Master Plan for Occupational Safety and Health in Construction Industry 2005 - 2010











di Tapak Binaa



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ABBREVIATIONS

ACEM	-	Association of Consulting Engineers Malaysia
BEM	-	Board of Engineers, Malaysia
BOA	-	Board of Architect, Malaysia
BOS	-	Board of Surveyor, Malaysia
CIDB	-	Construction Industry Development Board of Malaysia
CREAM	-	Construction Research Institute of Malaysia
CSHA	-	Construction Safety and Health Association
DOSH	-	Department of Occupational Safety and Health Malaysia
DSM	-	Department of Standard Malaysia
KPPDIB	-	Kesatuan Pekerja-Pekerja Dalam Industri Binaan
MPSHCI	-	Master Plan for Safety and Health in Construction Industry
MBAM	-	Master Builders Association Malaysia
MTUC	-	Malaysian Trade Union Congress
NIOSH	-	National Institute of Occupational Safety & Health
NCOSH	-	National Council For Occupational Safety and Health
NOSHCCI	-	National Occupational Safety and Health Committee for Construction Industry
OSH	-	Occupational Safety and Health
PAM	-	Pertubuhan Akitek Malaysia
PIAM	-	Persatuan Insuran Am Malaysia
РКММ	-	Persatuan Kontraktor Melayu Malaysia
REHDA	-	Real Estate & Housing Developers Association of Malaysia
TEEAM	-	The Electrical and Electronics Association of Malaysia



MESSAGE FROM YB DATO' SERI S. SAMY VELLU MINISTER OF WORKS, MALAYSIA



The effort to uplift the image of construction industry in this country is a non stop activity of my Ministry. Again, the ministry through Construction Industry Development Board (CIDB) in its effort to bring down the accidents, injuries and fatality rates in the construction sector, has initiated to draw up a comprehensive Master Plan for Occupational Safety and Health in Construction Industry to complement the Department of Occupational Safety and Health (DOSH) efforts in reducing accidents, injuries and fatalities at construction sites.

To increase the effectiveness of the current system, it is necessary to implement the system more comprehensively and systematically, while the close cooperation among all the industry players is also maintained. As such, a comprehensive Master Plan which indicates guidelines for preventive measures need to be formulated. The Master Plan is meant specifically for the construction industry and therefore participation from all stakeholders is vital.

I would like to take this opportunity to call all industry players to participate and give out their fullest commitment to the implementation of this Master Plan.

Finally, I would also like thank Department of Occupational Safety and Health, Human Resources Ministry for their join effort with Construction Industry Development Board for the formulation and preparation of this Master Plan for Occupational Safety and Health in Construction Industry. Thank you.

Dato' Seri S. Samy Vellu Minister of Works, Malaysia



MESSAGE FROM YB DATUK WIRA DR. FONG CHAN ONN MINISTER OF HUMAN RESOURCES, MALAYSIA



I wish to congratulate the Construction Industry Development Board (CIDB) and the National Occupational Safety & Health Committee for Construction Industry (NOSHCCI) for taking the effort to develop the Master Plan for Occupational Safety and Health in Construction Industry.

Statistics around the globe had shown an enormous proportion of the occupational fatalities in the construction industry. Being one of the major contributors to the total employment, the construction industry has long since been considered as a hazardous occupation due to the high incidence of occupational accidents, and most importantly, fatal injuries. As such, in an effort to bring down the accidents, injuries and fatality rates in the sector, it is timely for the Master Plan to be developed, in an effort to further improve the quality of safety and health in workplaces and that risks to people's safety and health from work activities are properly monitored and controlled. It also provides an opportunity for all the industry players to work together to better deliver the targets.

For that, I would like to urge all industry players to give their fullest commitment and cooperation in ensuring the successful implementation of this Master Plan. I have been told also that this Master Plan is the first of its kind and hope other industries will take similar steps to develop similar Master Plan to self regulate their own industries.

Finally, congratulation again to CIDB and all the players involved in developing this Master Plan and I hope the Master Plan will be implemented successfully. Thank you.

