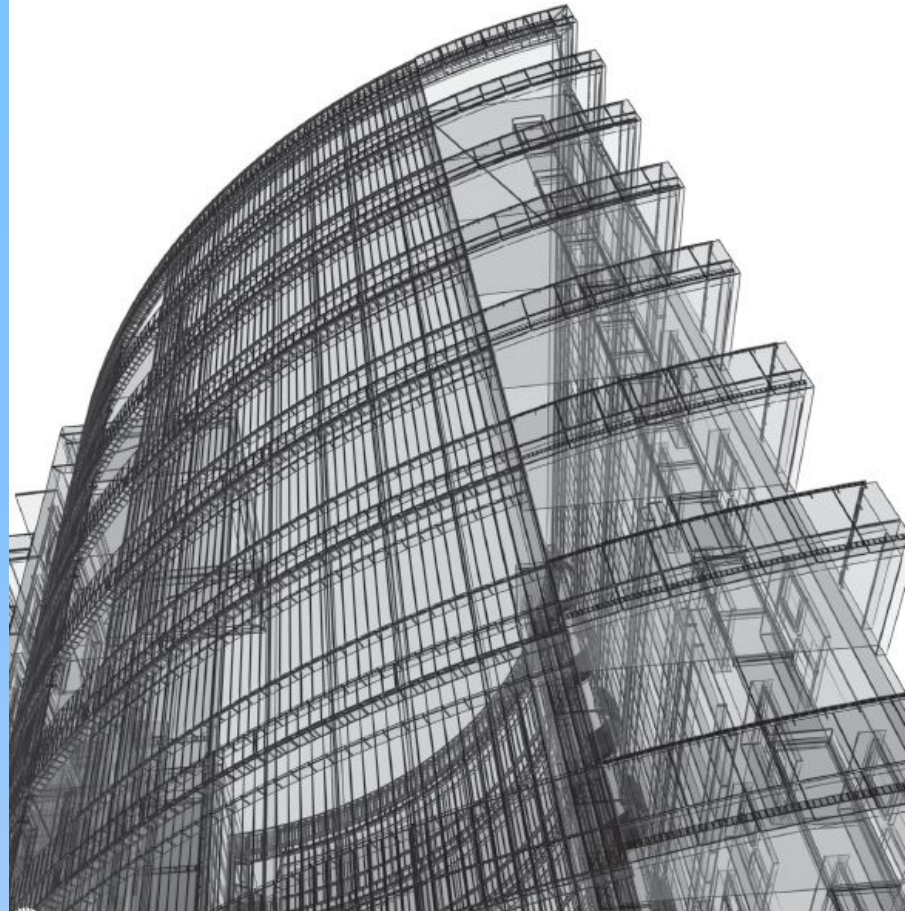


# A GUIDE TO HEALTH AND SAFETY AT CONSTRUCTION SITES

MACI - Maldives association of construction industry



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## **Health and Safety HANDBOOK**

- The Handbook was prepared in 2011 for MACI for the construction industry of Maldives
- H&S regulations of New Zealand, Singapore, UK were studied
- To provide a health and safety standard for the construction companies
- First such standard in the Maldives
- Construction related accidents are becoming more frequent
- The handbook is non-mandatory
- 26 Sections

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# INTRODUCTION

The building operations and works of engineering construction industries in Maldives have made tremendous progress in recent years. The growth of the industry has also been subjected to increasing health and safety risks to workers on site and to the general public.

This guideline is the first document on health and safety at construction sites in the Maldives. This is an initiative by the Maldives Association of Construction Industry (MACI) to keep construction sites safe for the workers and to the general public. This is designed to serve as a minimum requirement for contractors to implement health and safety standards on their construction sites.

