LETTER OF SUBMITTAL

PUNJAB CONCAST STEELS LTD.
FOCAL POINT
LUDHIANA

Mr. Tikka Jagjit Singh
Industrial Co-ordinator
Centre for Industrial Liaison & Placement
Thapar Institute of Engg. & Technology
(Deemed University)
PATIALA.

Dear Sir,

I submit herewith this Report entitled "PROJECT REPORT ON WORK TERM II" of Punjab Concast Steels Limited, Ludhiana. This has been prepared by me for Work-Term II from July '91 to January '92.

This Report has been prepared and written by me and has not received any previous academic credit at this or any other Institution.

Thanking you,

Sincerely yours,

Ashwdal

(ASHISH JINDAL)

PROJECT
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OBJECT : TO DETERMINE THE WORK LOADS FOR VARIOUS JOBS TO BE GIVEN ON CONTRACT AND ALSO FIX THEIR RATES.

NEED OF THE PROJECT

The Company has over 100 jobs given on contract basis. The average billing of contractors is about 25 lacs per month. So far Company has no standardize method to determine the rate of various jobs given to contractors. Therefore they have in immense need to determine the work loads for various jobs so that optimum rates can be awarded to contractors.

METHODOLOGY

I have applied different methods to determine work loads for various jobs :

1. In Some cases I applied time study and determine the time required to complete the job. Then added various allowances to it to determine standard times.

2. In some cases I applied work sampling to determine time utilization and accordingly determine the number of persons required on the job.

The detail of working procedure is given alongwith each activity in next pages.

CONCLUSION

At the end of the project a complete summary of the rates calculated are given, most of them were implemented in the Industry.

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ACKNOWLEDGEMENT
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Firstly I would like to express my gratitude to Mr. Tikka Jagjit Singh for arranging my Six months Work-Term II at Punjab Concast Steels Limited, Ludhiana.

Then I am grateful to Mr. B.K.Gupta, General Manager (Corporate) for allowing me to work under his supervision at P.C.S.L. His advice and suggestions were very helpful and his guidance valuable in making me come to the right solutions.

Mr.A.C.Katiyar, Executive Director, and Mr. H.N.Singhal, Personnel Manager have been most co-operative and encouraging in the implementation of the projects and in overcoming obstacles which occured occasionally.

Finally I would like to thank the staff of PCSL, specially the Corporate Office for creating a friendly atmosphere and helping me in being integrated with the plant and its employees and making my training a success.

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INTRODUCTION

PUNJAB CONCAST STEELS LIMITED is a part of OWM Group. This group has engaged in manufacture of large variety of products.

The Company has manufactured ingots, bellets and rolled material. The company has about 1200 employees of its own and about 2000 employees of the contractor. Company has its offices in following cities :

1) Faridabad
2) Ghaziabad
3) Madras
4) Bombay
5) Delhi

Company's Head Office is in Ludhiana and is located within factory premises. Factory is running for 24 hours, in three Shifts plus General Shift.

HISTORICAL BACKGROUND

PUNJAB CONCAST STEELS LIMITED was incorporated in 1973 by OWM Group. The Company today has manufactured ingots, bellets, rolled material. For this purpose Company has three induction furnaces, three electric arc furnaces, one concast plant, VDA plant, oxygen plant and four rolling mills. Company has annual licenced capacity of 100000 tons of ingots and 85000 tons of rolled material. The company supplies its products to TELCO, Premier Auto, Eicher, PTL etc. Company's annual turn-over is above 100 Crore.

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UNLOADING:

ITEM	MAY	JUNE
LIME STONE	1604270	366590
B.P.SETS	154610	86440
FERRO ALLOYS	64635	133400
HOT TOPS	-	-
NUT COKE	-	22560
PET COKE	67405	14230
RAW DOLOMITE	14150	21060
	1905070	644280
	1905070/2363541	644280/998820
AVERAGE %age	= 80.6%	= 64.5%

AVERAGE OF TWO MONTHS = 72.5%

UNLOADING

S. NO.	ITEM DESCRIPTION	NO. OF WORKERS	WEIGHT (Kg.)	HANDLING METHOD	BASIC TIME WITH LOAD (Minutes)	POINTS FOR RELAXATION ALLOWANCE	%AGE RELAXATION FOR GIVEN POINT	PERSONAL NEED ALLOWANCE	TOTAL ALLOWANCE	STD TIME B.T. + ALLOWANCE (Minutes)
1.	LIME STONE	1	1000	By Shovel	21	56	27%	5%	32%	27
2.	FERRO ALLOYS	1	50	On Head	1.12	107	72%	5%	77%	2
3.	HOT TOPS	1	13	On Head	1.3	37	18%	5%	23%	1.6
4.	B.P.SETS	1	50	On Head	3.3	107	72%	5%	77%	5.8
5.	NUT COKE	1	50	On Head	1.12	107	72%	5%	77%	2
6.	PET COKE	1	50	"	1.12	107	72%	5%	77%	2
7.	RAW MATERIAL	1	50	"	1.12	107	72%	5%	77%	2

AVERAGE UNLOADING/MONTH

LIME STONE	985430 Kgs.
FERRO ALLOYS	99017 "
HOT TOPS	-
B.P.SETS	120525 "
NUT COKE	11280 "
PET COKE	40817 "
RAW MATERIAL	17609 "

UNLOADING TIME (One Worker/Month)

1.	LIME STONE	27/1000 x 985430	=	26606 Minutes
2.	FERRO ALLOYS	2/50 x 99017	=	3960 "
3.	B.P.SETS	5.8/50 x 120525	=	13980 "
4.	NUT COKE	2/50 x 11280	=	451 "
5.	PET COKE	2/50 x 40817	=	1632 "
6.	RAW DOLOMITE	2/50 x 17609	=	704 "
				47333 "

Weight unloaded in 47333 minutes = 1274678 Kg.
Total unloading/month = 1681165 Kg.

Worker unload 1274678 Kg Weight in = 47333 Minutes
" " 1681165 " " " = $\frac{47333 \times 1681165}{1274678}$
= ≈ 62427 Minutes.

Labour Rate = Rs. 3/hour
Labour Cost = 62427 x 3/60 = Rs.3121/-

Total unloading/month = 1680 Ton
unloading rate = Rs.5/-/Ton
Contract get = Rs.8400/-/Month.

In addition contractor has following expenses:

a) Income-tax 2% = Rs. 168/-
Let the contractor paid ESI and Provident Fund on Rs.4000/-
ESI 7.25% = Rs. 290/-
Provident Fund 20% = Rs.800/-
Total expenses: 3121 + 290 + 168 + 800 = Rs.4380/-.

Let the contractor want a profit 20% = Rs.876/-
Contractor should get = Rs.4380 + 876 = Rs.5256/-
Unloading/ month = 1680 Ton
Unloading Rate/Ton = Rs.3.10/Ton.

SHIFTING

ITEM	MAY	JUNE
LIME STONE	363000	305000
FERRO ALLOYS + HOT TOPS	330136	280917
B.P.SETS	439248	312812
OXYGEN	54780	54780
NUT COKE	51000	20650
PET COKE	41700	33500
RAW DOLOMITE	29900	28200
	1309764	1035859
TOTAL SHIFTING	18Ø5644	1479213
AVERAGE %AGE SHIFTING	72.5%	70%

AVERAGE OF TWO MONTHS = 71%

SHIFTING:

S.NO.	ITEM DESCRIPTION	NO.OF WORKERS	WEIGHT (KG)	HANDLING METHOD	BASIC TIME (Minutes) WITH LOAD	BASIC TIME (Minutes) WITHOUT LOAD	POINT FOR RELAXATION ALLOWANCE.	%AGE RELAXATION FOR GIVEN POINTS	PERSONS NEED ALLOWANCE	TOTAL ALLOWANCE	STD.TIME B.T + ALLOWANCE (Minutes)
1.	LIME STONE	1	1000	TROLLEY	80	2.5	56	27%	5%	32%	105.6
2.	FERRO ALLOYS	1	50	ON HEAD	3.6	-	107	72	5%	77%	6.3
3.	HOT TOPS	1	13	"	4	3	46	22%	5%	27%	8
4.	B.P.SETS	1	3500	MANUALLY	-	-	-	-	-	-	480
5.	NUT COKE	1	50	ON HEAD	4.5	3	75	40%	5%	45%	9.5
6.	PET COKE	1	50	"	4.0	3	73	39%	5%	44%	8.76
7.	RAW DOLOMITE	1	50	"	6	3.5	77	42%	5%	47%	12.32

AVERAGE SHIFTING/MONTH

LIME STONE	%%@	334000 Kg.
FERRO ALLOYS		290551 "
HOT TOPS		14975 "
B.P.SETS		376030 "
NUT COKE		35825 "
PET COKE		37600 "
RAW ~~MATERIAL~~/ DOLOMITE		29050 "

SHIFTING TIME (One Worker/Month)

1.	Lime Stone	105.6/1000 x 334000	=	35270 Minutes
2.	Ferro Alloys	6.3/50 x 290551	=	36609 "
3.	Hot Tops	8/13 x 14975	=	9215 "
4.	B.P.Sets	480/3500 x 376030	=	51570 "
5.	Nut Coke	9.5/50 x 35825	=	6806 "
6.	Pet Coke	8.76/50 x 37600	=	6587 "
7.	Raw Dolomite	12.32/50 x 29050	=	7158 "
				153215 "

Weight Shifted = 1118031 Kg/month

Total Shifting/month = 1642428 Kg.

Worker Shifts 1118031 Kg Weight in = 153215 minutes.

" " 1642428 " " " = 153215 x 1642428/1118031

= 225078 minutes.

Labour rate = Rs.3/-/hour

Labour cost = 225078 x 3 /60 = Rs.11254/-

In addition Contractor has following expenses on labour:

1 Munshi = Rs.750/-/Month (Assumed)

1 Driver = Rs.650/-/" "

Total labour cost = 11254 + 1400 = Rs.12654/-/Month.

Other expenses include:

a) Tractor:

Diesel	Rs. 800/-
Maintenance	Rs.1200/-
Depreciation	Rs.1700/-
Total:	Rs.3700/-/Month

Total Shifting per month = 1650 Ton

Shift rate = Rs.7/-/Ton.

Contractor get = 1650 x 7 = Rs.11550/-/Month

b) Income-tax 2% = Rs.231/-

Let the contractor paid ESI and Provident Fund on the basic wages of Rs.5000/-

ESI 7.25% = Rs.362/-

Provident Fund 20% = Rs.1000/-

Total expenses = 12654 + 3700 + 231 + 362 + 1000 = Rs.17947/-

Let the contractor want a profit 20% = Rs.3590/-

Contractor should get = Rs.21537/-

Shifting per month = 1650 ton.

Shifting rate/Ton = Rs.13/-/Ton.

SUMMARY

ACTIVITY	RATE/TON (Rs.)	CONTRACTOR'S EXPENSES/ MONTH (Rs.)	CONTRACTOR GETTING/ MONTH (Rs.)	PROFIT/ LOSS
SHIFTING	7/T	17947	11550	- 6397
UNLOADING	5/T	4380	8400	+ 4020
LIME BURN	60/T	5000	8580	+ 3580
				+ 1203

Product: : **LIME BURN**

Contractor : RAM KRISHAN GUPTA

Activity : Shifting Lime Stone, Fire Wood and Steam Coal to the Furnace, Loading Lime Burn on trolly, weighing and transfer to A, B, D Furnace.

Contract Rate: Rs. 60/-/MT

WORKING PROCEDURE:

1. Shifting Fire Wood and Steam Coal from the storage place, near the Furnace.
2. Contractor labour shifted the Fire Wood to the Furnace and our messner (PCSL) arrange them in the Furnace.
3. Then some steam coal is put on the fire wood.
4. It is followed by putting Lime Stone in the Furnace.
5. Steam coal is put in between the Lime Stone for proper burning of lime stone.
6. The Lime Stone is burnt in about 24 hours.
7. About 24 hours are needed for cooling of Lime Burn.
8. Then contractor labour picked the lime burn out of the Furnace.
9. It was loaded in the trolley and weighed.
10. After weighing the Lime Burn is supplied to A, B, D Furnace. The weighing slip was signed by S.M.S. Foreman and contractor kept it with him.
11. After 15 days the bill was made for total weight.

S.NO.	ACTIVITY	NO.OF WORK-ERS	WEIGHT (Kg.)	HANDLING METHOD	BASIC TIME (Seconds) WITH LOAD	BASIC TIME (Seconds) WITHOUT LOAD	POINTS FOR RELAX-ATION ALLOW-ANCE.	%AGE RELAX-ATION FOR GIVEN POINTS	PERSON-AL NEED ALLOW-ANCE.	TOTAL ALLO-WANCE	STD TIME + B.T.+ ALLOWANCE (Seconds)
1.	SHIFTING FIRE-WOOD near the Furnace(From storage place)	1	1000	Trolley	11550	300	65	33%	5%	38%	16239
2.	Shifting Steam coal near Furnace (from Storage)	1	5000	"	10880	300	101	65%	5%	70%	18796
3.	Shifting Firewood to the Furnace	1	1000	"	21600	-	66	34%	5%	39%	30024
4.	Shifting SteamCoal to the Furnace	1	50	On Head	75	26	84	48%	5%	53%	140
5.	Shifting Lime Stone to the Furnace.	1	60	"	94	31	85	49%	5%	54%	175
6.	Pick Out the Lime Burn out of the Furnace.	1	5000		-	-	-	-	-	-	36380
7.	Loading Lime Stone in the trolley.	1	5000	50Kg.Wt. on head at one time.	11194	-	104	69%	5%	74%	19477
8.	Supply Lime Burn to A,B,D Furnace.	1	5000		7835	-	(Included in B.T)		5%	5%	8226

Jamna Parsad (Mistry) told that the ratio of Lime Stone and Steam Coal used is :-

Lime Stone	:	Steam Coal
3		1

He also said that with the input of 15 tons Lime Stone, we get approximately 10 tons Lime Burn as output. For 15 tons Lime Stone we use approximately 1 ton Fire Wood.

