Notes by-

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CONSTRUCTION MANAGEMENT

ASSIGNMENT NO. 04

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Assignment No. 4.

26/08/03

Q.1] Define IFR, ISR, II.

1) IFR (Injury Frequency Rate):-

The injury frequency rate is defined as the number of worked. A ~~dia~~ disabling injuries per 10^6 man hours worked. A disabling injury means an injury which causes a loss of working time beyond the day ; shift or turn during which the injury recieved.

$$\text{Injury Frequency Rate} = \frac{\text{No. of disabling injuries} \times 10^6}{\text{No. of man hours worked.}}$$

Injury frequency Rate does not take into account the time lost because of an injury.

2) ISR (Injury Severity Rate):-

It is defined as the No. of days of lost time because of injuries per 1000 man hour worked. The std. scale for lost time resulting from death or permananet disability are fixed. If an injury causes the death or permanent disability of a worker the No. of days of lost time used for that work should be taken from the table even though a worker who losses several fingers in an accident & lateron returns to work, the total disability be only considered.

$$\text{ISR} = \frac{\text{No. of days lost} \times 1000}{\text{No. of man hours worked.}}$$

iii) II : (Injury Index)

$$II = \frac{\text{Frequency Rate} \times \text{Severity Rate}}{1000}$$

Q.2] A contractor has employed an on avg. 150 workers on a ~~hourly~~ housing complex consisting 6 buildings. The project was completed in 50 weeks & working hours per weeks being 40. During the complition of the project there were 15 disability injuries & 22 working days were lost; because of injuries.

Calculate IFR, ISR, II.

Sol^n:- 1) Injury Frequency Rate:-

$$IFR = \frac{\text{No. of disabilities} \times 10^6 \text{ injuries}}{\text{No. of man hr. worked.}}$$

$$= \frac{15 \times 10^6}{150 \times 50 \times 40}$$

$$= 50.$$

2) Injury Severity Rate:-

$$ISR = \frac{\text{No. of days lost} \times 1000}{\text{No. of man hr. worked.}}$$

$$= \frac{22 \times 1000}{150 \times 50 \times 40}$$

$$= 0.0733$$

3) Injury Index:-

$$I.I = IFR \times ISR / 1000$$

$$= \frac{50 \times 0.0733}{1000}$$

$$= 3.667 \times 10^{-3}$$

Q.3] Explain economic aspect of accident :-

Due to accident at any const^{n} site, there are injuries to one or more workers which may lead to the death of one or more workers. No doubt, the compensation in the form of insurance is paid to the worker, medical assistance is granted, still there are always certain indirect expresses in any form; the contractor has to bear. There losses can not be covered by insurance or compensation are called indirect cost & includes the following.

a) Cost of lost time of injured employee & that of other employee who either stop the work due to accident or those who are employed for first aid and after assistance to that injured person.

b) Cost of supervisory staff in assistaing that injured employee; involved in investigations for cause of a accident & preparing accident report.

c) Cost lost due to damaged equipment or damage of other property material etc.

d) Cost due to delayed progress of the work due to accident.

e) Cost of payment of wedges to the injured person, during the period of the injury.

Q.4] What are the causes of const° accident ?

Causes of construction accidents may be grouped as-

1) Uncontrollable contact bet° men & equipment or bet° men & material such as cranes, trucks, matl. storage etc.
2) Failure of temporary structures such as scaffoldings, forms, ladders, cofferdams etc.
3) Inherent engg. hazards; such as the use of explosives, toxic gases, toxic ducts etc.
4) Unsafe practice of individual workers or personal hazards resulting from the carelessness of workers.

Q.5] How are the const° accidents are classified ?

As per provisions of factories act 1948, accident in general classified into 5 catagories viz-

1) Minor accidents :- Accident which are make the worker disabled for less than 48 hours comes under this catagory.
2) Reportable accidents :- If an accident causes worker disabled such that he can not work for more than 48 hrs. the accident is classified as reportable accidents. Such accidents should be reported.
3) Fatal accident :- Results in a death of a worker.
4) Accidents which causes poisoning
5) Dangerous accidents.

Q.6. Enumerate the important aspects to be included in the safety program of a const° project.

Special features have been made by const° industry which adversely influence the safety & health of workers. Special problems that arise at const° sites are due to following reasons:

1) Short time duration of work sites to labourer.
2) Seasonal employment.
3) Extensive & exhaustive use of migrant labour.
4) Extensive subcontracting practice.
5) Effect of weather.
6) Over-time working
7) Competetive tendering.

The objectives of safty program are:-

1) To minimise accidents & incidents.
2) ~~Indo~~ Identificat° & eliminat° of risks before losses occur.
3) Developing confidence in workers.
4) Avoiding loss of time, life, machinary & of course work.

7] Write a short note on personnel protective equipments.

a) Protection of head:
- Safety hard hats
- Rubberized hats for protection against liquid.
- Ear protection.

b) Protection of face:-
- Face mask
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- Face shields
- Welding helmets.

c) Protection of eyes:
- Goggles of case-hardened & clear glass for protect° against impact.
- Eye cup goggles for protection against flying objects & dust.
- Eye cup goggles impervious to chemicals for protct° against acids / alkalies splashes.

d) Protection of lungs:-
- Air line respirators.
- Cartridge respirators
- Oxygen or air breathing apparatus
- Gas mask.

e) Protection of other body parts; eg. hand, foot, leg etc.
- Protective asbestos clothing.
- Gloves
- Safety shoes.
- Foot gaurds
- Safety body belt
- Aprons
- Safety (moulder's) shoes.

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