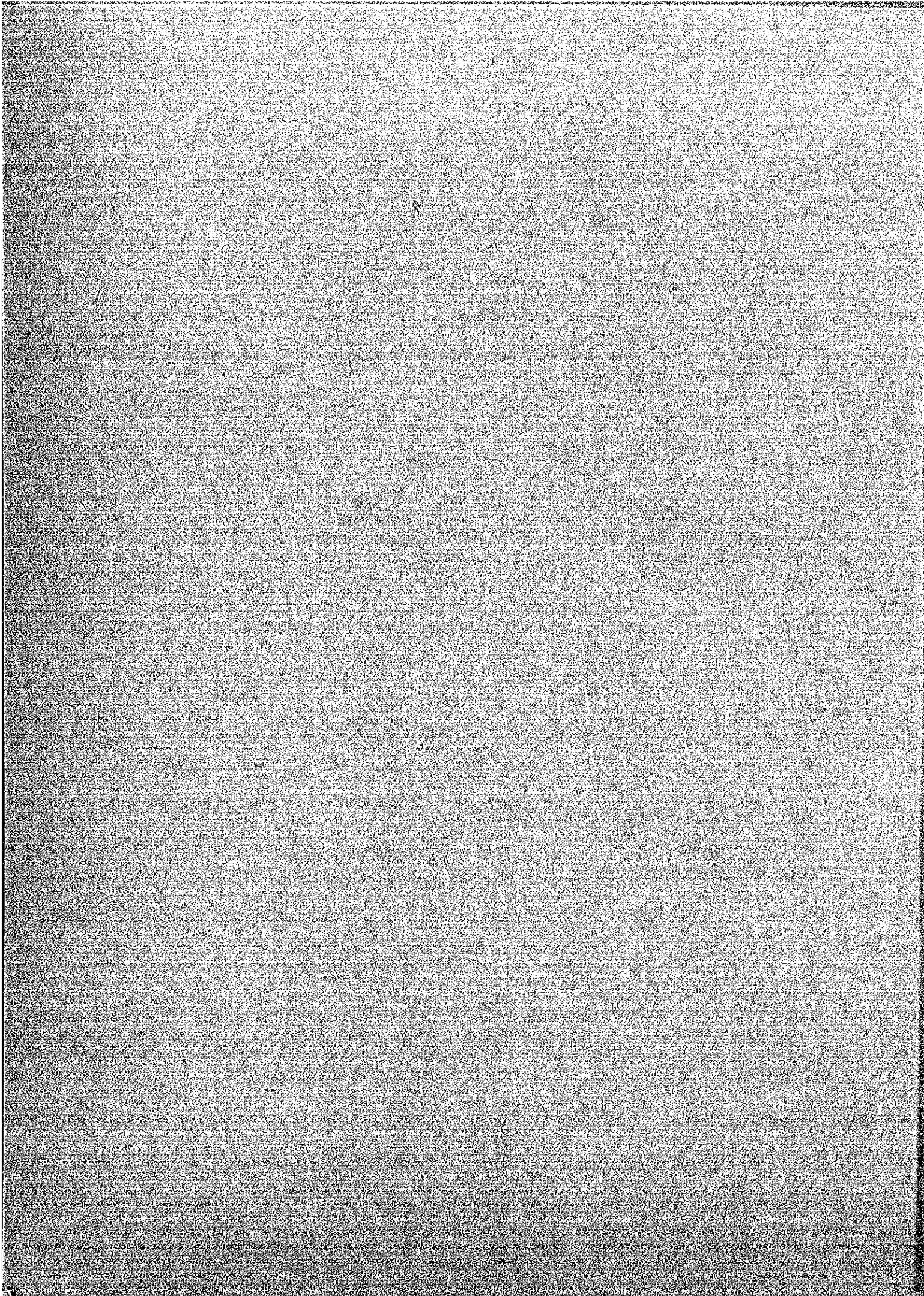


Fig. A. 1,300,000^{t/y} Cold mill layout plan

CHAPTER 14

COST CALCULATION DETAIL



CHAPTER 14 COST CALCULATION DETAIL

This chapter involves EDP output of full cost calculation basis.