Now we calculate standard time required to produce Lime Burn (about 10 tons) with one worker.

1. Shifting 1 ton Fire Wood near Furnace = 16239 secs.
2. Shifting 5 tons Steam Cool near Furnace = 18796 secs.
3. Shifting 1 ton Fire Wood to Furnace = 30024 secs.
4. Shifting 5 tons Steam Coal to Furnace = $\frac{140}{50} \times 500 = 14000$ secs.
5. Shifting 15 tons Lime Stone to Furnace = $\frac{175}{60} \times 1500 = 43750$ secs.
6. Pick out 10 tons Lime Burn out of Furnace = $\frac{36380}{5000} \times 10000 = 72760$ secs
7. Loading 10 tons Lime Burn in trolley = $\frac{19477}{5000} \times 10000 = 38954$ sec
8. Supply 10 tons Lime Burn to A.B.D. Furnace = $\frac{8226}{5000} \times 10000 = 16452$ sec

Total time 1 worker has required to prepare and shift 10 tons Lime Burn to Furnace = 250975 secs.

Average Lime Burn made/month = = 143 Tons

1 worker required time to shift 143 tons Lime Burn = $\frac{250975}{10} \times 143$

= 3588942 secs.

Labour Rate = Rs. 3/hour

Labour Cost = $\frac{3588942}{3600} \times 3$ = Rs. 2990/- P.M.

In addition contractor has following expenses :-

1 Munshi = Rs. 750/- P.M. (Assumed)

Total Labour Cost = 2990 + 750 = Rs. 3740/- P.M.

Contractor Rate = Rs. 60/- Ton

Contractor get = 143x60 = Rs. 8580/-

OTHER EXPENSES :-

Income Tax 2% = Rs. 171/-

Let the contractor paid E.S.I. and Provident Fund on basic wages of Rs. 4000/-

E.S.I. 7.25% = Rs. 290/-
Provident Fund 20% = Rs. 800/-

Total Expenses = 3740 + 171 + 290 + 800 = Rs. 5000/-

Let the contractor want a profit of 20% = Rs. 1000/-

Contractor should get = Rs. 6000/-

Lime Burn made/month = 143 Ton Rate/Ton should be = Rs. 42/- per Ton

A - ROLLING MILL

SUBJECT - TO Make a complete study of Labour on A - Rolling Mill.

ACTIVITIES The following are the major activities performed on A - Mill.

1. Material Rolling
2. Finished Product shearing and staking.

MATERIAL ROLLING:

The block diagram of the rolling process is given below :-

Total labour required = 27/12 hrs.

Mill works for 12 fours i.e. from 6.00 a.m. to 6.00 p.m.

VIII

ACTIWISE DIVISION OF LABOUR :

01. PUSHING THE MATERIAL INTO FURNACE :

Labour Required = 5

The activity involves following sub activities.

a) Bringing the ingots/billets near the inclined ramp and puttinh them on the ramp (2 persons)

b) Pushing the Ingots/Billets to the pusher. (1 Person)

c) Adjusting the piceces properly on the pusher. (1 person)

d) Operating on the switches to push the pieces into furnace (1 perso

02. FURNACE :

Two persons are required on the furnace.

FIREMAN = 1

KUNDIMAN = 1

Fireman has responsibility of the furnace and to see that whether material is properly heated up or not. Whereas Kundiman has to bring the piece out of furnace.

03. SHIFTING THE HOT PIECE TO ROUGH STAND

PERSON REQUIRED = 1

He shifts the hot piece to rough stand.

04. ROUGH STAND

PERSONS REQUIRED = 2

One person is required on either side of the rough stand. They passes the hot piece through different openings of rough stand.

05. SHIFTING TO STAND - 1 AFTER CUTTING THE EDGE

PERSONS REQUIRED = 2

They take the hot piece from the rough stand and shift it to the stand - 1 after cutting the edge on the cutter.

06. STAND 1 TO 7

AVERAGE NO. PERSONS REQUIRED = 10

There are total 7 stands numbering 1 to 7

For the size above 16 Ø we have used only 5 stands and for the size below 16 Ø we use all the 7 stands.

USING 5 STANDS (No. 1,2,3,6,7)

PERSONS REQUIRED = 8

DIVISION ON VARIOUS STANDS

	PERSONS
STAND 1	= 1 + 1 = 2

STAND	2	=	0 + 1 = 1
STAND	3	=	1 + 0 = 1
STAND	6	=	0 = 2 = 2
STAND	7	=	2 + 0 = 2

USING 7 STANDS

PERSONS REQUIRED = 12

PERSONS

STAND	1)		
STAND	2)	=	2
STAND	3	=	2
STAND	4	=	2
STAND	5	=	2
STAND	6	=	2
STAND	7	=	2

Therefore we take average 10 persons on stands.

07. COOLING BED

PERSONS REQUIRED = 5

These persons are involved in following activities.

a) Shifting the rolled material from conveyor to bed (2 persons)

b) Transfer the rolled material on the cooling bed, proper cooling and hammering (3 persons)

DETERMINATION OF CONTRACTOR's RATE ON ROLLING MATERIAL

In order to determine contracter rate we have made following assumptions :-

1) The Mill works for 150 hours/month

2) The average production per hour = 2.5 Ton.
   Production/month = 375 Ton.

3) Two sizes are rolled here :

   a) $4\frac{1}{2}$' x $5\frac{1}{2}$' Size
   b) $3\frac{1}{2}$' x $4\frac{1}{2}$' Size.

   Let 25% production is of $4\frac{1}{2}$' x $5\frac{1}{2}$' Size i.e. 93 Ton.

4) For $4\frac{1}{2}$' x $5\frac{1}{2}$' size the rate at rough stand. stand 1, and stand 2 is double.

Size :- 4½' x 5½'

Sr.No.	Activity Description	Persons required	Rate	Total Cost/ Month(38 Hrs.
01.	Pushing the material into furnace	5	Rs. 35/12 hrs	554
02.	Fireman	1	Rs.1800/month	1800
03.	Kundiman	1	Rs. 25/4 hrs.	237
04.	Shifting hot piece to rough stand	1	Rs. 50/4 hrs.	475
05.	Rough Stand	2	Rs. 50/4 hrs	950
06.	Shifting to stand 1	2	Rs. 44/4 hrs	836
07.	Stand 1	2	Rs. 50/4 hrs.	950
08.	Stand 2	1	Rs. 50/4 hrs.	475
09.	Stand 3 to 7	7	Rs. 26/4 hrs.	1729
10.	Cooling Bed	5	Rs. 25/4 hrs.	1187
			Rs.	9193

Size :- 3½' x 4½'

Sr. No.	Activity description	Perons required	Rate	Total Cost/ Month(112 Hrs.)
01.	Pushing the material into furnace	5	Rs. 35/12 hrs.	1633
02.	Kundiman	1	Rs. 25/4 hrs.	700
03.	Shifting hot piece to rough stand	1	Rs. 25/4 hrs.	700
04.	Rough Stand	2	Rs. 25/4 hrs	1400
05.	Shifting to stand 1	2	Rs. 22/4 hrs.	1232
06.	Stand 1 to 7	10	Rs. 26/4 hrs	7280
07.	Cooling bed	5	Rs. 25/4 hrs	3500
				16445

Labour Cost = 9193 + 16445 = Rs. 25,638/-

Let the contractor has to pay extra for 25 hours to the labour, when Mill is not working.

Extra Cost = Rs. 3670/-

Total Cost = 25638 + 3670 = Rs. 29,308/-

Contractor has also one Munshi for supervision = Rs. 800/-

Total Labour Cost = Rs. 30,108/-

Let the contractor paid ESI and Provident Fund on 50% of Labour Cost i.e. on Rs. 15,054/-

E.S.I. 7.25% = Rs. 1091/-

Provident Fund 20% = Rs. 3010/-

Total Expenses = 30108 + 1091 + 3010 = Rs. 34,210/-

Income Tax 2% = Rs. 1000 (Assumed)

Let the contractor wants a profit of R.s. 5000/- per month.

$\therefore$ Contractor should get = Rs. 40,210/-

Production/Month = 375 Ton.

Rate = 40,210/- / 375 Ton = Rs. 107/Ton

B & C - ROLLING MILL

INTRODUCTION:-

(1) POWER OF MAIN MOTOR = 1000 HP

(2) SIZE OF INGOTS (INPUT)

SIZE	WEIGHT (Kgs)
5½ x 6½'	220 Kg. (Half 110 Kgs)
4½ x 5½'	120 "
3½ x 4½'	90 "
100 RCS	75 "

(3) THERE ARE TOTAL SIX STANDS ON B and C MILL

(4) FLAT AND ROUND PIECES ARE THE OUTPUT.

ACTIVITIWISE DIVISION OF LABOUR

Total Labour required = 32/Shift (12 Hrs.)

1) PUSHING THE MATERIAL INTO FURNACE -

LABOUR REQUIRED = 5

The division of above laboure is as follows:

(A) Bringing the Ingot/Billets near the inclined ramp and putting them on the ramp (2 persons)

(B) Pushing the Ingots/Billets to the pusher.

(C) Adjusting the pieces properly on the pusher (1 person)

(D) Operating the switches to push the pieces into furnace (1 person)

2) FURNACE: -

Two persons are required on the furnace.

FIREMAN = 1

KUNDIMAN = 1

3) SHIFTING HOT PIECE TO STAND-I

PERSONS REQUIRED = 1

His job is to shift the hot piece to Stand-I.

(4) STANDS

There are total six stands.
Persons required on Stands = 19

STAND	PERSONS
I	1 + 1
II	2 + 2
III	2 + 2
IV	2 + 2
V	0 + 2
VI	3 + 0
	19

Generally the weight of ingot is about 110 - 120 Kg.
The above man-power is required for this weight.

(5) COOLING BED

PERSONS REQUIRED = 5

(A) Shifting the rolled material from conveyor to bed (3 persons)

(B) Colling the material (2 persons)

DETERMINATION OF CONTRACTORS' RATE ON ROLLING MATERIAL

The following assumptions are made -

1. The mill works for 300 hours/month (Past Data)
2. The average production per hour = 4 Ton

   Production/month = 1200 Ton.

S. No.	ACTIVITY DESCRIPTION	Persons required /shift (12 Hrs.)	Persons required/Day	RATE (Rs.)	(TOTAL Cost/ Month) 300Hrs.
1.	Pushing the material into furnace.	5	10	35/-/ 12 hrs.	4375
2.	Fireman	1	2	1800/-/ month	3600
3.	Kundiman	1	2	25/-/ 4 Hrs.	1875
4.	Shifting HOt Piece to Stand-I	1	2	25/-/ 4 Hrs.	1875
5.	STAND-I to III	19	38	25/-/ 4 Hrs.	35625
6.	Cooling Bed	5	10	25/-/ 4 Hrs.	9375
					56725

Let the Contractor has to pay extra for 40 hours to the labour, when mill is not working.

Extra Cost = Rs. 7080/- $\left(\frac{53125}{300} \times 40\right)$

Total Cost = Rs. 56725 + 7080 = Rs. 63805/-.

Contractor has also one Munshi/Shift for supervision = Rs. 800/-

Total labour cost = Rs. 63805 + 1600
= Rs. 65405/-

Let the contractor paid ESI and PPF on 50% of Labour cost i.e. Rs. 32700/-

ESI	7.25%	=	Rs. 2370/-
PPF	20%	=	Rs. 6540/-

Total expenses = Rs. 74315/-

Income-tax 2% = Rs. 1500/- (Assumed)

Let the contractor wants a profit of Rs. 5000/-/Month.

Contractor should get

= 74315 + 1500 + 5000
= Rs. 80815/-

Production/Month = 1200 Ton

Rate = 80815/1200

= Rs. 67/-/Ton

D - MILL

INTRODUCTION:

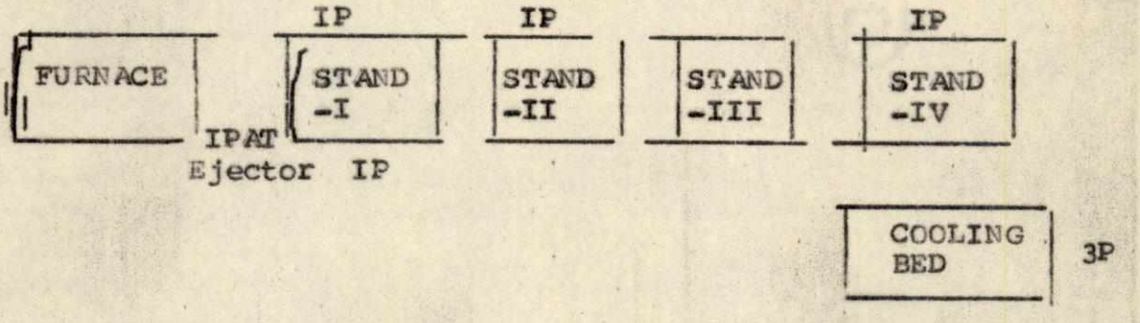
1. Power of Main Motor = 1000 HP
2. Weight of flywheel = 14 15 Ton.
3. Diameter of flywheel = 10 feet
4. Size of Ingots (Input)

Size:	Weight (Kgs.)
10" x 11½"	640 Kgs.
8" x 9"	420 "
5½" x 6½"	220 "

5. Capacity of Furnace = 7-8 Ton/Hr.
6. Average Production/Hr. = 6.3 Ton.

PRESENT WORKING METHOD:

BLOCK DIAGRAM:



During no. of observation, the following labour of contractor is present on the mill.