Datuk Wira Dr. Fong Chan Onn Minister of Human Resources, Malaysia

FOREWORD

The development of Master Plan for Occupational Safety and Health in Construction Industry is initiated by the Construction Industry Development Board (CIDB) to complement the effort of the Department of Occupational Safety and Health (DOSH) in reducing accidents, injuries and fatalities at construction site. It is developed to guide the construction industry stakeholders to strengthen their occupational safety and health activities within the industry.

This Master Plan is produced for used by the construction industry and therefore participation from all stakeholders is vital. Information and feedback from stakeholders forms the basis for this Master Plan. To ensure that feedback from all stakeholders are considered, CIDB has established the National Occupational Safety & Health Committee for Construction Industry (NOSHCCI) represented by various organizations. Their role is to consider occupational safety and health issues within the industry, propose guidelines and monitor the development of the Master Plan. Gratitude is owed to the wide range of people in NOSHCCI who has offered their practical experience, approaches and decisions to guide the formulation of this Master Plan.

The focus of this Master Plan is on six areas identified by the National Occupational Safety and Health Committee for Construction Industry to achieve improvement in safety and health performance within the industry. The six areas are: -

a) Enforcement and Legislation

In the enforcement and legislations front, the master plan has identified the development of new legislations, amending the existing legislations and strengthening of the enforcement agency as thrust areas for implementation. Programs identified for implementation include, increasing the number of DOSH officers, appointment of construction safety and health officer instead of general safety and health officers, comprehensive provision of Personal Protective Equipments, review of BOWEC's regulations and penalties, registration of all site safety and health supervisors and certification of Contractors Management Systems. It is hoped that with improved coordination and control by DOSH, the construction industry's safety and health performance can be further improved.

b) Education and Training

Education and training play an important role in reducing accidents. To impart safety and health management skills and to inculcate safe working behaviour amongst workers, a number of safety and health training programs has been identified for implementation. It is envisaged that a strong focus on education and training will afford greater opportunity to all in the industry to relearn and equip themselves with the knowledge necessary to produce innovative solutions to safety and health issues in the industry.

c) Promotions

Promotion of safety and health activities among industry stakeholders is vital. It is envisaged that through aggressive promotion, the safety and health awareness among the construction industry players can be further improved. Promotion programs lined up for implementation include sensitization of prosecutions, occupational safety and health management systems, safe work practices, annual awards and accident reduction targets to be achieved during the master plan period. Sensitization will be through electronic media and conventional methods.

d) Incentives

To stimulate the industry stakeholders to play a more active role in the promotion of safety and health in the industry, the Master Plan has identified specific areas, which will receive financial incentives in the form of subsidies and tax relief. Areas identified to receive benefits from various government agencies are courses for Construction Safety and Health Officer, Safety Officer and all other courses earmarked for implementation under this master plan, seminars and courses organized by construction safety and health association. It is envisaged that with the introduction of the stimulus package, the industry stakeholders will be more forthcoming in participating in all programs organized for the promotion of safety and health within the industry.

e) Standard Development

In order to support and guide the industry stakeholders to achieve compliance to legislations and the desired quality of work, the master plan has identified for development, a number of guidelines and standards. Guidelines on Construction Occupational Safety and Health Management System and Code of Practice for safe construction work (such as working at height, working at confined area, working at noisy and dusty area, etc.) have all been identified for development during the master plan period. With the use of the codes of practices and the resulting improved method of work, the industry will be able to self-regulate safety and health to further reduce accidents and fatalities within the industry.

f) Research & Developments and Technology

To support the construction industry stakeholders with an up to date technology to produce innovative safety and health solutions, the master plan has identified a number of research and development programs for implementation. Programs for the future include improving existing reporting system, new methods to prevent falling from height, improving signalling system for site traffic management, mandatory preparation of design drawings for temporary works and the development of e-portal for safety and health.

Stakeholders can use this Master Plan as a basis to set up their own action plans. However, the successful implementations of this Master Plan depend on the stakeholders' incorporation of the master plan's guidelines and objectives in their business operations and use as a forward planning document to improve safety and health in construction. By doing so, it will indirectly increase the productivity and profitability for contractors involved in construction industry.

