

## WORK SITE MANAGEMENT PLAN IN CONSTRUCTION PROJECTS

*Zakir Hossain Khan & A. Rajshekhar*

*Research Scholar, Department of Geography, Kalinga University, Raipur, Chhattisgarh, India*

**Received: 24 Apr 2020**

**Accepted: 29 Apr 2020**

**Published: 16 May 2020**

### **ABSTRACT**

*In project construction activities, Occupational Health and Safety Management Plan, Site and Camp Management, Worker Safety and Work Site Management Plan and Labor Environmental Management Plan are analyzed in this study. Followed by Labour Act 2006 and Labour Rules 2015 of Bangladesh, these plans will help for future development of occupational health and safety rules in Bangladesh. Work site management plan in construction projects is essential to prevent occurrence of different types of hazards and accidents in a construction site. Different stages of safety management, including its major parameters of the safety management are discussed in this study. Remedies that are to be taken in order to prevent various accidents are sorted out. It is important to send the message to all that, safety at work will not only ensure safety for project but also will ensure safety for their family.*

**KEYWORDS:** *Safety; PPEs, Construction*

### **INTRODUCTION**

It was stated by Cretu et. al. on 2011 in “The Guide to the Project Management Body of Knowledge” that safety management is most important in a project management area. Twort and Rees in 2011 mentioned that, suitable safety activities is important to identify properly and strategy to accommodate potential serious health and safety problems. Robson et.al., in 2007 further stated that, workplace health and safety are considered to be very important issues as they are intrinsically linked with the overall wellbeing of workers. Kumie et al. (2016) described that, variations in workplaces in developing countries observed for the current rapid economic development. Around 7 % to 10 % of the global workforce works in the construction industry, but worldwide the sector accounts for 30 % to 40 % of occupational fatal accidents, that is at least 60, 000 per year stated by Murie in 2007. Also, Holmes et al. in 1999 stated that, worldwide the risk is similar and many cases are safety related. Akhter et.al., in 2010 described that as a fundamental right of every worker, occupational safety and health have been repeatedly mentioned and referenced in the Alma Ata Declaration on Primary Health Care (1978), the UN’s Global Strategy on Health for All (2000), the ILO Convention (1919), the WHO constitution and in many other multilateral conventions and documents along with the Bangladesh Labor Law 2006.

With regard to project construction activities, Occupational Health and Safety Management Plan, Site and Camp Management, Worker Safety and Work Site Management Plan and Labor Environmental Management Plan are covered in this study. Followed by Labour Act 2006 and Labour Rules 2015 of Bangladesh, these plans will help for future development of occupational health and safety rules in Bangladesh.

## OBJECTIVE OF THE STUDY

Objective of this Study is

- To develop construction worker safety and work site management plan.
- To focus on the health and safety of work environment during the construction process.

Construction project site was selected for this study. The study can lead towards a new era of construction worker safety of Bangladesh to set a health and safety policy in Bangladesh.

## MATERIALS AND METHODS

The study was conducted through secondary data collection of different institutional and newspaper reports. After completion of the data collection and analysis phase, Collected information were processed, analyzed and interpreted to arrive at the result of the study. After completion of data collection, collected data were checked, verified & re-checked and analyzed, keeping in view of the requirement with the Bangladesh labor act 2006, Bangladesh labour rules 2015 and other international standards.

### Occupational Health and Safety Management Plan

The impact at construction site for emergency response to any accident, construction camps, water and sanitation facilities need to be considered as below.

- Construction works may pose health and safety risks to the construction workers and site visitors, leading to fatalities.

### People Near to the Construction Site and the Construction Workers Will Be Exposed to a Number of:

- Health risk factors in the form of noise, dust, chemicals, construction material, solid waste, waste water, vector transmitted diseases etc.,
- Risk factors resulting from human behavior such as Sexually Transmitted Diseases (STI), Human Immunodeficiency Viruses (HIV), etc.,
- Traffic accidents at construction site.

### Child Labor

- Absence of first aid facilities and health care facilities in the immediate vicinity will aggravate the health conditions of the victims.
- Inadequate infrastructure facilities, such as housing, water supply and sanitation facilities will increase pressure on the local services, and it will cause substandard living style and health hazards.
- Lack of water sanitation facilities at construction sites affects personal hygiene of the workers.
- Lack of awareness and basic knowledge in health care among the construction workers, make them susceptible to potential diseases.