Person Present/Shift = 10

1. Ejector = 1
2. Fireman = 1
3. Stand-I = 1 + 1
4. Stand-II
5. Stand-III = 1 + 1
6. Stand-IV = 1
7. Cooling Bed = 3

PRESENT DIVISION OF LABOUR WITH PRESENT RATES:

	Persons Present/ Shift (12 Hrs.)	Person present/ day	Rate	Total Cost/ Month (310 Hrs.)
1. Ejector	1	2	Rs. 4.5/Hr.	1395
2. Fireman	1	2	Rs. 1800/-/ month	3600
3. Stand-I	2	4	Rs. 7/-/Hr.	4340
4. Stand-II 5. Stand-III	2	4	Rs. 6/-/"	3720
6. Stand-IV	1	2	Rs. 4.5/Hr.	1395
7. Cooling Bed	3	6	Rs. 4.5/"	4185
			Rs.	18635

Let the contractor has to pay extra for 40 hours to the labour, when mill is not working.

Extra Cost = Rs. 2400.00

Total Cost = Rs. 18635 + 2400 = Rs. 21035.00

Contractor has also one supervisor/shift.

Let supervisor salary = Rs. 1200/-/Month.

Supervisor cost = 1200 + 1200 = Rs. 2400.00

Let the contractor paid ESI and PF on Rs. 10000/-

ESI 7.25% = Rs. 725.00

Provident Fund 20% = Rs. 2000.00

OTHER EXPENSES:

In addition contractor has to provide uniform every month to the labour.

Uniform Cost	= 20 x 50	= Rs. 1000.00
Tea expenses:		= Rs. 500.00
Total Expenses		= Rs. 1500.00

Total Expenses: 21035 + 2400 + 725 + 2000 + 1500 = Rs. 27660/-/Mon

Income-tax 2% = Rs. 550.00

Net Expenses: Rs. 28210/-.

Let a Contractor wants a profit of Rs. 5000/-/Month

Contractor should get = 28210 + 5000 = Rs. 33210/-.

Average Production/Month = 1950 Ton

Rate should be = Rs. 17/-/Ton

Present Rate = Rs. 18/-/Ton.

INGOT SUPPLY TO PUSHER (A,B,C MILL)

This contract includes the supply of the Ingots to pusher at A, B & C Mill from the Ingot yard.
Persons required/Shift = 3

They have to lift the ingots in the trolley and then unload them at the respective rolling mills.

Persons required/day = 3 + 3 = 6

Let labour rate = Rs. 35/-/12 Hrs.

Labour cost = 35 x 6 x 30 = Rs. 6300/-/Month.

In addition contractor has two Drivers which also serve as Supervisor.

Driver cost = 850 + 850 = Rs. 1700.00
Total Labour Cost = 6300 + 1700 = Rs. 8000.00

OTHER EXPENSES:

Contractor has also one Tractor and Two Trolleys. Therefore expenses on this are:

Diesel	= Rs. 800.00
Maintenance	= Rs. 1200.00
Depreciation	= Rs. 1700.00
Total:	= Rs. 3700.00/Month

Let contractor paid ESI and Provident Fund on Rs. 4000/-

ESI 7.25%	= Rs. 290.00
Provident fund 20%	= Rs. 800.00

Total Expenses: = 8000 + 3700 + 290 + 800 = Rs. 12790/-
Income-tax 2% = Rs. 250.00

Net expenses: = Rs. 13040/-

Let contractor want 20% profit i.e. Rs. 2600/-/month.

Contractor should get = Rs. 15650/-/Month
Average shifting/month = 3400 Ton
Rate should be = Rs. 4.60/Ton
Present Rate = Rs. 6.50/Ton.

INGOT SUPPLY TO PUSHER (D MILL)

This contract includes the supply of the Ingots to the pusher at D-Mill and then pushes it in the Furnace. The contractor take the help of crane to shift the ingot from Ingot Yard.

Persons required/shift = 3
Persons required/day = 3 + 3 = 6
Let labour cost Rs. 35/-/12 Hrs.
Labour cost = 35 x 6 x 30 = Rs. 6300/-/Month

It was observed that contractor has no supervisor
Let contractor paid ESI and Provident Fund on Rs. 3000/-.

ESI 7.25% = Rs. 220.00
Provident Fund 20% = Rs. 600.00

Total expenses: 6300 + 220 + 600 = Rs. 7120.00

Income-tax 2% = Rs. 140/-.

Let contractor wants 20% Profit = Rs. 1500.00
Contractor should get = Rs. 8760.00
AVerage shifting/month = 1950 Ton.

Rate should be = Rs. 4.50/Ton.
Present rate = Rs. 6.50/Ton.

INGOT CUTTING:

This activity includes the procedure of cutting of the Ingot in the Ingot yard. The procedure of cutting is to cut the ingot upto half with the help of gas and then break it with the help of hammer. For cutting contractor used his LPG Cylinders.

8 AM to 8 PM 8 PM to 8 AM

Welder required = 3 + 2

Welder required = 5/day

Let labour cost = Rs.40/-/12 Hrs.

Welder Cost = 5 x 40 x 30 = Rs.6000.00 (1)

Welder Helper = 3 + 2 = 5

Let labour cost = Rs.35/-/12 Hrs.

Labour cost = 5 x 35 x 30 = Rs. 5250.00 (2)

To break the ingot with the help of hammer, persons required = 4 + 4 = 8/day.

Let labour cost Rs.35/12 Hrs.

Labour Cost = 8 x 35 x 30 = Rs.8400.00 (3)

Adding: (1) + (2) + (3)

Total: Labour Cost = 6000 + 5250 + 8400 = Rs.19650/-/Month

Let for cutting contract has consumed 60 LPG Cylinders/Month

Let cylinder Cost = Rs.150/-

Expenses on Cylinders/Month = Rs.9000/-

Contractor has also other contracts of cutting in the plant. To look after the cutting contractor has 2 supervisors. So We consider here 1 supervisor, because other is considered in the end Gas Cutting.

Supervisor Cost = Rs.850/-

Total Expenses on labour = 19650 + 850 = Rs.20500/-/Mont

Let contractor paid ESI nad provident Fund on Rs.10000/-

ESI 7.25% = Rs.725.00

Provident fund 20% = Rs.2000/-

Net expenses = 20500 + 9000 + 725 + 2000 = Rs.32225.00

Income-tax 2% = Rs.650/-

Let contractor wants a profit of Rs.5000/-/Month.

Contractor should get Rs.37875/-.

Average cutting/month = 3400

Rate should be Rs.11.15/Tonne

present rate = Rs.12.00/Ton.

SUMMARY E-FURNACE

S.No.	ACTIVITY DESCRIPTION	JOB TYPE	PERSONS REQD/ SHIFT	PERSON/ DAY	RATE	NET SALARY/ MONTH
1.	SCRAP CHARGING	UNSKILLED	6/12 Hrs	12	35/-/ 12 hrs.	12600
2.	SCRAP MELTING					
	A. 1st Hand	Skilled	1	3	1400	4200
	B. Bariman	Semi-skilled	2	6	1200	7200
	C. Helper	Unskilled	1	2	35/-/ 12hrs.	2100
3.	MOULD SETTING TO INGOT STACKING					
	A. Plate Setting- Plate mason	Skilled	1	3	1200	3600
	Helper	unskilled	1/12hrs	2	35/-/ 12hrs.	2100
	B. Mould Setting - Sling Man	Skilled	1	3	1200	3600
	Helper	Unskilled	1/12hrs.	2	35/-/ 12hrs.	2100
	C. Setting Fire Clay Brids Fire Clay Mason	Semi-skilled.	1	1	700	700
	D. Pouring Metal in the Mould- Teemer Man	Skilled	1	3	1200	3600
	E. Ingot Stacking And Colour Coding	Un-skilled	3/ 12hrs.	6	35/-/ 12hrs.	6300
4.	MUNSHI	Skilled	1	3	750	2250
	TOTAL LABOUR COST					50350/-

SUBJECT: To calculate the Contractor rate on E-Furnace

Activities: (1) Scrap Charging
(2) Scrap Melting
(3) Mould setting to Ingot Stacking

Description:

(1) Scrap Charging:

This activity includes the charging of the scrap from scrap yard to the Furnace manually.

Procedure:

The scrap yard is about 30 feet from the Furnace. The labour has to pick the scrap from the yard in the bucket. The bucket was weighed and the average weight comes out to be 25 Kg. The time of various activities are also noted, which are as follows:

(A) Filling Scrap in the bucket (Wt. about 25 Kg) = 29 secs.
(B) Shifting Scrap to the Furnace on head = 57 secs.
(C) Returning back to scrap yard without load = 47 secs.

From the relaxation allowances table it has been calculated that

Relaxation allowance = 22%
Personal need allowance = 5%
Standard Time = 149 secs.

The capacity of Furnace = 2500 Kg.
To get the output of 2500 kg. we have to put 2700 kgs. scrap in the furnace.
Thus for shifting 2700 kg. scrap to the furnace in 80 minutes the persons required = 6
Job Type : Unskilled
The rate of labour as told by labour is = Rs. 35/-/12hrs
Cost/day = 6 x 35 x 2 = Rs,420/-/day

The furnace works for average 30 days/month
Cost/month = 420 x 30 = Rs. 12600/-

(2) SCRAP MELTING:

This activity includes the melting of the input scrap. The following persons are required for this job per shift:

A. 1st hand = 1
B. Bariman = 2
C. Helper = 1

...2...

(A) Ist Hand:

Job Type : Skilled

The function of 1st hand person is to look after the furnace. the responsibility of the furnace is upon him.

This person is hired by the contractor on monthly basis.

Salary/month = Rs. 1400/-

persons required per day = 1 x 3 = 3

Net salary/month = 1400 x 3 = Rs. 4200/-

(B) Bariman:

Job Type : Semi-Skilled.

The function of Bariman is to melt the scrap properly without damaging the ~~baring~~ lining of furnace.

Persons required/shift = 2

Persons required/day = 2 x 3 = 6

Barimen are also on monthly basis.

Salary of one bariman/month = Rs. 1200/-

Net salary/month = Rs. 7200/-.

(C) Helper

Job type = Unskilled

The job of helper is to help the bariman. He has to put the material into furnace as directed by the Bariman.

Rate = Rs. 35/-/12 hours.

Cost/day Rs. 70/-/

Cost/month = 70 x 30 = Rs. 2100/-.

(3) MOULD SETTING TO INGOT STACKING:

This activity includes following sub activities:

(A) Plate Setting

(B) Moulding Setting

(C) Fixing Fire Clay Bricks in the Tandish

(D) Pouring molten metal into moulds

(E) Ingot Shifting

(F) Ingot stacking and colour coding.

(A) Plate Setting:

This activity has done by Plate Masson

Job type : Skilled

The job of plate mason is to fit the BP Sets in the frame. It has been observed that time taken for this work is about 50 minutes.

Salary = Rs. 1200/-/month.

Net Salary = 1200 x 3 = Rs. 3600/-/month.

He also requires one helper to assist him.

Salary/month = Rs. 2100/-.

...3...

(B) Mould Setting:

This activity is done by the sling man.
Job type : Skilled
He has to set the mould on the plate, then to get ingots out of the mould box.
Salary = Rs. 1200/-/month.
Net salary = 1200 x 3 = Rs. 3600/-/month.
Sling man requires one helper.
Salary/ month = Rs. 2100/-.

(C) Fixing Fire Clay Bricks in the Tandish

This activity is done by Fire Clay Mason. Only one mason is required/day.
Job Type : Semi-skilled.
He has to set the fire clay bricks in the tandish.
Salary = Rs. 700/-/month.

(D) Puring Metal in the Mould:

This activity is done by Teemer man.
Job Type : Skilled.
He has to pour molten metal in the mould box. He also supervise the activities of pit side.
Salary = Rs. 1200/-/month.
Net salary = 1200x 3 = Rs. 3600/-/month.

(E) Ingot Stacking and Colour Coding:

This activity includes the stacking of Ingots after breaking runners and risers.
Persons required = 3/12 hours
Job Type = Un-skilled.
Salary = Rs. 35/-/12 hours.
Salary/month = 3 x 2 x 35 x 30 = Rs. 6300/-
Total labour cost = Rs. 48100/-
Contractor has also one Munshi/shift.
Salary = Rs. 750/-/month.
Net Salary = 750 x 3 = Rs. 2250/-/month.
Total labour cost = 48100 + 2250 = Rs. 50350/-/month.

Let the Contractor pay ESI and Provident Fund on 50% of labour cost i.e. Rs. 25175/-.
ESI 7.25% = Rs. 1825/-
Provident Fund 20% = Rs. 5035/-.
Total Expense = Rs. 57210/-/month
Income-tax 2% = Rs. 1100/- (Approx.)
Net expense = Rs. 58310/Rs
Let a contractor want a profit of Rs. 5000/-/month.
Contractor should get = Rs. 58310/- + 5000/- = Rs. 63310/-.
Let production/month = 750 MT
Rate/Ton = Rs. 84.50/Ton.