14-1 Full cost basis EDP output

Table 14-1-1 Cost summerized sheet (General)

Table 14-1-2 Cost summerized sheet (Products division)

Table 14-1-3 Cost summerized sheet (Auxiliary division)

Table 14-1-4 Cost sheet (by cost center)

14-2 Other calculation detailed materials

Table 14-2-1 Raw materials cost detail

Table 14-2-2 Refractory cost detail

[Correct] Please correct "Portable water" to "Potable water" in this EDP cost sheet

CHAPTER 14

14-1 Full cost basis EDP output

Table 14-1-1

 ** THE PHILIPPINES INTEGRATED STEEL MILL PROJECT (FINAL-F/S) **
 ** COST SUMMARIZED SHEET (GENERAL) **
 ** JUL-04-1979 **

 ** PAGE 0027 **

COST ELEMENT (UNIT) CODE	REQUIREMENT 1000QUANT	UNIT PRICE US.D/QUANT	A M O U N T 1000US.D
IRON ORE (M.T) 1001	2,022	27.498	55,600
LIME STONE (M.T) 1002	285	7.211	2,055
DOLomite (M.T) 1003	69	8.546	582
FERRO MANGANESE (M.T) 1004	26	43.154	1,122
SILICA (M.T) 1005	455	8.400	3,827
IMPORT COAL (M.T) 1006	1,186	77.847	92,327
STL SCRAP PURCH (M.T) 1021	132	192.237	25,377
IRON SAND (M.T) 1031	3,844	11.181	42,981
*		46.721	605
SCALE-RETURN (M.T) 1101	19	23.632	449
BF DUST-RETURN (M.T) 1102	30	9.135	274
STL SCRAP-RET. (M.T) 1103	118	192.237	22,684
IRN SCRAP RET. (M.T) 1104	4	173.000	692
SINTER(FINES) (M.T) 1105	119	23.622	2,811
COKE BREEZE (M.T) 1106	291	51.000	14,841
*		92.649	26,961
FERROALLOYS (KG) 1201	10,700	.572	6,121
ALUMINUM (KG) 1202	2,200	2.521	5,546
CALCIUM CARBIDE (KG) 1203	2,000	1.06	2,121
FLOURSPAR (KG) 1204	5,000	.649	3,246
*	19,900		12,917
COG (NM3) 1901	379,300	.059	22,303
TAR & PITCH OIL (M.T) 1902	42	71.000	2,982
LIGHT OIL (M.T) 1903	11	106.000	1,166
BFG (NM3) 1904	2,764,500	.009	25,986
LDG (NM3) 1905	109,800	.009	989
STEEL SCRAP (M.T) 1906	118	192.237	22,684
IRN SCRAP (M.T) 1907	4	173.000	692
MILL SCALE (M.T) 1908	19	23.579	448
BF DUST (M.T) 1909	30	9.133	274
SINTER(FINES) (M.T) 1910	119	23.622	2,811
COKE BREEZE (M.T) 1911	291	51.000	14,841
LIME ST.(FINES) (M.T) 1912	21	50.603	1,063
BURNT LIME(F.) (M.T) 1913	2	6.476	13
*	3,254,097	6.027	19,715
COG (NM3) 2001	379,300	.059	22,303
BFG (NM3) 2002	2,764,500	.009	25,987
LDG (NM3) 2003	109,800	.023	2,521
HEAVY OIL (KG) 2004	65,880	.135	8,893
LPG (KG) 2005	1,750	.285	498
LIGHT OIL (KG) 2006	4,721	.106	500
*			60,761
ROLL (KG) 2012	1,325	1.966	2,605
REFRACTORY (KG) 2013	35,905	.725	25,925
OTHER VAR. SUPPLIES 2014			36,569
ELECTRIC-PURCH.(KWH) 2020	43,450	.018	782
PSC SINTERING COST 2040	1,486	16.000	23,776
PSC SEA-BERTH LENTAL 2050	2,095	1.150	2,409
OTHER VARIABLE EXP. 2060			1,504
*			28,471
MISCELLANEOUS INCOME 2090	51,714	.018	931
*			931
MAINT. REPAIR SUPPL. 3001			23,540
OTHER FIXED SUPPLIES 3002			2,129
*			25,669
LABOR FEE 3010			7,176
*			7,176
PROV. FOR BF RELINING 3020			6,490
DEPRECIATION 3030			76,640
AMORTIZATION 3040			4,800
REAL PROPERTY TAX 3050			14,630
OTHER FIXED EXPENSES 3060			17,782
*			120,342
MATERIAL COST TOTAL **	3,230,062	.040	130,770
VARIABLE COST TOTAL **			124,870
FIXED COST TOTAL **			153,187
GRAND COST TOTAL ***			408,827

Table 14-1-2

THE PHILIPPINES INTEGRATED STEEL MILL PROJECT (FINAL-F/S)
 COST SUMMARIZED SHEET (PRODUCTS DIVISION)
 JUL-64-1979
 PAGE 0025