## **GENERAL DUTIES**

Every Developer, main contractor and sub-contractor shall

- Have a H & S policy
- Have a H & S Manual
- Ensure all workers are aware of H&S requirements and provide adequate supervising
- Provide adequate protective apparel and equipment

## **SOME KEY SITE REQUIREMENTS**

1. Site should have one trained first aid person
2. Site should maintain a first aid kit always refilled
3. Site should maintain a H & S notice board with all the emergency numbers
4. Main Contractor should appoint a site safety supervisor who should spend at least 10 hours per week exclusively on safety supervision and promoting safe site

## **PUBLIC SAFETY**

- Pedestrians should be protected
- Public should be protected from suspended loads
- Excavations should be properly fenced
- Security of the site should be provided even for non-working hours



## **PERSONAL PROTECTIVE EQUIPMENT (PPE)**

- Contractor is responsible for providing adequate PPE
- All employees and sub contractors should be trained for wearing required PPE
- Safety helmets should be worn
- Safety shoes should be worn
- Safety glasses, hearing protection, gloves and respiratory protection should be worn at relevant tasks

## WORKING AT HEIGHTS OVER 3 METERS

Safe work practices may include one or more of the following:

- (a) Guarding;
- (b) Safety nets; or
- (c) Fall arrest systems.

### (A) GUARDRAILS / TOEBOARDS

Where protection is required at the perimeter of the building or openings in roofs, floors or lift shaft, and is provided by a guardrail system, the guardrail should:

- (a) Be 900-1100 mm above the working place;
- (b) Incorporate a mid-rail; and
- (c) Include the installation of a toeboard where there is a risk of tools or materials falling from the roof/place of work.

### (B) SAFETY NETS

Safety nets can provide a satisfactory means of protection against falling, while allowing workers maximum flexibility of movement. In considering the use of safety nets as a fall protection measure, employers may take into account the usefulness of safety nets for the safety of persons in other occupations involved with the roof structure. Nets should be installed with sufficient clearance to prevent contact with the surface below when a person falls on them.

### (C) INDIVIDUAL FALL ARREST SYSTEMS

- Individual fall arrest systems include inertia reel systems, safety harnesses, lanyards and static lines.
- People required to use this equipment must be trained in its use.
- Waist type belts should not be used for roof work.
- People using safety harnesses should not work alone. It is important that the rescue of a worker who is suspended in a full body harness should occur within 20 minutes of the arrested fall.

## **SITE PROTECTION**

- Worksite should be fully barricaded by protective hoarding
- Hoarding should not be less than 1800mm in height and continuous to the ground
- All building materials should be stored and handled within the hoarded area.

## CRANES

**Employers and employees using cranes and lifting appliances should ensure that:**

- The area of the crane operation is not accessible to public.
- That no person stays under the suspended load.
- That the load is not lifted over a third party's property.
- Cranes and derricks are restricted from operating within 4m of any electrical power line.
- Cranes are inspected weekly, and thoroughly examined every 12 months by a competent person. The results of inspections should be recorded.
- There is a current test certificate.
- The driver is trained, competent and over 18 years of age.
- The controls (levers, handles, switches, etc.) are clearly marked.
- The driver and dogman determine the weight of every load before lifting.
- Every jib crane with a capacity of more than 1 tonne has an efficient automatic safe load indicator that is inspected weekly.

## DEMOLITION

- Provides a detailed process for safe building demolitions

### **Contractors or employers who carry out demolition work or contract others to should take all practicable steps to ensure:**

- The public are protected from the rubble, dust and traffic by proper gantries and fenced walkways.
- Power, gas, telecommunications, sewerage and water services have been disconnected.
- Walls are never left free-standing that could be blown down by unexpected winds.
- Where any wall is to be toppled by pulling, there is a surrounding clear space of 1.5 x wall height.
- Floors are not overloaded with demolition debris or plant being loaded on to floors.
- Adequate measures are taken to overcome asbestos hazards from old insulation and construction materials.
- Empty tanks are checked for explosive or toxic materials.
- Noise is controlled at the source.
- Protective helmets, also eye, feet and hearing protection is provided and it is ensured that it is used.
- Precautions are taken to avoid fire in debris.
- The public is protected from the site.
- When chainsaws are used, protection is provided for the user's legs, eyes and ears.
- Traffic crossing footpaths is controlled by adequately trained personnel.