G - FURNCE

Sl.No.	Activity Description	Job Type	Persons Reqd-/ shift	Persons/ day	Rate	Net Salar month
1.	Scrap Charging	Unskilled	7/12 hrs	14	35/-12 hrs.	14700
2.	Scrap Melting					
a)	Ist hand	Skilled	1	3	1400	4200
b)	Bariman	Semi-skilled	3	9	1200	10300
3.	Mould Setting To Ingot Stacking					
A.	Plate setting-Plate Mason	Skilled	1	3	1200	3600
B.	Helper to Mason	Unskilled	2/12 hrs	4	35/-12 hrs.	4200
C.	Mould Setting Sling Man	Skilled	2	6	1200	7200
D.	Helper to sling Man	unskilled	1/12 hrs	2	35/12 hrs.	2100
E.	Pouring Metal in the Mould Teemer Man.	Skilled	1	3	1400	4200
F.	Helper to Teemer Man	Unskilled	1/12hrs	2	35/-12 hrs.	2100
G.	Ingot Stacking	Unskilled	3/12hrs	6	35/-12 hrs.	6300
4.	MUNSHI	Skilled	1	3	750	2250
	Total Labour cost					65850

Let the contractor pay ESI and PPF ON 50% of Labour cost i.e. Rs. 32,925/-

E.S.I. 7.25% = Rs. 2387/-

Provident fund 20% = 6585/-

Income tax 2% = Rs. 1400/- (approx.)

Net expense = Rs. 76,222/-

Let a contractor want a profit of Rs. 5,000/- / month

contractor shoudl get = Rs. 81,222/-

Average Production/month = 1225 Ton.

Rate = 81222/1225

= Rs. 66.50 /Ton.

OBJECT: To study the contractors activities at Pit side.

ACTIVITY: Contractor has following activities at Pit side:

	ACTIVITY	RATE
1.	Ingot Weightment, Shifting	Rs. 10.50/Ton
2.	Steel Bone Stacking	Rs. 3.00/"
3.	Pit side cleaning	Rs. 150.00/Day

This rate is same for three Arc Furnaces i.e. A,B & D Furnac

Contractors activities have studied on the B-Furnace
Therefore following date is for B-Furnace:

Average No. of heats/day = 3.2
Average Production/heat = 14 Ton
Average Production/day = 14 x 3.2 = 45 tonnes.

ACTIVITY-I

(1) Ingot Weightment, Shifting:-

Working Procedure:- This activity includes the arrangement of ingots in a line so that the crane can uplift them on the trolly. Then these ingots are weighed and shifted to the ingot storage yard.

Method:- To measure the above work we have used work sampling technique for three days and found that they are busy in working for approximate 60% of available time.

No. of workers required/shift = 3
Job type = Unskilled
Labour Cost = Rs. 35/-/12 hrs.
Total labour cost/day = Rs. 210/-/day
Labour cost/Month = Rs. 6300.00

In addition he require one driver, one trolley and on tractor for shifting. Driver serves the purpose of Munshi.

Let Driver Cost = Rs. 750/-/Month
Drivers required = 2
Driver cost = Rs. 1500/-/month.
Total labour cost = 6300 + 1500 = Rs. 7800/-/month.

Also contractor has one tractor and one trolly:

Maintenance and Petrol = Rs. 800.00
Depreciation = Rs. 1000.00 = Rs. 1800.00

Let the contractor paid ESI and E.P.F. on 50% of labour cost i.e. Rs. 3900/-

ESI 7.25% = Rs. 282.00
PPF 20% = Rs. 780.00

Let the contractor paid Income-tax = Rs. 300/-/month.
Total expenses: 7800 + 1800 + 282 + 780 + 300 = Rs. 10962/-

Let the contractor wants a profit of 20% = Rs. 2190.00

Contractor should get = Rs. 13152/-
Production/Month = 45 x 30 = 1350 Tonnes
Rate: 13152/1350 = Rs. 9.80 = Rs. 10/-/Ton.

ACTIVITY - II

(2) Steel Bones Stacking:

Working Procedure:- This activity includes ~~includes~~ the breaking of runners and risers and then stacking them outside the shed. The rate is given on the Ingot weight.

METHODOLOGY: To measure the work content we have used work sampling technique for three days and found that worker is busy for about 60% of available time.

No. of worker required/Shift = 1
Job Type = Unskilled
Labour rate = Rs. 35.00/12 Hrs.
Labour Cost/Day = Rs. 70/-/day.
Labour Cost/month = Rs. 2100/-

Let the contractor paid ESI and PPF on Rs. 1000/-

ESI 7.25% = Rs. 72.00
PPF 20% =Rs 200.00

Let the contractor paid Income-tax = Rs. 80/-
Total expenses = 2100 + 72 + 200 + 80 = Rs. 2452.00

Let contractor wants a profit of Rs. 500/-/month.

Contractor should get = Rs. 2952/-/Month.

Rate = 2952/1350
= Rs. 2.20/Ton

INGOT SHIFTING:

This activity includes the shifting of Ingots from Induction Furnaces to the Ingot yard. The Loading of trolley has done with the help of Crane. The unloading is also done with the help of crane except for 3½' x 4½' size. This size ingot is to be unloaded manually. It was also observed that shifting has been done only in one shift.

Labour required	= 2
Let labour rate	= Rs. 2 x 35 x 30
	= Rs. 2100/-/Month.

In addition contractor has one driver, which also serves as a supervisor.

Driver Cost	= Rs. 850.00
Total Labour Cost	= Rs. 2100 + 850/-
	= Rs. 2950/-

Contractor has also one Tractor and Two Trolleys for this job.

Diesel	= Rs. 800.00
Maintenance	= Rs. 1200.00
Depreciation	= Rs. 1700.00
	= Rs. 3700.00 / Month

Let contractor paid ESI and Provident Fund on Rs. 1500.00

ESI 7.25%	= Rs. 108.00
Provident Fund 20%	= Rs. 300.00
Net expenses	= Rs. 2950 + 3700 + 108 + 300/-
	Rs. Rs. 7060.00
Income-tax 2%	= Rs. 140.00

Let contractor wants a profit of 20% = Rs. 1500.00
Contractor should get = Rs. 8700/-/month
Average shifting/month = Rs. 1350.00 Ton

∴ Rate should be = Rs. 6.50/Ton

Present rate = Rs. 7.50/Ton.

STRAIGHTENING MACHINES :

The activity includes the straightening of round and R C S pieces on Customers requirement. Then after straightening, punching, numbering and colour coding has to be done on the straighten material.

For the above activity there is variation of Labour. It was observed that generally 11 persons are required per 12 hour shift.

∴ Total pers n required/day = 11 = 11 = 22 person

Labour Rate = Rs. 35/12 Hour

∴ Labour Cost/month = 35 x 22 x 30 = Rs. 23100/-

Let contractor have 1 munshi/shift

∴ Munshi pay = 800 + 800 = 1600

∴ Total Labour Cost = 23100 = 1600 = Rs. 24700/-

Let the contractor pay E.S.I. and Provident Fund on 50% of Labour Cost i.e. on Rs. 12000/-

E.S.I. 7.25% = Rs. 870/-

Provident Fund 20% = Rs. 2400/-

∴ Net Expenses = Rs. 27970/-

Income Tax 2% = Rs. 550/-

∴ Total expenses/month = Rs. 28520/month.

Let contractor want a profit of Rs. 5000/-

∴ Contractor should get = Rs. 33520/-

Average straightening/month = 650 Ton.

∴ Rate/Ton = Rs. 52/Ton.

Presant Rate = Rs. 75/Ton.

FLAT INSPECTION :

This activity includes the inspection of the Si-Mn Flat. During inspection they noted following things :-

1. Whether size is same as required.
2. Any other fault in the Flat.

They mark the defected portion with chalk which is latter on cut on a cutting machine.

Basic Time to inspect one piece of approximate

40 Kg weight = 120 Secs.
Persons involved = 3
Relaxation allowance = 10%
Personal need allowance = 5%
∴ Standard Time = 138 secs.

Time taken by 1 person to inspect one flat piece = 138x3 = 414 secs.

To inspect 40 Kg piece time required by 1 person = 414 secs.

To inspect 1 Kg piece time required by 1 person = $\frac{414}{40}$

To inspect 600000 Kg piece time required by 1 person = $\frac{414}{40}$ x 600000 =1725 H

Labour Rate = Rs. 3/Hours

∴ Labour Cost = 1725 x 3 = Rs. 5175/-

Let the contractor has to pay extra for 150 hours per month to the Labour, when there is no work.

∴ Extra payment = 150 x 3 = Rs. 450

Contractor has also one supervisor = Rs. 800

∴ Total Cost = 5175 + 450 + 800 = Rs. 6425/month.

Let the contractor paid E.S.I. and Provident Fund on 50% of Labour Cost i.e. Rs. 3200/month.

E.S.I. 7.25% = Rs. 230
P.F. 20% = Rs. 640
∴ Net Expenses = Rs. 7300
Income Tax 2% = Rs. 145

Let contractor want a profit of 20% i.e. Rs. 1450/-

∴ Contractor should get = Rs. 8900

Flat inspection/month = 600 Ton.
Rate = Rs. 14.80/Ton

TRUCK LOADING :

This activity includes the loading of rolled product on the truck Manually. This loading is done where E.O.T. crane is not available.

Persons involved = 10

Time for lifting and putting the piece into truck = 20 secs.

Time without load = 7 secs

Load Handled = 100 Kg

∴ Load/Man = 100/10 = 10 Kg.

Force exerted = $20 \times \frac{20}{27}$ = 15 lbs.

Points for relaxation allowance = 29

% age relaxation allowance = 15%
Personal need allowance = 5%
Total Allowances = 20%

Standard Time = 31 Secs.

Total time for one worker for loading 100 kg piece on truck = 31 x 10=310
Total Averate wt. loaded/month = 2300 Ton.
To Load 100 kg piece time required by one person = 310 secs.
To Load 2300 Ton piece time required by one person = 310x2300000 = 1980 Ho

Labour Rate = Rs. 3/hour

∴ Total Labour Cost = Rs. 5940/month.

Let the contractor has to pay extra to labour for 300 hours when these is no working.

∴ Extra Cost = 300 x 3 = Rs. 900/-
∴ Total Cost = Rs. 6840/-

Let the contractor paid E.S.I and Provident Fund on 50% of Labour Cost i.e. Rs. 3200/-

E.S.I. 7.25 % = Rs. 232
Provident Fund 20% = Rs. 640

∴ Expenses = Rs. 7712/month

Income Tax 2% = Rs. 150
∴ Net expenses = Rs. 7862/-

Let a contractor want a profit of 20% i.e. Rs. 1600/month.

∴ Contractor should get = Rs. 9460

Average truck loading/month = 200 Ton

∴ Rate = Rs. 4.80 Ton
Present Rate = Rs. 6/Ton

E.O.T. CRANE LABOUR:

The Contractor has supplied labour for Two E.O.T. Cranes we require two person/Crane.

Therefore total no. of persons required/shift = 2 + 2 = 4

No. of persons required/day = 4 + 4 = 8
Let labour rate = Rs. 35/12 hrs.
∴ Labour Cost/day = 35 x 8 = Rs. 280/-
Labour Cost/Month = 280 x 30 = Rs. 8,400/-

Let contractor paid E.S.I. and Provident Fund on Rs. 4,000/-

∴ E.S.I. 7.25% = Rs. 290/-
Provident Fund 20% = Rs. 800/-
Total expenses = Rs. 9,490/-

Let contractor wants 20% profit = Rs. 1,900/-

Income Tax 2% = Rs. 190

∴ Contractor should get = Rs. 11580/-

Average load handle/month = 3500 Ton

∴ Rate should be = Rs. 3.25/Ton

SECOND PROPOSAL

Let us give him contractor on daily wages. The rate of daily wages is calculated as follows.

No. of persons required/day = 8
Let Labour rate = Rs. 35/12 Hrs

∴ Labour cost/day = 35 x 8 = Rs. 280/-

Let contractor paid E.S.I. and Provident Fund on Rs. 100

∴ E.S.I. 7.25 of 1 7.25

Provident Fund 20% = 20

∴ Total expenses/day = 280 + 7.25 + 20 = Rs. 307.25

Let contractor wants a profit of Rs. 40/daily

∴ Contractor should get = Rs. 347/day.

Si - Mn Flat Cutting

This activity includes the cutting of Si-Mn ~~&~~ flat from the ~~marketix~~ marking (marked during inspection) to cut the defected pieces. The following are the activites with their times :-

Sr.	Activity Description	No. of worker	Basic Time (Sees)	Rela-~~xati~~-on allo-wan-ces	Personal need allowa-nce	Total allo-wance	STD Tim (sees)
01.	Putting the flat on on Conveyor	1	10	10%	5%	15%	11.5
02.	Adjusting the pieces on conveyor and pushing upto cutter	3	32	10%	5%	15%	37
03.	Cutting	1	10	10%	5%	15%	11.5
04.	Shifting to stand from conveyor	2	24	23%	5%	28%	31

Total time taken by 7 persons to cut 40 kg flat pieces = 91 secs.

Time taken by one person = 91x7 = 637 secs.

Average flat cutting/month = 600 Ton

To cut 40 Kg time requited by one person = 637 secs.

To cut 1 Kg time required by one person = $\frac{637}{40}$ secs.

To cut 600000 Kg time required by one person = $\frac{637}{40} \times 600000$ = 2655 Hrs.

Labour Rate = Rs. 3/hour

Total labour Cost = 2655 x 3 = Rs. 7965

Let the contractor has to pay extra to labour for 200 hrs. when there is no working.