COST ELEMENT (UNIT) CODE	REQUIREMENT 1000QUANT	UNIT PRICE US./QUANT	A M O U N T 1000US.D
IRON ORE (M.T) 1001	2,922	27,498	55,600
LIME STONE (M.T) 1002	285	7,211	2,055
DOLomite (M.T) 1003	69	4,156	589
FERRO MANGANESE (M.T) 1004	56	8,400	1,358
SILICA (M.T) 1005	45	77,847	92,327
IMPORT COAL (M.T) 1006	1,186	192,237	26,721
STL SCRAP PURCH (M.T) 1021	139	11,181	805
IRON SAND (M.T) 1031	72	46,721	179,597
SCALE-RETURN (M.T) 1101	19	23,632	449
BF DUST-RETURN (M.T) 1102	30	9,133	274
STL SCRAP-RET. (M.T) 1104	118	192,237	22,684
IRON SCRAP (M.T) 1104	118	173,000	692
SINTER(FINES) (M.T) 1105	119	23,622	2,811
COKE BREEZE (M.T) 1106	7	31,000	51
#	291	92,849	26,961
FERROALLOYS (KG) 1201	10,700	.572	6,121
ALUMINUM (KG) 1202	2,200	2,376	5,227
CALCIUM CARBIDE (KG) 1203	2,000	.521	1,041
FLOURSPAR (KG) 1204	5,900	.169	998
#	19,900		12,987
COG (NM3) 1901	379,300	.059	22,303
TAR & PITCH OIL (M.T) 1902	42	71,000	2,982
LIGHT OIL (M.T) 1903	1	106,000	1,166
BFG (NM3) 1904	2,764,500	.009	23,986
LDG (NM3) 1905	109,800	.023	2,665
STEEL SCRAP (M.T) 1906	118	192,246	22,684
IRON SCRAP (M.T) 1907	4	173,000	692
MILL SCALE (M.T) 1908	19	23,579	448
BF DUST (M.T) 1909	19	9,133	274
SINTER(FINES) (M.T) 1910	119	23,622	2,811
COKE BREEZE (M.T) 1911	131	50,665	6,630
LIME ST.(FINES) (M.T) 1912	21	6,476	836
BURNT LIME(F.) (M.T) 1913	2	6,500	13
#	3,254,097	.027	88,705
COG (NM3) 2001	191,800	.059	11,267
BFG (NM3) 2002	1,791,800	.009	16,843
LDG (NM3) 2003			
HEAVY OIL (KG) 2004	62,510	.135	8,438
LPG (KG) 2005	1,750	.285	498
LIGHT OIL (KG) 2006			
#			37,046
ROF (KG) 2012	1,325	1,966	2,605
REFACTORY (KG) 2013	35,905	.725	26,042
OTHER VAR. SUPPLIES 2014			6,909
#			35,556
ELECTRIC PURCH.(KWH) 2020			
PSC SINTERING COST 2040	1,486	16,000	23,776
PSC SEA-BERTH LENTAL 2050			
OTHER VARIABLE EXP. 2060			937
#			24,713
MISCELLANEOUS INCOME 2090			
#			
MAINT. REPAIR SUPPL 3001			17,200
OTHER FIXED SUPPLIES 3002			1,965
#			19,165
LABOR FEE 3010			2,693
#			2,693
PROV. FOR BF RELINING 3020			6,490
DEPRECIATION 3030			50,555
AMORTIZATION 3040			
REAL PROPERTY TAX 3050			
OTHER FIXED EXPENSES 3060			1,548
#			58,593
OXYGEN(N2,ARG.) (NM3) 4001	157,080	.074	11,654
ELECTRICITY (KWH) 4002	293,624	.066	19,489
BF BLOWER (NM3) 4003	1,951,000	.004	8,086
STEAM (M.T) 4004	117	8,769	1,026
SEA-WATER (M3) 4005	16,900	.023	384
INDUSTRIAL WATER (M3) 4006	15,940	.111	1,771
PORTABLE WATER (M3) 4007	772	.228	176
#			42,596
GAS OIL DISTRIBUTION 4010	648	3,611	2,340
MATERIAL HANDL. (M.T) 4020	4,081	3,709	15,136
IRON-ORE SIZING(M.T) 4030	930	1,682	1,564
PRODUCT HANDL (M.T) 4040	1,202	1,561	1,876
TRANSPORTATION 4050	1,000	3,309	3,309
TEST AND INSPECTION 4060			
#			24,225
MAINTENANCE SHOP 5000	642	23,470	15,060
PLANT ADMINISTRATION 5010	635	26,534	16,849
#			31,917
MATERIAL COST TOTAL ##	3,230,062	.040	130,770
VARIABLE COST TOTAL ##			164,136
FIXED COST TOTAL ##			112,368
GRAND COST TOTAL ###			407,274