**Considering above Impact, below Management Plan can be Prepared for Construction Site**

- Practicable safety standards for all workers and site visitors. Safety standard should be better or in line with the international standards such as International Labor Office guideline on ‘Safety and Health in Construction, World Bank Group’s ‘Environmental Health and Safety Guideline’s, etc. Contractor’s own standards will have to comply with the local standards.
- Considering inherent risks in particular construction activity and specific classes of hazards in the work areas, a safety and healthy work environment for workers needs to be worked out.
- Provide appropriate PPEs (Personal Protective Equipments) for workers that include safety boots, helmets, masks, gloves, visual jackets, coverall, goggles, full face eye shields, ear plug, etc. and regular maintenance of the PPEs properly by cleaning dirty ones and replacing them with the damaged ones.
- Safety procedures such as regular communication, training and protective PPE’s to workers in the sites where hazardous operations are prevalent.
- An environment, health and safety manager will look after the health and safety of the workers.
- Inform the local authorities responsible for health, religious and security before commencement of construction works and establishment of construction camps so as to maintain effective surveillance over public health, social and security matters. It will also avoid local conflict, if any.
- The Contractor shall not hire children of less than 14 years of age in accordance with the Bangladesh Labor Rules 2015 for any construction work in Bangladesh.
- Ensure availability of first aid facilities and health care facilities at construction site. First aid stations should be appropriately equipped as per Bangladesh Labor Rules 2015 and should be easily accessible throughout the work place.
- Document and record keeping on occupational accidents, diseases and incidents.
- Minimize workplace hazard as much as possible to prevent accidents, injury and disease arising during or from associated occurrence in the course of work. It should be managed with good international industry practice in line with local regulations.
- Identify potential hazards to workers, particularly those that may be life threatening and provide necessary preventive and protective measures.
- Provide regular training to the construction drivers to strictly follow the driving rules.
- Provide adequate lighting in the construction area and in the roads used for construction vehicle movements.
- The Contractor shall provide the following facilities in the campsites to improve health and hygienic conditions, as mentioned in occupational health and safety management plan.

### **Adequate Ventilation Facilities**

- Safe and reliable water supply. Drinking water supply from deep tube wells should meet the national standards. Otherwise, bottled drinking water facilities to the construction workers that meets the national standards.
- Hygienic sanitary facilities and sewerage system. The toilets and domestic waste water will be collected through a common sewerage.
- Treatment facilities for sewerage of toilet and domestic wastes.
- Storm water drainage facilities.
- Recreational and social facilities.
- Safe storage facilities for petroleum and other chemicals.
- Arrangement of onsite solid waste collection and offsite disposal facilities.
- Arrangement for awareness program.
- Paved internal roads.
- Security fence at least 2 m height.

### **Health Care and First Aid Facilities**

- Train all construction workers in basic sanitation and health care issues to avoid malaria and transmission of sexually transmitted infections such as STI, HIV, etc.
- The contractor should provide portable toilets at the construction sites, wherever more than 25 people are working the whole day for a month. Location of portable facilities should be at least 10m away from storm drain system and surface waters. These portable toilets should be cleaned once a day and all the sewerage should be pumped from the collection tank once a day and should be brought to the common septic tank for further treatment.
- Train all construction workers in general health and safety matters and on the specific hazards of their work, that is basic hazard awareness along with site specific hazards, safe work procedure and also emergency response for fire, evacuation during anthropogenic and natural disaster.
- Start malaria, HIV/AIDS (Acquired Immune Deficiency Syndrome) and STI education campaign prior to the start of the construction phase and complement it with by a strong condom marketing, increased access to condoms in the area as well as with voluntary counseling and testing.
- Implement malaria, HIV/AIDS and STI education campaign, targeting all hired workers, international and national, female and male, skilled, semi- and unskilled occupations, at the time of recruitment and thereafter to be pursued throughout the construction phase on ongoing and regular basis. This should be complemented by easy access to condoms at the workplace as well as to voluntary counseling and testing.

### Site and Camp Management

Considering area of construction camps, construction camp facilities, disposal of waste and health and safety for construction worker, below impact can be considered.

- Campsites for construction workers are the important locations that have significant impacts such as health and safety hazards on local resources and infrastructure of nearby communities.
- Inadequate infrastructure facilities such as housing, water supply and sanitation facilities will increase pressure on the local services and generate substandard living standards and health hazards.
- Management of wastes is crucial to minimize environmental pollution.
- Due to inadequate health and safety practices, diseases such as malaria transmission are high possibility..

Considering above impact, below management plan is prepared for construction site.

- Location of the construction camps will be acceptable from environmental, cultural and social point of view.
- Location of construction camps will be away from local communities in order to avoid social conflict to use the natural resources such as water or to avoid the possible adverse impacts of the construction camps on the surrounding communities.
- Local authorities responsible for health, religious and security shall be duly informed on the set up of camp facilities to maintain effective surveillance over public health, social and security matters.
- Construction camps should be minimum 500m far away from the residential area and cultural sites.