$\therefore$ Extra Cost = 200 x 3 = Rs. 600/-

Contractor has also two supervisiors = Rs. 850 + 850 = Rs. 1700/-

$\therefore$ Total Cost Rs. 10265/month

Let the contractor paid ESI and Provident Fund on Rs. 4500/-

E.S.I. 7.25% = Rs. 325

Provident Fund 20% = Rs. 900/-

Net Expenses = Rs. 11490/-

Income tax 2% = Rs. 210/-

$\therefore$ Net expenses = Rs. 11,700/-

Let a contractor want a profit of 20% i.e Rs. 2300/month

$\therefore$ Contractor should get = Rs. 14000/ manth

$\therefore$ Flat cutting/month = 600 Ton

$\therefore$ Rate/Ton = Rs. 23.25/Ton

Present Rate = Rs. 30/ Ton

MATERIAL SHIFTING, H.T. LOADING AND UNLOADING

This activity includes the shifting of rolled product anywhere it is desired in the factor. It is seen that there is generally more than one shifting of same material and contractor charges on the basis of number of shifting.

The H.T. Loading and Unloading includes the loading and unloading of the rolled product on heat treatment trolley. If the weight of piece is more than 70 Kg. theytake the help of maunal crane for ~~had~~ loading.

Working hours = 12 hours
Labour required = 20
Labour Rate = 35/12 hrs

∴ Expenses/day = 35 x 20 = Rs. 700

∴ Expenses/month = 700 x 30 = Rs. 21000/month.

One munshi = Rs. 800

∴ ~~One~~ Total Expenses = 21000 + 800 = Rs. 21800/-

Let the contractor paid E.S.I. and Provident Fund on 50% of Labour Cost = Rs. 11000/-

E.S.I. 7.25 % = Rs. 800

Provident Fund 20% = Rs. 2200/-

∴ Total Expenses = Rs. 24800

Income Tax 2% = Rs. 500

∴ Net Expenses = Rs. 25300/-

Let the contractor wants a profit of Rs. 5000.

∴ Contractor should get = Rs. 30,300/month.

Average shifting/month = 3300 Ton.

∴ Rate = Rs. 9.20/Ton

Present Rate = Rs. 8/Ton

FIX LENGTH CUTTING BY HEXAMACHINE :-

This activity includes the cutting of rolled material upto required fix l length on the hexamachines, theb grinding and colour co-ding finally.

We have total four hexamachines let us suppose that 3 machines are working at a time.

Person required per hexamachine = 2

Persons required for grinding = 2/Shift 2 + 2 = 4/day

Person required for colour coding = 1

Average cutting on one hexamachine/day = 6 Tons

∴ Cutting on 3 machines/day = 6x3 = 18 Ton

Let Labour Rate = Rs. 40/12 Hrs.

Labour Cost/day = 17 x 40 = Rs. 680/-

Also Contractor has two supervisiors/day

Supervisor Cost = 1000 + 1000 = Rs. 2000/month

∴ Supervisor Cost/day = Rs. 70/-

∴ Total Labour Cost = 680 + 70 = 750

Let the contractor paid E.S.I. and Provident Fund on Rs. 350

E.S.I. 7.25% = Rs. 25/-

Provident Fund 20% = Rs. 70/-

Total Expenses = 750 + 25 + 70 = Rs. 845/-

Let contractor paid 2% Income Tax = Rs. 17/-

Let contractor wnn wants a profit of Rs. 100/ day

∴ Contractor should get = Rs. 962/-

;

∴ Rate should be = 962/18 = Rs. 53/Ton

IS CUTTING :

This activity is to check internalsoundness of rolled product. The pieces are cut on hexamachine, then send for test in Laboratery.

The sub activites involved in this activity are as follows :-

1. Writing numbers on the pieces.
2. Setting pieces on the hexamachines to cut (4 machines)
3. Shifting pieces to Laboratory.
4. Punching
5. Polishing
6. Pickling

The activity 1 and 2 has continued for 24 hours for these activities we require 3 persons per shift.

∴ Persons required = 6/day

The activity 3, 4, 5 and 6 has done in the morning shift only. we require 5 persons for this work,

∴ Total person required/ day = 6 + 5 = 11

Labour Cost = Rs. 35/12 hrs.

∴ Labour cost/month = 11 x 35 x 30 = Rs. 11,550/-

Let the contractor paid E.S.I. and Provident Fund on Rs. 5,000/-

E.S.I. 7.25% = Rs. 350/-
Provindent Fund 20% = Rs. 1,000/-

∴ Total expenses = Rs, 12,900/-

Income tax 2% = Rs. 250/-

∴ Net Expenses = Rs. 13150/-

Let a contractor want a profit of 20% i.e. Rs. 2600/-

∴ Contractor should get = Rs. 15,150/-

Average Is Cutting/month = 3900 Ton

∴ Rate/Ton = Rs. 4/Ton.

It is also observed that contractor is doing another work of Shifting the step down pieces from Rolling Mills to Tool Room and then to Laboratory for Is testing in this work his two man are engaged.

∴ Total persons/day = 2 + 2 = 4

∴ Labour Cost = 4 x 35 x 30 = Rs. 4200/- } Rs. 1.10 PMT.

∴ Contractor should get = Rs. 20,000/-

∴ Rate should be = 20,000/3900 = Rs. 5.10/ Ton.

ROLLED PRODUCT FINISHING AND DRESSING :

This activity includes large number of sub activities. The various sub-activities are tested below :-

a) Stacking the material in the open yard
b) 100 % inspection of rolled material
c) Dressing
d) Colour Coding, Punching and numbering
e) Nick.e spot testing
f) Spark testing

LABOUR REQUIREMENT :

It is observed that for above lested sub-activities, following labour is required.

There are 25 groups of labour and each group has composed of 4 persons.

The actual working procedure is that contractor give numbers to each group. He then handed over a heat to the one group. This group has to perform all the sub activities (a to c) lested above on that hear. This group is offered another heat after 25 heats. Upto that time that group is free. Procedure of payment is Rs. 25 per ton to the one group.

∴ Contractor paid to Labour per Ton = Rs. 25/-

∴ Average material dressed/month = 3200 Ton

Labour Cost for 3200 Ton = 3200 x 25 = Rs. 80000/month.

For sub-activity 'd' i.e. colour coding, numbering and punching he has 5 persons on daily wages.

Let Labour Rate = Rs. 35/12 hrs.
Labour Cost = 5 x 35 x 30 = Rs. 5250/months

He has also two men for nickle spot testing and two persons are for spark testing.

∴ For sub-activity 'C' and 'f' labour required = 4

∴ Labour Cost = 4 x 35 x 30 = Rs. 4200/month.

Contractor has also two supervisiors to control the work.

∴ Supervisor Cost = 1000 + 1000 = Rs. 2000/month.

∴ Total Labour Cost = 80000 + 5250 + 4200 + 2000 = Rs. 91450/-

Let the contractor paid ESI and Provident Fund on Rs. 45,000/-

i.e. E.S.I. 7.25% = Rs. 3250/-
P.F. 20% = Rs. 9000/-

∴ Total expenses = Rs. 103700/-

Let contractor paid 2% Income Tax = Rs. 2000/-

Let contractor want a profit of Rs. 1000/month

$\therefore$ Contractor should get = Rs. 115700/-

$\therefore$ Rate should be = Rs. 36/ Ton

Present Rate = Rs. 40/ Ton

INGOT STACKING:

This activity includes the stacking of the Ingots of induction furnaces in the open yard. This activity has done only for 12 hours.

Person required = 2
Let labour rate = Rs. 35/-/12 Hrs.
∴ Labour Cost = 35 x 2 x 30
= Rs. 2100.00

Contractor has also one supervisor = Rs. 850.00
Total labour cost/month = 2100 + 850 = Rs. 2950.00

Let contractor paid ESI and Provident Fund on Rs. 1500/-

ESI 7.25% = Rs. 108.00
Provident Fund 20% = Rs. 300.00
Net Expenses = Rs. 2950 +108+300
= Rs. 3358.00

Income-tax 2% = Rs. 75/-

Let contractor wants a profit of 20% = Rs. 800.00

∴ Contractor should get = Rs. 4233.00

Average Stacking = 1300 Ton.

∴ Rate should be = Rs. 3.25/Ton

Present rate = Rs. 2.00/Ton

CONTRACTS OF BCM PLANT:

There are many sub contractors under the BCM Plant. We consider all the sub contracts and persons involved in all these activities. The following are the sub-contracts under the BCM Plant.

a) Con Cast pit to inside shed.
b) Billet stacking
c) Billet Dressing
d) Billet's sample cutting.

It was observed that BCM plant does not work for full day. Therefore contractor used his labour in other works when they are free in Concast plant. Therefore observing all these I have taken 25 days as working in the concast plant, and following rates are calculated on the 25 days.

a) CONCAST PIT TO INSIDE SHED:

This activity includes bringing the billets from plant to shed with the help of Crane.

Persons required/shift	= 2
Person required/day	= 2 + 2 = 4
Let Labour rate	= Rs. 35/12 Hours
∴ Labour Cost	= 4 x 35 x 25 = Rs. 3500/-

b) BILLET STACKING:

This activity includes, stacking of billets in the shed and then cleaning the billets.

Persons required	= 3
Labour Cost	= 3 x 35 x 25 = Rs. 2625/-

c) BILLET DRESSING:

This activity includes grinding of billets either fully or partiall

Persons required/shift	= 10
Persons required/day	= 20
Labour Cost	= 20 x 35 x 25 = Rs. 17500/-

d) BILLET'S SAMPLE CUTTING:

This activity includes the sample cutting of billets for I.S. testi 2-3 samples are taken per heat for IS testing. For cutting contract used his own LPG Cylinders.

Welders required/day	= 2
Welder Helper/day	= 2
Let welder Cost	= Rs. 40/12 Hour
∴ Labour Cost	= 2x40x25 + 2x35x25
	= 2000 + 1750 = Rs. 3750/-

According to Welder, average 200 Ton meterial has been cut by one ℔ LPG Cylinder.

∴ LPG Cyliners required/month = 5
Let Cylinder Cost = Rs. 150/-

∴ Cylinder Cost = 5 x 150 = Rs. 750/-

∴ Total Cost = 3750 + 750 = Rs.4500/-

To look after all these activites contractor has two supervisiors/day.

∴ Supervisor Cost = 850 + 850 = Rs. 1700/

Adding :

Total Labour Cost = 3500+2625+17500+4500+1700 = Rs.29825/-

Let the contractor paid ESI and Provident Fund on Rs. 15000/-

E.S.I. 7.25% = Rs. 1100/-
Provident Fund 20% = Rs. 3000/-

∴ Net Expenses = Rs. 33925/-

Let contractor paid Income Tax Rs. 700/-

∴ Total expenses/month = Rs. 34225/-

Average billing for above activities per month

Comes out to be ≯ Rs. 45000/month.

SUMMARY OF CONTRACTORS RATE:

Sr. NO.	CONTRACT	AV. PRODUCTION ASSUMED(TON)	PRESENT RATE PER TON	PROPOSED RATE PER TON	DIFFERENCE PER TON
01.	STORE:				
a.	Unloading	1680	5/T	3.10/T	+ 1.90/T
b.	Shifting	1650	7/T	13/T	- 6/T
c.	Lime Burn	143	60/T	42/T	+ 18/T
02.	ROLLING MILL:				
a.	Ingot Rolling at 'A' Mill	375	120/T	107/T	+ 13/T
b.	Ingot Rolling at 'B' Mill	1200	65/T	67/T	- 2/T
c.	Ingot Rolling at 'C' Mill	1200	65/T	67/T	- 2/T
d.	Ingot Rolling at 'D' Mill	1950	18/T	17/T	+ 1/T
e.	Ingot supply to Pusher at A, B, C Rolling Mill	3400	6.50/T	4.60/T	+ 1.90/T
f.	Ingot supply to Pusher (D. Mill)	1950	6.50/T	4.50/T	+ 2.0/T
g.	Ingot Cutting	3400	12.00/T	11.15/T	+ 0.85/T
03.	S.M.S. PLANT:				
a.	'E' Furnace	750	90/T	84.50/T	+ 5.50/T
b.	'G' Furnace	1225	70/T	66.50/T	+ 3.50/T
c.	Ingot weightment & Shifting at Arc Furnace	1350	10.50/T	10.00/T	+ 0.50/T
d.	Steel Bone Stacking	1350	3.00/T	2.20/T	+ 0.80/T
e.	Ingot Shifting (Ind.Fur.)	1350	7.50/T	6.50/T	+ 1.00/T
f.	Pit side Cleaning	-	150/day	150/day	
04.	QUALITY CONTROL:				
1.	Straightening Machines	650	75/T	52/T	+ 23/T
2.	Flat Inspection	600	15/T	14.80/T	+ 0.20/T
3.	Truck Loading	2100	61/T	4.80/T	+ 1.20/T
4.	EOT Crane Labour	3500	1.50/T	1.65/T	- 0.15/T
5.	Si-Mn Flat Cutting	600	30/T	23.25/T	+ 6.75/T
6.	Material Shifting, H.T. Loading & Unloading	3300	8/T	9.20/T	- 1.20/T
7.	Bundling of Fix Length Cutting	-	-	2.85/T	-
8.	Flat Bundling	-	-	6/T	-
9.	End Gas Cutting	3450	12/T	12/T	-
10.	Fix Length Cutting by Hexa Machine	-	70/T	53/T	+ 17/T
11.	IS Cutting and step down samples	3900	3.50/T	5.10/T	- 1.60/T
12.	Rolled Product Finishing & Dressing	3200	40/T	36/T	4/T
13.	Ingot Stacking	1300	2/T	3.25/T	- 1.25/T
14.	Contractors of BCM Plant	-	45000/month (Bill)	39000/mth (Bill)	

ANALYSIS OF OVER-TIME Vs SHIFT AT R.M.