INTRODUCTION

1.0 INTRODUCTION

1.1 CONSTRUCTION INDUSTRY IN MALAYSIA

¹The construction industry in Malaysia is generally divided into two areas. One area is general construction, which comprises residential construction, non-residential construction and civil engineering construction. The second area is special trade works, which comprises activities of metal works, electrical works, plumbing, sewerage and sanitary works, refrigeration and air-conditioning works, painting works, carpentry, tiling and flooring works and glass works. Malaysia was experiencing significant economic growth at an average rate of 13.5% of GDP per annum during the year 1993 to 1997 period (Table 1). The high economic growth rate has had very positive impact on the construction sector during this period. Generally this rapid growth in the industry has brought an increased injuries and fatalities in this industry due to lack of focus in occupational safety and health. The construction industry has strong influence on the country's economy and account for about slightly less than 5% of the GDP. Although it accounts for less than 5% of GDP, the industry is a strong growth push because of its extensive linkages with the rest of the economy. In particular the industry has extensive linkages with construction related manufacturing industries such as basic metal products and electrical machinery. ¹In 1998, when the construction industry experienced a sharp downturn, basic metal industries incurred some 35.6 percent drop in output. Generally the growth of the industry was moving in tandem with growth in the manufacturing industry.

The industry is also important in terms of employment generation. The industry's contribution to employment is about 7.8 percent of total employment in the country in the year 2003 (**Table 2**).

Despite its important contribution to the nation's economy, the industry is still saddled with serious problems such as low quality, low productivity, poor image, economic volatility, bureaucratic delays, lack of ethics, shortage of skill manpower and lack of data and information.

The low productivity in the industry is attributed to low technology usage, poor project and site management, unskilled labour, high input cost and duration estimation, shortage of construction manpower, high construction wastage, poor maintenance, non-conducive and accident prone work environment and bureaucratic obstacles. The poor image of the industry is caused by the high incidents of accident, absence of job security, poor management, low wages for high risk jobs and lack of opportunity for career advancement.

The shortage of skill manpower in the industry is caused by poor industry image, lack of training culture, too many construction activities at one time, and over dependence on labour.

To address the above problems plaguing the industry, CIDB in collaboration with the stakeholders is developing the Construction Industry Master Plan (CIMP). This Master Plan has identified a number of policies, one of which is a policy on health and safety in construction. It is envisaged that the implementation of this policy in the short to medium term is expected to reduce the high incidence of accidents and economic losses to stakeholders thus indirectly improving productivity, quality and image of the industry as a whole.

^{1.} Market Watch Malaysia 2004 - Construction and Building Materials Industry

Table 1. Gross Domestic Products by Sector of Origin

	5003	5.7	5.9	8.3	1.9	4.4
	2002	3.0	3.7	4.0	2.3	4.1
	2001	1.8	-6.2	1.6	2.3	5.7
	5000	0.6	21.0	3.1	1.0	4.8
(%)	666L	3.8	13.5	-3.1	-5.6	3.3
JAL GROWTH	8661	-4.5	-13.7	1.8	-23.0	-0.8
ANNI	266I	0.4	3.0	10.4	10.6	7.2
	966L	2.2	12.2	4.5	14.2	9.7
	966L	1.1	14.5	9.0	17.3	9.4
	766L	-1.0	14.7	2.5	14.1	9.7
	2661	3.9	12.9	-0.5	11.2	10.0
SECTOR		Agriculture	Mining	Manufacturing	Construction	Services

Source: Ministry of Finance, Malaysia

SECTOR	Percent (%)					
	1990	1995	2000	2001	2002	2003
Agriculture	26.0	18.7	15.2	14.8	14.3	13.8
Mining	0.6	0.5	0.4	0.4	0.4	0.4
Manufacturing	19.9	25.3	27.6	26.8	27.2	27.9
Construction	6.3	9.0	8.1	8.1	7.9	7.8
Services	47.2	46.5	48.7	49.9	50.2	50.1
TOTAL	100.00	100.00	100.00	100.00	100.00	100.0

