CHAPTER-THREE

COST OF ACCIDENTS

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Every accident brings with it losses in the form of sacrifice of human life, loss of materials or equipment, injuries to workers etc.

In turn accidents also lead to compensation cost.

Thus accidents increase the cost of construction and decrease the margin of profit to contractors.

- There are two main categories of cost of accidents
- ➢ Tangible or Direct Cost:-The cost which can be easily ascertained or evaluated and covered by worker compensation.
- ➢ Intangible or Indirect Cost:-The cost which cannot be easily Evaluated.

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1) DIRECT COSTS

Covered by workers Compensation

➢ Ambulance service

➢ medical & follow-up treatment

➢ Hospitalization

➢ Medication

➢ disability benefits

➢ Losses covered by insurance

➢ financial transaction

What is Workers Compensation

✓ A mandatory government run insurance scheme that ensures compensation for workers who get injured in the workplace.

✓ The company pays the insurance premium based on man-hours to be worked

✓ Premium in each state varies based on the type of craft

❖ 20% of wage to over 100%
❖ Based on overall safety record of the craft
❖ Insurance payment period & terms in the state

Experience Modification Rate & Loss Ratio

✓Premium for a employer is based on state rate and employer's experience modified rate(EMR)

➢EMR tends to be an evaluation of company's safety record.

➢Loss ratio is based on claims made .vs. premium paid

➢Larger EMR higher the premium.

➢EMR is modified based on three year period not including immediately preceding year.

Past year cases may not have been closed yet

Experience Modification Rate

Focuses on reflecting numerous small incidents rather than few large ones

Year	LR	EMR
1991	1.08	0.98
1992	1.05	0.97
1993	0.36	0.92
1994	0.24	0.96
1995	0.22	0.72
1996	0.37	0.66
1997	0.63	0.58

EMR is used evaluate a firms safety performance ?

2) INDIRECT COSTS

Indirect cost for accidents is difficult to quantify which may include:-

1. Lost time of injured worker
2. Cost of lost time of other workers who stop
3. Cost of lost time of supervisory crew
4. Time spent by site medical crew/ Transport
5. Damage to equipment, tools, materials
6. Employee welfare cost.
7. Disruption to crew composition
8. Reduced worker productivity / Supervisor productivity
9. Idle or unused equipment
10. Overhead cost
11. Administration cost / Legal costs
12. Company Image

Calculating accident Costs

A) Calculating direct cost of accidents

DCA= medical cost + IndemnitPayments

B) Calculating Indirect cost of accident

ICA = direct cost x multipliers

Cost Multipliers

If your direct cost of accident is:
Use this cost multiplier:

0 – 2,999 birr	4.5
3,000 - 4,999 birr	1.6
5,000 - 9,999 birr	1.2
10,000 or more	1.1

Cost of accidents = DC + IC(of accidents)

Economic Costs and Benefits

There are generally said to be five main reasons why accident prevention in construction is worthwhile or useful.

1. The cost in human suffering
2. Moral reasons needs to be done to raise the quality of life at work
3. Legal reasons are contained in statute law
4. Financial reasons ensure the continuing financial health of a business and avoid the costs associated with accidents
5. Finally, a good safety record and documented safety management system can value in gaining new business

Accident investigation and Recording

The elements of an accident recording system consist of :

- Investigation reports – format
- Summary analysis forms used of by the data collector
- Statistical analysis
- Summary reports for management

Principles of accident investigation and Recording

❖Purpose of the investigation & report

❖Defined procedure for investigating all accidents

❖Essential tools in the competent investigation of accidents and damage/ loss of incidents

❖Documentation to provide evidence of policy or practice followed on site

COSTS OF THE SAFTEY PROGRAM

❑ The cost of administering a construction safety and health program usually amounts to 2.5% of direct labor cost.

❑ These costs include:

➢ Salaries for safety, medical and clerical personnel

➢ Safety meetings

➢ Inspection of tools and equipments

➢ PPE

➢ Health programs such as respirator fit tests

➢ Miscellaneous supplies and equipments

❑ The net savings to be expected from introducing effective safety program is 4% of direct labor cost.

QUANTIFICATION OF ACCIDENT

❑ Injury Frequency Rate(IFR):

$$IFR = \frac{NO\ OF\ DISABLING\ INJURIES}{TOTAL\ NO\ OF\ MAN\ HOUR\ WORKED} * 100000$$

- The disabling injury means an injury which causes loss of working time beyond the Shift or day during which the injury occurs.
- IFR denotes how frequently accidents occur.

❑ Injury Severity Rate (ISR):

$$ISR = \frac{NO\ OF\ DAY\ LOST}{NO\ OF\ MAN\ HOURS\ WORKED} * 1000$$

❑ Injury Index (II)

$$II = \frac{IFR * ISR}{1000}$$

Example
➢ On a particular construction project the contractor employed on an average 100 workers with 50hrs/week. The project lasted for 35 weeks and during this period, 14 disabling injuries occurred. If the no. of days lost due to injuries is 35,

A) Calculate IFR, ISR and II

- Solution

$$IFR = \frac{14}{100 * 50 * 35} * 100000 = 8$$

$$ISR = \frac{35}{100 * 50 * 35} * 1000 = 0.2$$

$$II = \frac{8 * 0.2}{1000} = 0.0016$$