At the Rolling Mill we have two shifts of 12 hours each. We give overtime for four hours plus meal to each worker, working for 12 hours. So study was made to analysis whether overtime is beneficial or we should start another shift of 8 hours.

AVERAGE SALARY CALCULATION:

Four categories of labour are eligible for the O.T.

1. Foreman
2. Junior Staff
3. Worker
4. Helper

Average salary of each category has been calculated, with addition of all the perks and benefits given to the employees.

The manpower planning has already been done on the Rolling Mills.

Therefore, according to that study, if we start another shift then following man power is required on all the mills:

Foreman	4
Junior Staff (Supervisors)	4
Workers	25
Helper	20

Av. Salary Calculations:

Foreman	3680 x 4	=	Rs. 14720.00
Junior Staff	1509 x 4	=	Rs. 6036.00
Worker	1457 x 25	=	Rs. 36425.00
Helper	922 x 20	=	Rs. 18440.00
	TOTAL:	=	Rs. 75621.00

Thus if we start new shift then the average expenses/month comes out to Rs.75600/-.

	CATEGORY	AV. BASK	HRA	VDA	BONUS	LEAVE ALLOWANCE	SHOE ALLOW-ANCE/MEAL AL.	COMPANY'S SHARE	TOTAL/ MONTH
1.	FOREMAN	2200	550	-	320	183	200	230	3680
2.	JUNIOR STAFF	880	168	78	190	94	7	92	1509
3.	WORKER	785	86	214	175	90	7	100	1457
4.	HELPER	490	30	168	105	57	7	65	922

AVERAGE EXPENSES ON O.T. PLUS MEAL PER MONTH

We have taken the average expenses of overtime plus meal expenses for the last three months i.e. Sept., Oct., and Nov., which is as follows:

Av. Reward paid	=	Rs. 35975.00
Av. Bill of Meal (Meal at rate of Rs.7.00)	=	Rs. 25000.00
TOTAL:		Rs. 60975.00

ADDITION

Av. increase of bill of Meal (Meal at rate of Rs.8.00)	Rs. 4500.00
Total:	Rs. 65000.00

IMP. NOTE:

1. Some employees have taken C/Off against the overtime. We will not take that into consideration in this study. That factor has also effect our work.
2. It is not possible that employee will work continuously for 12 hours with same efficiency. So running of 12 hours shift will certainly effect our efficiency and quality of work.
3. The cost of meal has taken when the rate is Rs.7/-/diet. Now it has been increased from Rs.7.00 to Rs.8.00/diet, therefore bill has certainly increased.
4. Some of the coal used by the contractor is given by us.
5. Repair of furniture is also ~~bear~~/borne by us.
6. Electricity and canteen building is also free.

PROJECT : 2
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OBJECTIVE : MANPOWER PLANNING AND ALLOCATION OF COMPANY'S EMPLOYEES IN VARIOUS DEPARTMENTS

NEED OF THE PROJECT

The Company Management thinks that they should have detail of work load on each of its employee.

METHODOLOGY

To calculate the work load on employees, I studied complete system of their working. I noted various responsibilities given to the employees, then apply work sampling to determine idleness wherever possible. I also suggested some changes which will make their working easy and efficient.

The detailed working procedure is given alongwith each project.

ACTIVITY DESCRIPTION :

The following are the major activities performed by various people required on the mills :-

1. Supervisor : Supervisor has to perfom following major activities.

   a) To check the dimensions of the some samples of rolled product.

   b) To make the report which includes the heat number, no. of working hours, breakdown hours cause of breakdown etc.

   c) Overall supervision of the Mill.

2. Foreman : Major jobs performed by forman are as follows :-

   a) To locate the fault and to remove it so that mill can work properly.

   b) To change the size of rollers to rolled different dimension.

3. Rolling Fitter : Fitter has following important Jobs :-

   a) He helps forman when there is any breakdown.
   b) He also help in changing the rollers during size change.

4. Rolling Fitter helper : As the name indicates he has to help fitter and foreman in their work he helps them by providing all the things required by them (Foreman,Fitter) during the work.

5. Welder : Welder helps in welding or cutting the material whenever required.

6. Welder helper : Welder helper is required only on D Mill This is because here material is very heavy. So welder require helper to assist him in welding. He also bring gas cylinders fo r welding from yard.

7. Maintenance Fitter: When there is any type of breakdown except on rollers, he has to check it and remove it.

8. Maintenance fitter Helper : Maintenance fitterhhelper, helps fitter in his work.

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MAN POWER REQUIREMENT ON DIFERENT M S

	MANPOWER	A		B		C		
		DAY	NIGHT	DAY	NIGHT	DAY	NIGHT	
01.	Supervisor	1	1	1	1	1	1	
02.	Foreman	1	1	1	1	1	1	
03.	Rolling Fitter	1	1	1	1	1	1	
04.	Fitter Helper	1	1	1	1	1	1	
05.	Welder	1	1	1	1	1	1	
06.	Welder Helper	-	-	-	-	-	-	
07.	Maintenance Fitter	1	1	1	1	1	1	
08.	Maintenance Fitter Helper	1	1	1	1	1	1	
09.	Black Smith	1	1	1	1	1	1	
10.	Black Smith Helper	1	1	1	1	1	1	
11.	Supervisor Helper	1	1	1	1	1	1	
12.	Crane Operator	-	-	-	-	-	-	
13.	Operator	-	-	-	-	-	-	
	TOTAL :-	10	10	10	10	10	10	26

A - 20
B - 20
C - 20
D - 50

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9. Black Smith : Black Smith make the faces of the holders, so that hot pieces can be hold easily and properly.

10. Black Smith helper :- He helps the Black Smith in his work.

11. Supervisor Helper : There are helpers on each Mill.

They have to see that there is no mixing of different heats, to note the number of pieces, whether proper cooling of material is done or not etc.

12. Crane operator : There are two cranes on D- Mill. Therefore two crane operators are required.

13. Operator : These operators are required on D- Mill. There are four control units of the conveyor on D-Mill. The operators control the movement of hot piece on conveyor and help in shifting it from furnace to colling bed after passing through different stands.

Note :- We can also transfer the manpower from one mill to other as and when we need it.

ROLLING MILL WORKSHOP:

There is a seperate rolling mill workshop, where maintenance work of rolling mill has done. The workshop has following machines :-

1.	Lathe	-	11
2.	Shaper	-	3
3.	Planer	-	1

Man Power Requirement :-

Machine	Day	Night
Lathe	9	9
Shaper Planer	3	3
Supervisor	1	1
Fitter	1	1
Helper	2	2
	16	16

LATHE : There are total 11 lathes. Two lathes are near the D- Mill and other nine are in the workshop. The main work on lathes are to make the rollers for rolling mills.

It is observed that we need just nine lathes at a time. So we require only nine operators per shift.

It is also observed that on one or two lathes, pieces are such where rough cutting or we can say simple work has done. For this purpose we do rot required fully trained operator, this work can also be done by semi-skilled person so we require

Fully trained operators - 7
Semi trained operators - 2

SHAPER AND PLANER: There are total theree shapers and one planer in the workshop. We require only three persons to operate them. This is because all these are side by side, and working process is very slow so theree persons can handle them easily.

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SUPERVISOR : We require one supervisor per 12 hour shift. His main job is to see which work should be complete first, and overall supervision of the workshop.

FITTER: Fitter is require to repair the lathe or other machine present in the workshop.

HELPER : Two helpers are requred. There job is to bring the rollers and other materials from the mill for repair with the help of crane. They have to clean the workshop.

SECURITY DEPARTMENT

The study of Security Department has done, and after thorough observation of their work, it was concluded that following officers are required :

	General Shift	A-Shift	B-Shift	C-Shift	Total
1. Chief Security Officer	1	-	-	-	1
2. Security Officer	-	1	1	1	3
3. Security Clerk at Gate	1	-	-	-	1
4. Security Inspector at Weigh Bridge.	-				1 (8 AM to 8 PM)
5. Reliever					

The requirement of security guards are given on next page.

REQUIREMENTS OF SECURITY GUARDS AT VARIOUS POSTS

		Day (8 AM to 8 PM)	Night (8 PM to 8 AM)
1.	Main Gate	3	2
2.	II Gate	1	-
3.	III Gate	1	-
4.	Weigh Bridge	1	-
5.	Admn. Block	1	1
6.	Sub-Station	1	1
7.	Rolling Mill	1	1
8.	Pump House	1	1
9.	Trollies	4	-
	Total	14	6

JOB DISTRIBUTION OF PERSONNEL OFFICE (EXISTING)

PERSONNEL OFFICE

RAJ KUMAR,
L.W.O.

1. Deals with Labour
   - Arrangement of Labour
   - Accident
   - Labour Court etc.
2. Library
3. Incharge of Personnel Office in the absence of Personnel Manager.
4. Manager attendance register.
5. Look after the Manager's Canteen.

AJAY KUMAR
A.L.O.

1. Joining and Leaving of the employees.
2. Record of Personal Files of employees.
3. Filing work.
4. Checking of Leave Record.
5. Misc. Work as desired by P.M.

DEVINDER
CLERK

1. All the work related to contractors.
   - Checking of Bill
   - Deduction of ESI & PF on the bill.
   - ESI and PF Challan
   - Distribution of checks of full and final to the employee.

MEHTA

1. Punching of Reward slips in the computer (1.45 Hrs.)
2. Prepare bill of meal and tea.
3. Prepare conveyance bills -(1 day)
4. Group Insurance and GGI Report - yearly.

JOB DISTRIBUTION OF TIME OFFICE (EXISTING)

TIME OFFICE

JIA LAL Chief Time Keeper G.Shift	JAGJIT SINGH T.Keeper Shift	KISHORE SINGH T.Keeper Shift	BIMBESH KUMAR T.Keeper Shift	NIRBHAI SINGH T.Keeper Shift	TIWARI T.Keeper G.Shift	MOHINDER Clerk Shift
1. Overall Supervision of Time Office work. 2. Factory ACt Return report. - Half yearly -Yearly. 3. Statistical Return report - yearly. 4. Bonus (yearly) 5. Full and Final of leaving. 6. Leaving and Joining Register (Data for computer) 7. Casual Labour payment 8. Advance reconcile.	1. Shift work (2.00 Hrs.) -Attendance record of staff. -Attendance cards with entry in register for workers. -Shift Attendance report and distribution of cards in concerned Deptt. -Gate Pass entry in register. -Collection of Reward slips and meal slips. etc. 2. Leave Posting of all leaves in Leave Wages Register (1.30 hrs.) 3. All the work related to staff: -Leave posting in attendance register. (20 mins) -Payment of Staff. -New Attendance Register -Monthly Posting of working days in leave wages register. -Payment checking of staff. (1 day)	1. Shift Work 2. C/Off posting in Register (1.5 Hrs.) 3. All the work related to SMS Plant.	1. Shift Work 2. Reward checking (45 mnts) 3. All the work related to Rolling Mill and Q.C.	1. Shift Work 2. All the work related to maintenance Deptt.	1. Deals with ESI & PF of Company employees 2. & salary distribution.	1. Serves as clerk and look after shift work.

DETAIL WORKING PROCEDURE OF TIME OFFICE:

1. SHIFT WORK:

A) Attendance Record of Staff:
The staff mark attendance in the register. The work of shift man is to mark the attendance of late comers in the attendance register from Late Comer's Register. It has been observed that about ten entries are to be made. It wil take about 15 minutes for this job.

B) Attendance Cards With Entry in Register for Workers:
He receives the cards of the workers then mark their attendance in the register.

C) Shift Attendance Report and Distribution of Cards in concerned Deptt.

This activity includes, making the departmentwise shift attendance report of workers, then distribute it to the concerned department alongwith cards. This whole activity (B & C) about 1.30 hrs.

D) Gate Pass Entry in Register:
He receive the Gate Pass, put time out on it, enter it in register and then enter the time in of the employee in the register. There are an average 5 - 6 Gate Passes daily, but on saturday the number is about 15.

E) Other Works:
In addition to above works, he has to attend the people coming to time office, he also receives ICM from different departments and take necessary actions. If there is any serious accident, then shift man has to go with patient to ESI.

2. LEAVE POSTING PROCEDURE:

The detailed leave posting procedure is as follows:
A. Receive the leave from employee.
B. Check whether mark by right authority.
C. Check his eligibility of leave.
D. Enter it in leave and wages register against employee's nam
It has been observed that there are about 50 leave application per day. It will take 1.30 hours to post them in the register

3. WORK RELATING TO DIFFERENT DEPTTS.

They have divided the work into following Deptts.
A) Staff
B) Rolling Mill and Q.C.Deptt.
C) SMS
D) Maintenance.

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There are four time keepers and each have given one department. They have to perform following jobs in their concerned Deptts.

1. Leave Posting In Attendance Register:
   This activity includes the posting of leave in the attendance register. Approximate time taken for this activity is 20 minutes.

2. Monthly Work

   a) Payment of Deptt.
   At the end of month they calculate the workings days and calculate the payment in the attendance register and send it to computer on 30th of month.

   b) Monthly posting of working days in leave wages register
   At the end of month, timekeeper has to enter the total days of working in the leave and wages register.

   c) Payment Checking of Deptt.
   The salary statement was made by computer and send to the Time Office for verification. They check manually the posting of working days in the salary statement. If there is any discrepancy they send it to EDP for correction.