CHAPTER 14

Table 14-1-3

THE PHILIPPINES INTEGRATED STEEL MILL PROJECT (FINAL-F/S)
 COST SUMMARIZED SHEET (AUXILIARY DIVISION)
 JUL-04-1979
 PAGE 0026

COST ELEMENT (UNIT) CODE	REQUIREMENT 1000QUANT	UNIT PRICE US.D/GUANT	AMOUNT 1000US.D
IRON ORE (M.T) 1001			
LIME STONE (M.T) 1002			
DOLDRITE (M.T) 1003			
FERRIC MANGANESE (M.T) 1004			
SILICA (M.T) 1005			
IMPORT COAL (M.T) 1006			
STL SCRAP-PURCH (M.T) 1021			
IRON SAND (M.T) 1031			
SCALE-RETURN (M.T) 1101			
BF DUST-RETURN (M.T) 1102			
STL SCRAP-RET. (M.T) 1103			
IRN SCRAP RET. (M.T) 1104			
SINTER(FINES) (M.T) 1105			
COKE BREEZE (M.T) 1106			
FERROALLOYS (KG) 1201			
ALUMINUM (KG) 1202			
CALCIUM CARBIDE (KG) 1203			
FLOURSPAR (KG) 1204			
COG (NH3) 1901			
TAR & PITCH OIL (M.T) 1902			
LIGHT OIL (M.T) 1903			
BFG (NH3) 1904			
LDG (NH3) 1905			
STEEL SCRAP (M.T) 1906			
IRN SCRAP (M.T) 1907			
MILL SCALE (M.T) 1908			
BF DUST (M.T) 1909			
SINTER(FINES) (M.T) 1910			
COKE BREEZE (M.T) 1911			
LIME ST.(FINES) (M.T) 1912			
BURNT LIME(F.) (M.T) 1913			
COG (NH3) 2001	187,700	.059	11,036
BFG (NH3) 2002	972,700	.009	9,144
LDG (NH3) 2003	109,800	.023	2,500
HEAVY OIL (KG) 2004	3,370	.135	455
LPG (KG) 2005			
LIGHT OIL (KG) 2006	4,721	.106	500
ROLL (KG) 2012			23,715
REFRACTORY (KG) 2013			
OTHER VAR. SUPPLIES 2014			1,013
ELECTRIC-PURCH.(KWH) 2020	43,450	.018	782
PSC SINTERING COST 2040			
PSC SEA-BERTH LENTAL 2050	2,095	1.150	2,409
OTHER VARIABLE EXP. 2060			567
MISCELLANEOUS INCOME 2090	51,714-	.018	931-
MAINT. REPAIR SUPPL. 3001			6,340
OTHER FIXED SUPPLIES 3002			164
LABOR FEE 3010			6,504
PROV. FOR BF RELINING 3020			4,483
DEPRECIATION 3030			4,483
AMORTIZATION 3040			26,085
REAL PROPERTY TAX 3050			4,800
OTHER FIXED EXPENSES 3060			14,630
OXYGEN(N2 ARG.) (NH3) 4001	9	.111	1
ELECTRICITY (KWH) 4002	187,050	.066	12,423
BF BLOWER (M.T) 4003			
STEAM (M.T) 4004	41	8.780	360
SEA-WATER (M3) 4005	165,030	.023	3,771
INDUSTRIAL WATER (M3) 4006	1,068	.111	119
PORTABLE WATER (M3) 4007	951	.227	216
GAS-OIL DISTRIBUTION 4010	352	3.608	1,270
MATERIAL HANDL.(M.T) 4020			
IRON-ORE SIZING (M.T) 4030			
PRODUCT HANDL. (M.T) 4040			
TRANSPORTATION 4050			
TEST AND INSPECTION 4060			
MAINTENANCE SHOP 5000	358	23.466	8,400
PLANT ADMINISTRATION 5010	365	26.537	9,686
MATERIAL COST TOTAL **			18,087
VARIABLE COST TOTAL **			45,695
FIXED CUST TOTAL **			90,823
GRAND COST TOTAL ***			136,518