Source: Economic Planning Unit, Department Of Statistic 1.3

1.2 SAFETY & HEALTH IN CONSTRUCTION INDUSTRY

The rapid growth of the construction sector coupled with the rise in the number of fatalities within the sector over the last ten years has brought into focus the hitherto low priority placed by the stakeholders on occupational safety and health. The number of fatalities encountered in the construction industry is alarming. Out of the total of 73,858 industrial accidents reported to SOCSO by the year 2003, 4,654 were recorded in the construction industry. From this figure, almost 2.0 percent or 95 cases resulted in death, while 12.2% or 566 cases resulted in permanent disabilities. In comparison, the manufacturing industry and the agricultural, forestry and fisheries industry recorded 0.7 percent and 0.6 percent fatalities respectively out of the total accidents reported. **Table 3** shows the percentage fatalities in the construction, agriculture and manufacturing sectors for a 5 year period, between the years 1999 to 2003. Over this period the highest fatalities is in construction, followed by agriculture and manufacturing sector.

Figure 1A and Figure 1B (extracted form SOCSO Annual Report) show the number of cases of accidents and fatalities respectively from 1993 - 2003. It is to be noted that SOCSO's figures only cover those workers subscribing to SOCSO. The actual figures are much higher if those not subscribing to SOCSO are taken into account. It is generally believed that many cases of accidents and fatalities of foreign workers in the industry are not reported to the authorities and hence the SOCSO'S figures are the accident statistics of Malaysian workers only.

SOCSO's Report shows that in the year 2000 there were 159 fatalities (the highest annual fatalities to date) out of 4,873 reported accident cases. In the year 1996 there were 5,401 reported cases (the highest number of annual reported cases to date) with 116 fatalities. During the period from 1993 to 2003 a total of 1,033 fatalities have been recorded in the construction industry.

The high number of incidents of injuries and fatalities amongst construction workers has generally been due to the nature of the works (evolving), weather condition and variety of hazards involved.

Construction workers are exposed to falling from heights, movement of plant and machinery, electrical shocks, excessive noise, etc. The underlying causes for the high number of incidents are summarised as follows:

- a) lack of trained workers and competent site supervisors on construction occupational safety and health matters;
- b) lack of occupational safety and health information, training materials, courses and programmes for the benefits of workers and supervisors in the construction industry;
- c) lack of standard guidelines on construction industry requirements for the development of safety and health solutions in the industry;
- d) lack of communication between those in charge of construction processes and the workers executing them;
- e) misconception that occupational safety and health protection is an unnecessary expenditure that can be saved;
- f) lack of information and know-how's on occupational safety and health latest technology;
- g) senior managers of the construction industry do not understand the benefits of having occupational safety and health programs and how it could increase their productivity in construction sector; and inadequate provision of budget and unclear specification on safety and health requirements for safety and health programs at the construction sites; and
- h) Lack of enforcement on mandatory safety requirements.

	No of fatalities	95	40	213
	Fatality rate per 100,000 Malaysian workers	25	27	14
2002	Percentage fatalities	1.8	0.7	0.6
	No of fatalities	88	69	214
	Fatality rate per 100,000 Malaysian workers	28	29	16
200	Percentage fatalities	2.0	0.6	0.7
	seitilstet to oN	89	75	243
	Fatality rate per 100,000 Malaysian workers	57	47	20
2000	Percentage fatalities	3.3	1.0	0.7
	No of fatalities	159	115	282
	Fatality rate per 100,000 Malaysian workers	54	53	17
1999	Percentage fatalities	3.1	1.0	9.0
	No of fatalities	146	132	232
YEAR	SECTOR	Construction	Agriculture Forestry Fisheries	Manufacturing

Table 3. Fatalities by Sector

33	Fatality rate per 100,000 Malaysian workers	26	16	13
20(Percentage fatalities	2.0	9.0	0.7
	səitilstəf fo oN	95	40	213
	Fatality rate per 100,000 Malaysian workers	25	27	14
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	səitilstat to oN	88	69	214
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	Fatality rate per 100,000 Malaysian workers	57	47	20
2000	Percentage fatalities	3.3	1.0	0.7
	No of fatalities	159	115	282
	Fatality rate per 100,000 Malaysian workers	54	23	17
1999	Percentage fatalities	3.1	1.0	0.6
	No of fatalities	146	132	232
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Source: SOCSO Annual Report

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Figure 1A. SOCSO Annual Report Reported Construction Accidents.