   The activity a, b & c has to be done at the end of month i.e. on 2nd and 3rd of month.

   d) New Attendance Register and Attendance Cards:
   This activity includes the making of new attendance register and attendance cards for next month. This work is generally completed before 25th of month. We have total 950 employees (including Staff, Worker, Helper)

SALARY & ADVANCE DISTRIBUTION:

1. Advance Distribution:
   The basic procedure of advance distribution is as follows:
   a) Firstly employee has to inform time office about salary advance. The dates are fixed i.e. on 16, 17, 18. Then Time Office inform cashier to arrange the cash.
   b) On 20, 21, 22 the advance is distributed to the noted employe

2. Salary Distribution:
   Four days are fixed for salary distribution i.e. on 4, 5, 6 & 7t of month.

ESI AND PF PROCEDURE:

1. Company Employees:
   The procedure of this is as follows:
   a) Firstly Mr.Tiwari receives the summary from the computer Dept
   b) From that summary he made departmentwise list of PF manually.
   c) Then he filled the ESI and PF Challan. These should be sent before 20th of month.

This whole activity requires 3 - 4 days.

CONTRACTOR'S EMPLOYEES:

Whole work of contracto relating to ESI and PF has been manually. The procedure is as follows:

a) We have shown 233 employees of total 42 contractors in our books.

b) Mr.Devinder receives the bill from the deptts. fortnightly.

c) He mark the attendance of employees in the contractors Attendance Register on the basis of bill of contractor.

d) On that attendance basis he deduct ESI and PF from contractor bill and send these registers to the Accounts Deptt.

e) He made ESI and PF Challan.

f) He receives checks from the account department and distribute them to the contractors.

SUGGESTIONS:

The detailed study of Time Office and Personnel Office was made. The important suggestions related to this deptt. are as follows:

1. One Copy Of Gate Pass:

We have two copies of Gate Pass, one is given in security office and other is in time. The entry of gate pass is made in the register by Time Keeper from the gate pass copy of security deptt. So there is no need of gate pass copy in time office. Thus one copy of gate pass may serve the purpose.

2. Attendance Register:

We have 7 - 8 different departmentwise and gradewise attendance registers. We make new registers every month, this result in wastages of time and stationery. This problem may be solved if we made attendance register on computer.

3. Gate Pass Procedure:

It was observed that there is no well defined system of gate also there is no checking of gate pass register. So there should be some well defind gate pass procedure and more important is the checking of a register and to take necessary action.

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4. Joining And Leaving Register:

There are two joining and leaving registers, one maintained by Time Office and second is by ALO. We can maintain single register instead of two registers, thus reducing duplication of work.

5. Reward Punching:

This activity includes the punching of reward in the computer. It was observed that about 200 entries has to be made daily. This whole work require about 1.45 Hrs. daily. It was also observed that EDP Deptt. has sufficient time to do this work, so this work may be done by EDP people.

6. Salary Distribution:

It was observed that there are long queues in time office on salary day, workers first stay for hours in time office, then for hours in front of cash window. This will certainly effect the production on that day. So to overcome this difficulty it is suggested that their salary will be enclosed in the envelope and time office people will go to concerned Deptt. and distribu the salary package among the employees and get their sign or thumb impression on the salary sheet. This will save the time of production people.

The second proposal is that cashier and time keeper will sit together, so there is only one queue.

MANPOWER REQUIREMENT IN SMS PLANT, CONSIDERING A & B FURNANCE ON INGOTS AND D FURNANCE ON BIUETS

	A- Furnance	B- Furnance	D- Furnance	Total/ Shift	Total/ Day	Reliever	Total
(A) SHIFTS AT ARC FURNANCE							
1. Melter	1	1	1	3	9	2	11
2. Furnance Men	5	5	6	16	48	8	56
3. Plate Mason	1	1	1	3	9	2	11
4. Trumpette Man	1	1	-	2	6	1	7
5. Plate Mason Helper	1	1	1	3	9	2	11
6. Sling Man	2	2	-	4	12	2	14
7. Sling Man Helper	2	2	-	4	12	2	14
8. Laddle Man	1	1	1	3	9	2	11
9. Laddle Man Helper	1	1	1	3	9	2	11
10. Teemer Man	--------1----------		1	2	26	1	7
11. Welder	----1------		1	2	6	1	7
12. Roof Mason	---------1----------			1	3	1	4

Contd..

	A-Furnace	B-Furnace	D-Furnace	Total/Shift	Total/Day.	Reliever	Total
Contd..							
13. Roof Mason Helper	----------	1	----------	1	3	1	4
14. Colour Coding	-	-	-	1	3	1	4
15. Shift Foreman	-	-	-	1	3	1	4
16. Pit Site Supervisor	-	-	-	1	3	1	4
B) SHIFT AT ARC FURNANCE							
1. Roof Mason	-	-	-	-	2	-	2
2. Roof Mason Helper	-	-	-	-	2	-	2
3. Stopper Men	-	-	-	-	3	-	3
4. Lime Kiln Mislery	-	-	-	-	1	-	1
				50	158	30	188

INDUCTION FURNACE

	E Furnance	G- Furnace	Total /Shift	G. Shift	Total /Day	Relie- ver.	Total
1. Melter	1	1	2	1	7	1	8
2. Welder	------1-----		1	-	3	1	4
						Total	12

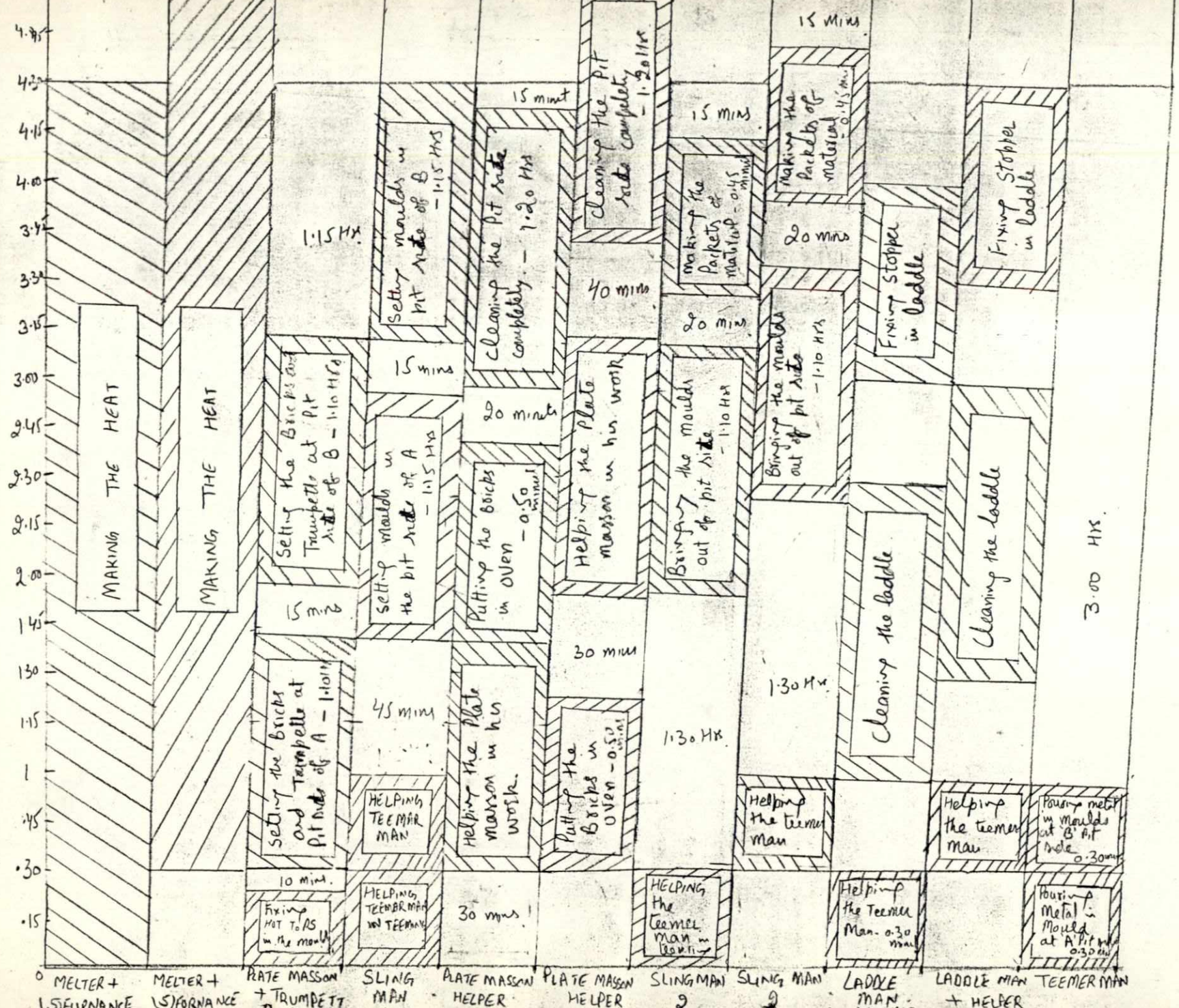
CRANE DRIVERS

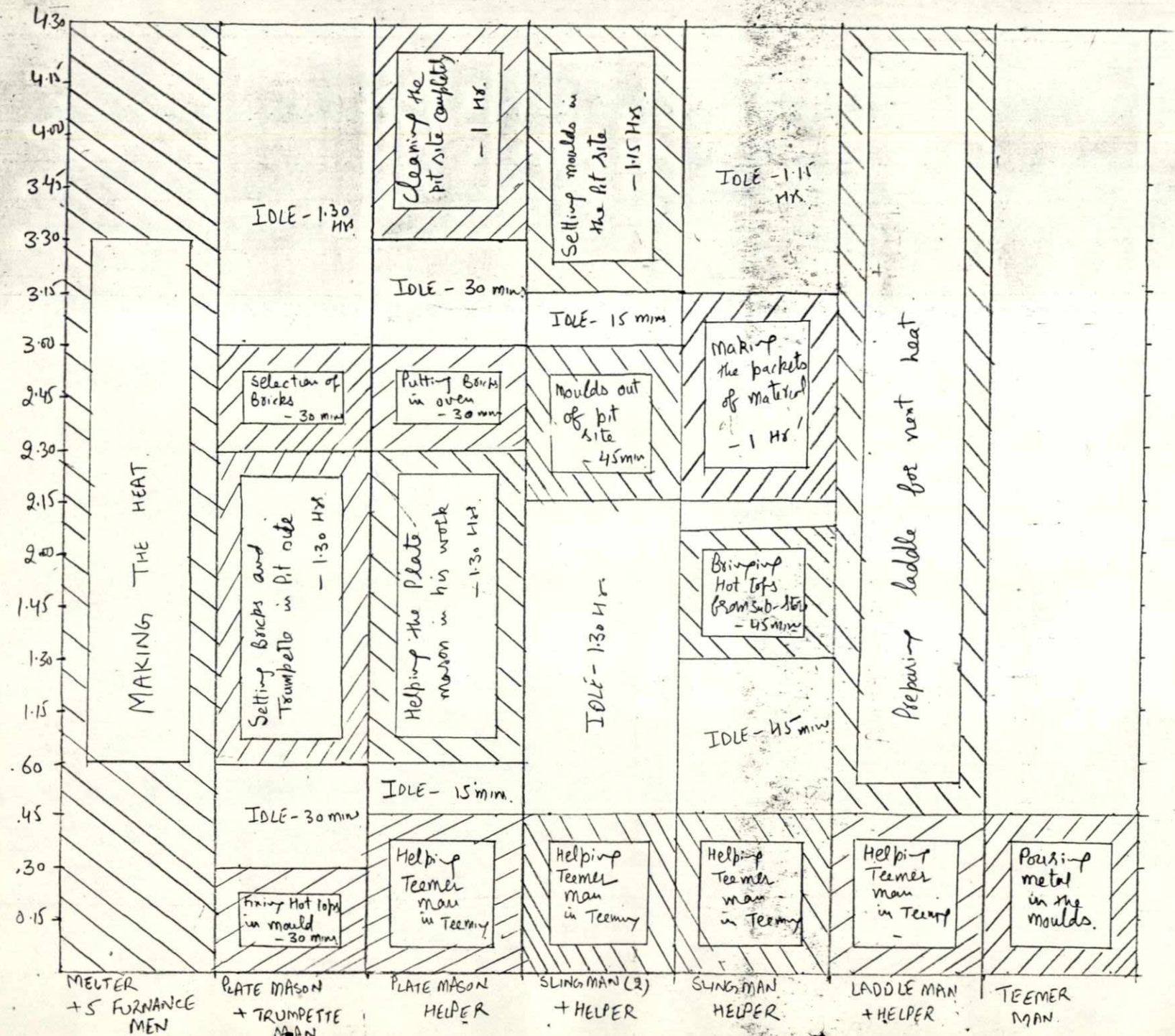
	G. Shift	Per Shift	Per Day
1. Scrap	1	3	10
2. Pit Site	-	3	9
3. BCM	-	1	3
4. I.F.	1	3	10
			32