### Contractor Shall Ensure the Following Facilities in the Campsites

- Adequate accommodation for all workers.
- Safe drinking water for all worker followed by national standard.
- Safe water for domestic use.
- Proper sanitary facilities and sewerage system. Ensure separate latrines and bathing places for males and females with total isolation by wall or by location. The minimum number of toilet facilities required is one toilet for every ten persons.

Provide in-house community / common entertainment facilities. Dependence of local entertainment outlets by the construction camps to be discouraged / prohibited to the extent possible.

- Proper solid waste management including collection and disposal, within the construction camps.
- Encourage and maintain waste separation at source, at least organic wastes in one pot and inorganic wastes in another pot at household level.
- Store inorganic wastes in a safe place within the camp and make arrangement to collect and dispose organic wastes on daily basis.

- Location of the garbage pit or on-site waste disposal site will be minimum 500m away from the residence so that local residents are not disturbed with nuisance odor.
- All solid waste must be collected and removed from the work camps and disposed in approval waste disposal sites.
- Ensure adequate health care facilities within construction sites.
- Ensure full time first aid facilities. Maintain stock of medicines in the facility and appoint fulltime designated first aider or nurse.
- Provide ambulance facility for the laborers during emergency for transporting to the nearest hospitals.
- Initial health screening of in-migrant labour.
- Provide adequate drainage facilities throughout the camps to ensure that disease vectors such as stagnant water bodies and puddles do not form. Ensure, regular mosquito repellent sprays during monsoon.
- Regular training sessions on best hygiene practices to be mandatorily participated by all workers. Place display boards at strategic locations within the camps containing messages on best hygienic practices and safety in work.

## CONCLUSIONS

Most important area in a construction work is safety management that ensures good health of the workers in the construction site. Work site management plan in construction projects is essential to prevent different types of hazards and accidents in a construction site. Different stages of safety management of major parameters of the safety management were discussed here. Remedies that are to be taken in order to prevent various accidents were sorted out. It is mandatory to ensure presence of a safety engineer or officer at the construction site to inspect the implementation of safety in the sites and management should make mandatory availability of safety equipments for all workers to ensure safety at site. Proper remedies and measures should be considered in every construction site to prevent any chance of occurrence of any kind of accidents. Therefore, the major parameters which are considered in the safety management were discussed in this study. A huge number of people in Bangladesh are engaged with construction jobs and a number of workers are illiterate and unskilled. To ensure safety in construction site along with hazard management, some process can be applied such as

- Ensure appropriate and available Personal Protective Equipment's (PPEs) for all.
- Regular and proper training for all those who are using PPEs is important.
- Improve maintaining the hazards
- Regular safety campaign
- Need to understand worker psychology

It is important to send the message to all that, safety at work will not only ensure safety for project but also ensure safety for their family.

**REFERENCES**

1. Akhter, S., Salahuddin, A. F. M., Iqbal, M., Malek, A., & Jahan, N. (2010). Health and occupational safety for female workforce of garment industries in Bangladesh, *m* (1), 65–70.
2. Assessment. *Ethiopian Journal of Health Development*, 30(1), 17–27.
3. Cretu, O., Stewart, R. and Berends, T. (2011). *Safety management for Design and Construction*. Hoboken, NJ: John Wiley & Sons.
4. Holmes, N., Lingard, H., Yesilyurt, Z., & De Munk, F. (1999). An exploratory study of meanings of risk control for long term and acute effect occupational health and safety risks in small business construction firms. *Journal of Safety Research*, 30(4), 251–261.
5. Kumie, A., Amara, T., Berhane, K., Samet, J., Hundal, N., Michael, F. G., & Gilliland, F. (2016). *Occupational Health and Safety in Ethiopia: A review of Situational Analysis and Needs*.
6. Murie, F. (2007). Building safety-an international perspective. *International journal of occupational and environmental health*, 13(1), 5–11.
7. Robson, I. S., Clarke, J. A., Cullen, K., Bielecky, A., Severin, C., Bigelow, P. L., Mahood, Q. (2007). The effectiveness of occupational health and safety management system interventions: a systematic review, 45, 329–353.
8. Abdullah, M. R., Rahman, I. A., & Azis, A. A. A. (2010). Causes of delay in MARA management procurement construction projects. *Journal of Surveying, Construction and Property*, 1(1).
9. Gangoellis, M., Casals, M., Forcada, N., & Macarulla, M. (2014). Analysis of the implementation of effective waste management practices in construction projects and sites. *Resources, conservation and recycling*, 93, 99–111.
10. Twort, A., and Rees, J. (2011). *Civil Engineering Project Management*. 5th edition. Oxford: Spon Press.