Figure 1B. SOCSO Annual Report Reported Construction Fatalities.

Source: SOCSO Annual Report

1.2.1 Background

Over many years, the Department of Occupational Safety and Health (DOSH) has taken a lot of effort to reduce the number of people who are killed, injured, or suffering ill health as a result of construction work. But their initiative alone is insufficient to increase or strengthen safety and health activities within the growing construction industry. Earnest effort from all the industry stakeholders is also necessary. Recognizing these difficulties, CIDB initiated the development of the master plan for safety and health.

Among the immediate measures adopted by the CIDB include the introduction of the safety and health induction course for construction workers and occupational safety and health management system course for contractors.

As a short to medium term measure, CIDB in collaboration with DOSH and industry players proposed to develop a five year (2005 – 2010) master plan to be known as the "MASTER PLAN FOR OCCUPATIONAL SAFETY AND HEALTH IN CONSTRUCTION INDUSTRY" (MPOSHCI) to guide the industry stakeholders to strengthen safety and health activities within the industry. In pursuit of this objective, CIDB formed a committee, namely "National Occupational Safety and Health Committee for Construction Industry (NOSHCCI)", comprising industry players and government agency representatives to assist in the development of this master plan. NOSHCCI members are listed in **Appendix 1**.

The approach of developing the Master Plan together with the industry players and the enforcement agency will facilitate greater industry player ownership of the Master Plan that is developed and deliver some enduring skills in safety and health management plan development that will aid sustainability.

1.2.2 Need for the Master Plan

Construction accident statistics maintained by SOCSO for the last period of 1993 – 2003 indicates that there are about 1,033 fatalities out of 49,260 reported cases. The principal reasons for the occurrence of the 1,033 fatalities have not been analysed and studied. This situation in the construction industry underpins the need to increase research activities and strengthen safety and health activities as well as to identify strategies to reduce the fatalities, injuries and ill-health.

Currently the various stakeholders are implementing their own plans without any single agency coordinating all their effort. So, this Master Plan is formulated to strengthen the co-ordination of policies and plans currently being implemented by the various stakeholders with emphasis on optimisation of resource utilisation. It is envisaged that this Master Plan will bring about well coordinated implementation and effective evaluation process regarding construction safety and health. Moreover concerned stakeholders can use the Master Plan as a basis to set up their own action plans.

²International Labour Organisation (ILO) has estimated that 4 percent of Gross Domestic Product (GDP – one of the most used measurements of national wealth) is lost due to accidents and work related diseases. This loss is attributed to cost arising from compensation payments, early retirements due to disability, absenteeism, unemployment and poorer household due to seriously reduced household income. The study also indicates that poor safety and health standard in a company may have impact on its profitability. The impact may arise from:

- a) Higher absenteeism and more downtime, leading to loss of productivity.
- b) Low morale, leading to loss of productivity.
- c) Difficulty in recruiting high quality employees.
- d) Payment of compensation.
- e) Higher insurance premium.
- f) Material damage to equipment and premises.
- g) Fines and loss of image.

Therefore it is important to raise the industry players' realisation that a high standard of occupational safety and health in their workplace will not only benefit their employees well being but also their companies' bottom line through higher productivity.

^{2.} Safety in numbers – International Labour Office Geneva, 2003

The pioneering effort of improving safety and health performance of the construction industry through the development of a Master Plan jointly by the stakeholders can be a reference benchmark for other industries. Thus this Master Plan can become a reference document for other industries' to improve their safety and health performance through the development of similar Master Plans that suit their industries.

OBJECTIVE

2.0 OBJECTIVE

The objective of the Master Plan is to reduce injury rates, work related ill-health and consequent days lost from work in the industry. It is hoped that the fatality rate of 26 per 100,000 workers in 2003 can be further reduced by 30% by the year 2010. ³The current fatality rate in the developed countries like Japan, France and the USA is below 20 per 100,000 workers and Malaysia which is striving to achieve developed nation status by 2020 should strive to achieve the target of reducing fatalities to less than 20 per 100,000 workers.

