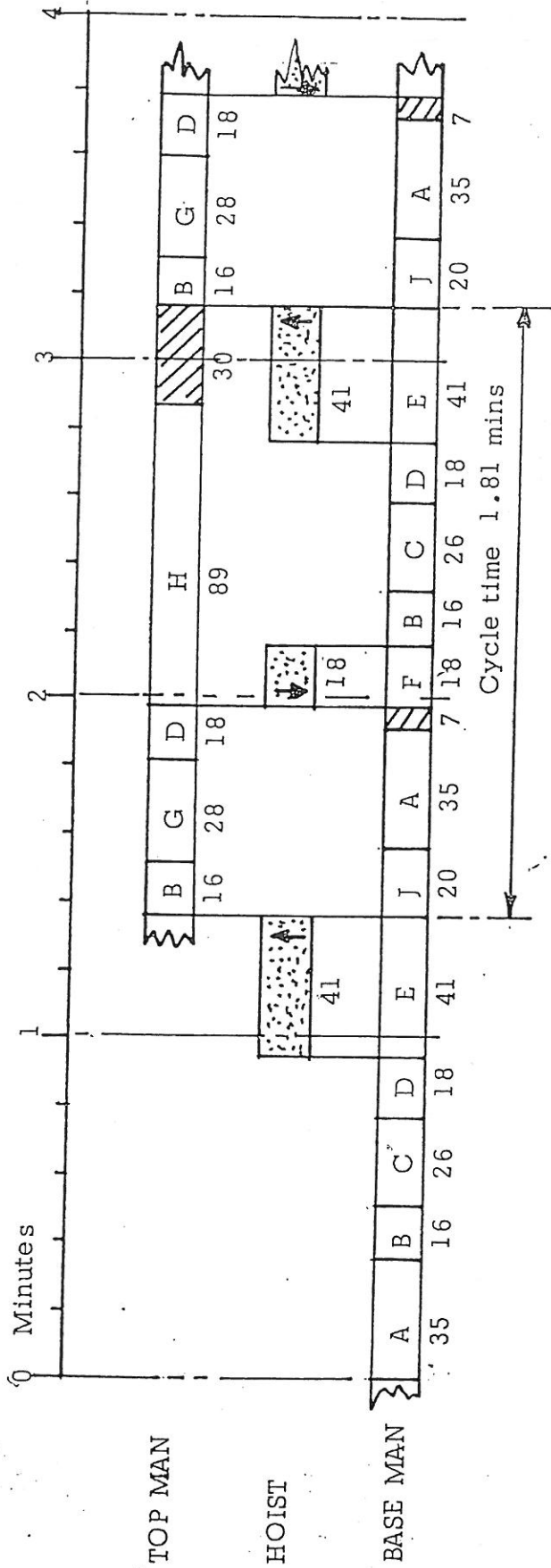


MULTIPLE ACTIVITY CHARTING HOIST AND TRANSPORT BRICKS

PRESENT METHOD



Utilisation

Top man $\frac{1.51}{1.81} \times 100 = 83\%$

Hoist $\frac{0.59}{1.81} \times 100 = 33\%$

Base man $\frac{1.74}{1.81} \times 100 = 96\%$

Output

50 bricks in 1.81 mins = 1657 bricks per hour

Cost per hour

2 men at £6 = £15 per hour
1 hoist at £3

Cost per 1000 bricks =

$\frac{£15.00}{1.657} = £9.05 \text{ per 1000}$

MULTIPLE ACTIVITY CHARTING HOIST & TRANSPORT BRICKS

1. Introduction

Bricks, banded in packs of 50, are transported 5 metres from a stockpile to a hoist, raised to fourth floor level and then transported 20 metres along the scaffold to where they are required.

Wheel barrows are used which will carry one pack of bricks at a time, but the hoist is capable of holding and raising up to four packs at a time. Barrows cannot be left in the hoist.

2. Present Method

The present method is as follows. One man at ground level wheels a pack of bricks to the hoist, opens the gates, wheels on the barrow and leaves the pack on the hoist platform. When the empty barrow is clear the man closes the gates and drives the hoist to the fourth floor. He then returns to the stock pile, engages another pack and returns to wait for the hoist to be cleared before driving it down and repeating the cycle.

The raising and lowering of the hoist can only be performed by the man at ground level.

On the fourth floor the hoist gates are opened by the second man when the platform arrives, the pack is engaged on the barrow, removed from the platform and the gates shut.

This allows the hoist to go down and be reloaded while the second man wheels the bricks to the required position 20 metres away and returns with the empty barrow to await the arrival of the hoist platform with the next pack.

The complete operation was broken down in the following elements and average times for each element, including an allowance for operator relaxation, were obtained.

<u>Element</u>	<u>Description</u>	<u>Minutes</u>
A	Engage pack on barrow and wheel 5 metres to hoist	0.35
B	Open hoist gates	0.16
C	Wheel barrow onto hoist, disengage pack and wheel barrow off	0.26
D	Close hoist gates	0.18
E	Raise hoist to fourth floor	0.41
F	Lower hoist to ground floor	0.18
G	Wheel empty barrow on to hoist, engage pack and wheel off	0.28
G1	As element G but disengage pack after wheel barrow off	0.32
H	Wheel barrow 20 metres, disengage pack and return	0.89
H1	As element H, but engage pack before commencing	0.94
J	Wheel empty barrow 5 metres	0.20

The cost of labour is £6.00 per man hour and of the hoist £3.00 per hour.

3. Your Work

1. On the basis of the present method, calculate
 - (a) the number of bricks that can be transported per hour;
 - (b) the cost of transport per 1,000 bricks.
2. Devise a better and cheaper method, assuming that there is no limitation on output, apart from the capacity of the hoist.