## HOUSE KEEPING

- Often ignored and causes many injuries to workers
- Walkways are level and free from obstructions
- Materials are stored safely
- Large bins are provided to avoid waste being thrown on the floor
- Adequate lighting is provided for the work
- All rubbish around machinery, plant, stairwells and the site in general should be regularly gathered and disposed of in suitable bins.

## HEALTH & SAFETY IN GENERAL

- It should be a top to down approach
- Any visitors including directors and managers should fully adhere to site safety rules
- If in doubt about safety, stop work and ask supervisor
- Any person who notices unsafe practice should immediately make them aware and later report to safety supervisor.
- Regular safety meetings among the staff and managers
- Appropriate reporting procedure for unsafe practice and near misses
- Establish a culture of safe practices within the company.
- Policy of Zero tolerance for unsafe practices
- Take appropriate action on employee who repeats unsafe practices.
- Reward those who report unsafe practices and near misses

## Laws and Regulations

- [First Building Act came in April 2017](#)
- Act requires to make regulations within 6 months
  - Building Code
  - Consultants' Regulations
  - Building Standards
  - Material Testing Regulations
  - Health and Safety Regulations

Some 14 Regulations to be drafted





(7)  $\frac{1}{x^2} = x^{-2}$   $\frac{d}{dx} x^{-2} = -2x^{-3} = -\frac{2}{x^3}$

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(8)  $\frac{1}{x^3} = x^{-3}$   $\frac{d}{dx} x^{-3} = -3x^{-4} = -\frac{3}{x^4}$

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(9)  $\frac{1}{x^4} = x^{-4}$   $\frac{d}{dx} x^{-4} = -4x^{-5} = -\frac{4}{x^5}$

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(10)  $\frac{1}{x^5} = x^{-5}$   $\frac{d}{dx} x^{-5} = -5x^{-6} = -\frac{5}{x^6}$

(11)  $\frac{1}{x^6} = x^{-6}$   $\frac{d}{dx} x^{-6} = -6x^{-7} = -\frac{6}{x^7}$

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(12)  $\frac{1}{x^7} = x^{-7}$   $\frac{d}{dx} x^{-7} = -7x^{-8} = -\frac{7}{x^8}$

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(13)  $\frac{1}{x^8} = x^{-8}$   $\frac{d}{dx} x^{-8} = -8x^{-9} = -\frac{8}{x^9}$

(14)  $\frac{1}{x^9} = x^{-9}$   $\frac{d}{dx} x^{-9} = -9x^{-10} = -\frac{9}{x^{10}}$



## **New Zealand Experience**

- Every contractor, sub contractor, suppliers to have a minimum H&S rating
- H&S certificate is usually included in the contract.
- As a manager, you always to have to think about safety, avoiding harm
- One significant incident, site suspended and 3 independent investigations conducted
- Recently a fatal accident in one of the branches
- Manager to have a H&S meeting minimum once a week with all staff
- Managers have to attend H&S training programs
- Independent H&S audits annually
- Quarterly bonuses are affected if serious accidents occurred during that quarter
- Depends on MTI (Medical Treatment Injury) or LTIs (Loss Time Injury)
- Any incident, near-misses should be logged and discussed in the next H&S meeting
- Everyone on site should follow the H&S rules - NO EXCEPTIONS.

## H & S Issues in Maldives

- It is a significant cost and affects the bid price
- Owners not generally interested
- BOQs do not have H&S items
- No law to enforce equally on all contractors
- Most high risk work are carried out by expat workers
- A high number of unskilled workers
- No supervision in small sites
- Small groups carry out sub contracting work or sometimes main contractor work
- Less monitored in resort construction. Accidents do not get reported
- Only fatalities are reported