Relievers = 5

Total Drivers Required = 32+5

= 37


Heat at furnance A
MAKING THE HEAT
MAKING THE HEAT
1.15 HRS.
Setting moulds in pit side of B - 1.15 HRS
Cleaning the pit side completely. - 1.20 HRS
Cleaning the pit side completely - 1.20 HRS
15 mins
15 mins
15 mins
15 mins
20 mins
40 mins
20 mins
20 minutes
30 mins
45 mins
10 mins.
30 mins
1.30 HRS.
1.30 HRS.
Setting the Bricks and Trumpette at Pit side of B - 1.10 HRS
Setting moulds in the pit side of A - 1.15 HRS
Putting the bricks in oven - 0.50 minutes
Helping the plate masson in his work.
Helping the plate masson in his work.
Putting the Bricks in oven - 0.50 minutes
Bringing the moulds out of pit side - 1.10 HRS
Bringing the moulds out of pit side - 1.10 HRS
Making the Packets of material - 0.45 mins
Making the Packets of material - 0.45 mins
Fixing Stopper in Ladle
Fixing Stopper in Ladle
Cleaning the Ladle
Cleaning the Ladle
3.00 HRS.
HELPING TEEMAR MAN
HELPING TEEMAR MAN
HELPING TEEMAR MAN
Helping the teemer man
Helping the teemer man
Pouring metal in moulds at 'B' Pit side 0.30 mins
Fixing HOT TOPS in the moulds
HELPING TEEMAR MAN
HELPING the TEEMER man
Helping the Teemer Man - 0.30 mins
Pouring Metal in Mould at A' Pit side 0.30 mins
0
MELTER + LIFTER
MELTER + LIFTER
PLATE MASSON + TRUMPETTI
SLING MAN
PLATE MASSON HELPER
PLATE MASSON HELPER
SLING MAN
SLING MAN
LADDLE MAN
LADDLE MAN + HELPER
TEEMER MAN


4.30
4.15
4.00
3.45
3.30
3.15
3.00
2.45
2.30
2.15
2.00
1.45
1.30
1.15
.60
.45
.30
0.15
MAKING THE HEAT
IDLE - 1.30 HRS
Cleaning the pit site completely - 1 HR.
IDLE - 30 mins
Selection of Bricks - 30 mins
Putting Bricks in oven - 30 mins
Setting Bricks and Trumpette in Pit site - 1.30 HRS
Helping the Plate mason in his work - 1.30 HRS
IDLE - 30 min
IDLE - 15 mins
Fixing Hot tops in mould - 30 mins
Helping Teemer man in Teeming
Setting moulds in the pit site - 1.15 HRS.
IDLE - 15 mins
Moulds out of pit site - 45 mins
IDLE - 1.30 HR.
Helping Teemer man in Teeming
IDLE - 1.15 HRS.
Making the packets of material - 1 HR
Bringing Hot Tops from sub-store - 45 mins
IDLE - 45 mins
Helping Teemer man in Teeming
Preparing laddle for next heat
Helping Teemer man in Teeming
Pouring metal in the moulds.
MELTER + 5 FURNANCE MEN
PLATE MASON + TRUMPETTE MAN
PLATE MASON HELPER
SLING MAN (2) + HELPER
SLING MAN HELPER
LADDLE MAN + HELPER
TEEMER MAN.

ACTIVITY DESCRIPTION

1. Melter

The Melter has following important jobs :-

A) To prepare the chemistry of material.

b) Overall supervision of furnace.

2. Furnace Men

No. of persons required/shift = 5

Their main job is to put the Lime Stone, Lime burn, Ferro-alloys etc. in the furnace with the help of shovel as directed by Melter.

3. PLATE MASON GROUP

This Group includes following persons :-

Plate Mason	1
Trumpette Man	1
Mason Helper	1

Plate Mason and Trumpette Man

They have following important jobs to be performed:

a) Setting the bricks and trumpette at pit side.

b) Fixing Hot tops in the mould.

Plate Mason Helper

a) Pit Site cleaning.

b) Putting bricks in oven.

c) Helping plate mason in his work.

4. SLING MAN GROUP

The group of sling men has to perform following important jobs :-

a) Setting moulds in Pit Site.

b) Bring moulds out of pit site.

c) Making the packets of material to be put in the mould boxes during pouring.

d) Helping teemer man during pouring.

5. TEEMING GROUP

This group includes :

a) Teemer Man.

b) Laddle Man.

c) Laddle man Helper.

They have following important jobs :-

a) Pouring the metal in the moulds.

b) Preparing the laddle after fixing stopper.

c) To put the slag out of laddle.

d) Overall supervision of pit site.

6. ROOF MASON & HELPER

They have following important functions :-

1) Lining of roof of furnace.

2) Lining of laddle.

3) Other repairs of furnace and laddle.

4) They also look after the repair of furnaces in Rolling Mill.

7. COLOUR CODING

As the heading indicates, this person has to make colour code on all the ingots of all the furnaces.

8. SHIFT FOREMAN

Shift foreman is a incharge of shift, He has to look after all the furnaces running in the shift. If there is any problem on any furnace he has to solve it.

9. PIT SITE SUPERVISOR

This man has the responsibility to supervise the pit site on all the furnaces. He has to see, whether all the work in pit site has done properly.

10. STOPPER MAN

This group includes 3 persons. The main job of this group is to make stoppers, which are to be fixed in the laddle, after every heat.

11. LIME KILN MISLERY

We have two furnaces to burn the lime,to make lime burn which is used in the A, B, D furnaces. To burn lime we use fire wood and steam coal in a proper way. Lime kiln mislery has the responsibility of burning the lime in the furnace.

PURCHASE DEPARTMENT

Present Manpower Strength = 6

Name	Designation
1. Mr. Ramesh Pashan	Manager Purchase.
2. Mr. S.S.Datta	Executive Purchase.
3. Mr. Beri	Purchase Officer.
4. Mr. S.K.Jaggi	Clerk
5. Mr.Mahtam Singh	-do-
6. Mr. Jatinder	-do-

DISTRIBUTION OF JOBS IN PURCHASE DEPARTMENT (EXISTING)

RAMESH PASHAN
MANAGER

-Supervision of Department
- Outstation Purchase

S. S. Datta
Executive
-.-.-.-.-.-

1. Deals with purchase of RM, refractories, ferro-alloys and imported scrap. (About 200 items)
2. Supervise Deptt. works in the absence of purchase manager.

Beri
Officer

1. Deals with local purchase(5000-7000 items)
2. Go to Market to purchase the items.

Jaggi
Clerk

1. Receive the material from transporter, and then loaded it on cart and sent it to factory (5-6 vehicles daily).
2. Reserve seats in train for Co.employees.

Mahtam Singh
Clerk

1. All the work related to SGR & Bill (2.30 Hr.)
   - Receive SGR & Bill from Store.
   - Entry in SGR register.
   - Check SGR and remove any discrepancy after discussing with concerned people.
   - Send it to Accounts Deptt.
2. Entry in indent register.
3. Filling work (1.15 Hrs.)

Jatinder
Clerk

1. Receiving Dak.
2. Issuing Ammendment notes to the parties.
3. Other miscelleanous work as desired by PM.

DISTRIBUTION OF JOBS IN PURCHASE DEPTT. (PROPOSED)

Mr. Ramesh Pashan
Manager

- Supervisor of Department
- Outstation purchase.

Mr. S. S. Datta
Executive

1. Deals with purchase of RM, refractories ferro alloys and imported scrap (about 200 items)
2. Supervise deptt. works in the absence of purchase Manager.

Beri

1. Deals with local purchase (5000-7000 items).
2. Go to market to purchase the items.

Jaggi

1. To Receive the material from transporter and then loaded it on cart and sent it to factory (5-6 Vehicles /daily)
2. Reserve seats in train for company employees.

Mahtam Singh
Clerk

1. All the work related to SGR & Bill (2.30 Hr.)
   - Receive SGR and Bill from Store.
   - Entry in SGR Register.
   - Check SGR and remove any discripency after discussing with concerned people.
   - Send it to Accts. Dept.
2. Entry in indent register
3. Filling work (1.15 Hrs.)

Jatinder

1. Helping Mr. Beri in his work & going to market & collect the material.
2. Also help Mr. Datta in his work.
3. Other Misc. work.

Steno/ Typist

1. Typing work related to purchase Deptt.
2. Follow up with parties.
3. Issuing Ammendment notes.
4. Receiving Dak.
5. Etc. work.

PRESENT SYSTEM OF WORKING

1. INDENT RECEIVED

First of all indents are received by Mr.Mahtam Singh in the morning. Then he take them to Mr. Pashan for signing after entering in the indent register. They have divided these indents into following categories.

Outside station Purchase	- Mr. Pashan
Local Purchase	- Mr. Beri

There are three copies of indent.

Yellow	-	Indentor
Red	-	Store
White	-	Purchase

Thus purchase Department receives just one copyof indent.

For RM, refractories, ferro alloys, fluxes etc., there is no need of indent. For these items there is a critical stock test. Mr. Datta along with Mr. Pashan handle the purchase of these items.

Format of Indent Register : Indent register has following columns:

S. No.	Indent No. & Dt.	Indentor Deptt.	Particular	Qty.	Purchase Enquiry Dt.	Suppliers' Name	Qty. ORD	Receipt of Mtl Dt.	SGR No.	Qty. rec-pt.	Qty rcvd	Balance

But they fill only first four columns.

Note : From April '91 to Dec. '91 Mr. Mahtam Singh receives 280 indents. Thus on average there are 35 indents/ month. It is observed that time required to enter one indent in indent register is about two (2) minutes.

2. ENQUIRY FLOAT

This step is not always be used. This is for the items whose rates are fluctuating or for capital items.

3. QUOTATIONS RECEIVED

On the basis of above enquiry, the various parties have sent their quotations. For local items quotations are also received by hand.

4. COMPARATIVE STATEMENT

On the basis of quotations received from the various parties, the comparative statement was made. We have fix format of comparative statement, on the basis of this comparative statement, order was placed to the party.

5. RELEASE OF PURCHASE ORDER

In the case of daily routine items and monoplistic items the steps 2,3 & 4 are not needed to follow. For RM, refractories etc. the order was placed for 6 months.

The purchase orders are of two types :

A) Local Purchase Orders.

B) Capital or Outstation Purchase Orders.

A) LOCAL PURCHASE ORDERS

These purchase orders are mostly hand written. There are 5 copies of local purchase order, which are distributed as follows :-

White	-	Party
Green	-	Store
Yellow	-	Accounts
Light Green	-	Purchase Deptt. (Master File)
Red	-	Remain in P.O.Booklet.

B) CAPITAL PURCHASE ORDER

This order has to be typed. There are seven copies of purchase order :

2 White	-	To party, then party return one copy.
1 Blue	-	Party file.
1 Green	-	Store
1 Red	-	Despatch (Master File)
1 Light Green	-	Purchase (Master File)

Note: From April '91 to Dec. '91 there are average 42 purchase orders/month for outstation (including RM, Refractories, fluxes etc.), whereas 238/month are local purchase orders.

6. FOLLOW UP

This step is needed if party does not send the material in time. The procedure for follow up is that person whose related the purchase order is given dictation to Steno and then Steno typed the letter and sent to party. We have to write average 2-3 letters daily to the parties.

7. MATERIAL TO STORE

This step also have two procedures:

A) If payment is through bank, then purchase department receive a GR copy from party and they sent to Accounts. They released documents from bank after giving payments. Then Mr.Jaggi, got the material from transporters and sent the material to the factory site.

Note: It was observed that there are about 5-6 cases of said type daily, to whom Mr. Jaggi deals.

B) The second case was directly receive the material in our factory.

8. SGR COPY TO HEAD OFFICE FROM STORE

After receiving the material and inspection by indentor, store people send two copies of SGR to the purchase deptt. alongwith bill, weighing step etc. any other document sent by the party.

Mr. Mahtam Singh receives two copies of SGR :

Yellow	-	Accounts
White	-	Record (Purchase Deptt.)

CHECKING OF SGR AND ENTRY IN SGR REGISTER

Mr. Mahtam Singh Checks the SGR with Purchase Order (To see whether material sent is according to P.O.), he also checks the freight in the bill. After checking he enters the SGR in the SGR register.

SGR register has following columns :

SGR No.& Dt.	Mtl. Desc-ript ion.	Supplier Name	Bill No. & Dt	Amt.	Sent to A/cs Dt.	Signature of A/cs.	Whether Returned or Not.	Remarks

After entering in SGR Register he sent yellow copy alongwith other documents to the accounts department.

In certain cases, bill is not attached with SGR, then he has to make estimate bill and have to attach it with SGR before sending it to Accounts Deptt.

In certain cases, party sent bills to the purchase Department directly then he has to attach this bill to the SGR.

Note : From April '91 to Dec.'91 there are average 600 SGR/month. It was also observed that for checking 25 SGRS, he took 40 minutes. And for entering same no. of SGRS in the SGR Register, approximate time taken by him is 85 mins.

9. RELEASE OF PAYMENTS

From accounts Department, they receive cheques and they distribute them to the concerned parties.

SUGGESTIONS :

1. Yellow copy of indent should come to purchase department alongwith white copy and it will return back to indentor after purchase action with delivery date so that indentor will able to know the status of his indent.

2. Rates of purchased material should be sent to the Indentor so that he may also know the rate of material and this will help in the better handling of material.

3. The indent register may have following columns : Indent No./Date, Indent Received Date, Indentor Deptt., Particulars, Qty., Enquiry Date, P.O.No. & Date, Party's Name, Qty. ordered, Delivery Date, Follow up date, Remarks.

4. It should be a duty of PM/Executive to check the indent register and all other registers after a week that whether all the entries are made regularly and properly and also to check that which orders are pending and why? and ask for follow up for pending orders.

5. These should be a ~~xxxxxxx~~ masterlist of suppliers with their rates. Then we made master comparative statement, and it should be reviewed after certain period.

6. There should be a register, in which the payments given to pa rty should be entered. It has columns like P.O.No. & Date, Party Name, Cheque/Draft No.& Dt., Amount, Remarks.

7. We may have fixed format for follow up.

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