Table 14-1-4

***** THE PHILIPPINES INTEGRATED STEEL MILL PROJECT (FINAL-F/S) COST SHEET *****						
① ** (CODE) COST CENTER		** (CODE) P R O D U C T	PRODUCTION	1,367	UNIT : 1000T/Y	DATE JUL-04-1979
(XAO) SINTERING PLANT		(P0) SINTER (M.T)	(FOR PROCESS	1,367)		PAGE 0001
			(FOR SALE	0)		
COST ELEMENT (UNIT) CODE	REQUIREMENT 1000QUANT	UNIT PRICE US.D/QUANT	A M O U N T 1000US.D	UNIT CONSUMP QUANT/Y	UNIT COST US.D/T	
SINTER (M.T) P01						
COKE (M.T) P02						
BURNT-LIME (M.T) P03						
PIG IRON (M.T) P04						
LIQUID STEEL (M.T) P05						
SLAB (M.T) P06						
BLOOM (M.T) P07						
BLUET (M.T) P08						
HOT COIL (M.T) P09						
(COST CENTER)						
IRON ORE (M.T) 1001	1,035	23.862	24,697		18.067	
LIME STONE (M.T) 1002						
DOLomite (M.T) 1003	69	8.536	589	.050	.431	
FERRO MANGANESE (M.T) 1004	43	43.077	1,853	.010	.410	
SILICA (M.T) 1005	45	8.400	378	.033	.277	
IMPORT COAL (M.T) 1006						
ST. SCRAP-PURCH (M.T) 1021	72					
IRON SAND (M.T) 1031						
	1,234	11.181	805	.053	.589	
		21.904	27,029	.963	19.772	
SCALE-RETURN (M.T) 1101						
OF DUST-RETURN (M.T) 1102	19	23.433	449	.014	.326	
STL SCRAP-RET. (M.T) 1103	30		274	.022	.260	
IRON SCRAP RET. (M.T) 1104						
SINTER FINES* (M.T) 1105						
COKE BREEZE (M.T) 1106	119	23.622	2,811	.087	2.056	
	168	21.036	3,534	.123	2.585	
FERROALLOYS (KG) 1201						
ALUMINUM (KG) 1202						
CALCIUM CARBIDE (KG) 1203						
FLOURSPAR (KG) 1204						
COG (NM3) 1901						
TAR & PITCH OIL (M.T) 1902						
LIGHT OIL (M.T) 1903						
BFSG (NM3) 1904						
LOG (NM3) 1905						
STEEL SCRAP (M.T) 1906						
IRON SCRAP (M.T) 1907						
MILL SCALE (M.T) 1908						
OF DUST (M.T) 1909						
SINTER FINES (M.T) 1210						
COKE BREEZE (M.T) 1211	119-	23.622	2,811-	.087-	2.056-	
LIME ST. (FINES) (M.T) 1212						
BURNT LIME (F.) (M.T) 1213						
	119-	23.622	2,811-	.087-	2.056-	
COG (NM3) 2001						
BFSG (NM3) 2002						
LOG (NM3) 2003						
HEAVY OIL (KG) 2004						
LOG (KG) 2005						
LIGHT OIL (KG) 2006						
ROLL (KG) 2012						
REFRACTORY (KG) 2013						
OTHER VAR. SUPPLIES 2014						
ELECTRIC PURCH. (KWH) 2020						
PSC SINTERING COST 2060	1,486	16.000	23,776	1.087	17.393	
PSC SEA-BERTH LENTAL 2050			23,776		17.393	
OTHER VARIABLE EXP. 2060						
MISCELLANEDUS INCOME 2090						
MAINT. REPAIR SUPPL 3001						
OTHER FIXED SUPPLIES 3002						
LABOR FEE 3010						
PROV. FOR DE RELINING 3020						
DEPRECIATION 3030						
AMORTIZATION 3040						
REAL PROPERTY TAX 3050						
OTHER FIXED EXPENSES 3060						
OXYGEN (ARG.) (NM3) 4001						
ELECTRICITY (KWH) 4002						
BF BLOWER (M3) 4003						
STEAM (M3) 4004						
SEA-WATER (M3) 4005						
INDUSTRIAL WATER (M3) 4006						
PORTABLE WATER (M3) 4007						
GAS-OIL DISTRIBUTION 4010						
MATERIAL HANDL. (M.T) 4020	1,302	3.709	4,829	.952	3.533	
IRON-ORE HANDL. (M.T) 4030	418	1.662	703	.306	.514	
PRODUCT HANDL. (M.T) 4040						
TRANSPORTATION 4050						
TEST AND INSPECTION 4060	164					
			5,532	.120	4.047	
MAINTENANCE SHOP 5000						
PLANT ADMINISTRATION 5010						
MATERIAL COST TOTAL **	1,283	21.631	27,752	.939	20.301	
VARIABLE COST TOTAL **			29,308		21.440	
FIXED COST TOTAL **						
GRAND COST TOTAL ***			57,060		41.741	