Through increased research and development activities, the causes underlying accidents at construction site could be accurately determine and the right strategies applied during the planning, design and construction phase of the project to prevent the occurrence of accidents and fatalities. Such an effective method of prevention of accidents should increase productivity and profitability of the construction enterprise and contractors.

3. Asian-Pacific Newsletter on Occupational Health Safety, Vol. 11, number 1, March 2004.

FRAMEWORK FOR THE MASTER PLAN

3.0 FRAMEWORK FOR THE MASTER PLAN

The framework for the Master Plan for Occupational Safety & Health in Construction Industry has been structured as follows:

- a) Stakeholders to enhance the occupational safety, health & welfare of all persons working at construction site.
- b) Stakeholders to internalise the Master Plan within their own organization. They must make the master plan as a critical forward planning document within their organisation. To achieve this stakeholders' organisation should be encouraged to set up safety and health committee within their organisation to prepare their own 'action plan' guided by the master plan.
- c) NCOSH to review the Master Plan as and when required. Stakeholders shall review their own 'action plan' once every 2 years or earlier to gauge whether they still meet the current requirements as well as to achieve the set targets.
- d) Presently, accidents data and analysis (if any) are kept by various organizations (insurance companies, SOCSO, DOSH and hospitals). So far, no comprehensive study and analysis of accidents on the construction industry has been carried out and not published. This situation has to be changed, as any real improvement on occupational safety and health performance in the industry has to be based on rectification of the current weaknesses as well as the reasons/ circumstances leading to their occurrence. However, the reliability of findings on the sources of accidents depends entirely on the correctness and completeness of the data collected. To achieve this goal, the Master Plan proposes on line reporting of accidents to be introduced in accordance with the proposed regulations, "Notification of Injuries Diseases and Dangerous Occurrence Regulation".
- e) Action plan on measures to improve enforcement, training, management, good practices, promotion, design and work practices so as to have overall improvement on safety and health performance in the industry. The Master Plan also proposes incentives for good performers and penalties for poor performers in safety and health in the construction industry.
- f) Safety and Health to be incorporated into National Occupational Skilled Standard (NOSS).

Figure 2 shows the diagrammatic framework of this Master Plan. The framework of this Master Plan is based on the notion that safety and health intervention is necessary throughout the different phases of the project life cycle. The different phases are planning, design, construction, operation and maintenance.

Threat to workers safety and health may occur at any one of the above phases and intervention at early phases of planning and design will afford an opportunity to foresee and design out some of the hazards thus reducing risk during construction and operation and maintenance phases of projects.

Accidents are prone to occur at any one of the above phases and in the event of an occurrence the underlying causes for the accident needs to be investigated. Based on the understanding of the underlying causes, safety and health solutions can be developed.

If the underlying causes are identified to be lack of knowledge and skill, then intervention by training the workers to impart suitable knowledge and skill guided by the National Occupational Skill Standards (NOSS) should be considered. Similarly if the underlying cause for the accident is due to management problems, then the management should be encouraged to establish safety and health management system and seek certification.

Similarly if the causes identified is due to poor design for safety and health, then the strategy to train the designers on designing out safety and health risk need to be given consideration. The intervention to improve safety and health performance in the industry can be either through training, promotion, enforcement, guidance or combination of a number of strategies.

With this framework it is hoped that the stakeholders will be able to achieve the objectives of the Master Plan to make the construction site a safe and healthy place to work. It is also envisaged that the good performers would be considered for reward with incentive and bad performers with disincentive.



STRATEGIES ON OCCUPATIONAL SAFETY AND HEALTH IN CONSTRUCTION INDUSTRY

4.0 STRATEGIES ON OCCUPATIONAL SAFETY AND HEALTH IN CONSTRUCTION INDUSTRY

4.1 INTRODUCTION

The management of safety and health in the construction industry, like in other industries is also governed by the Occupational Safety and Health Act 1994 and the Factories and Machinery Act 1967 and Regulation made there under. The Factories and Machinery (Building Operations & Works of Engineering Construction) (Safety), Regulations 1986 in particular has played an important role in shaping the safety and health management practices in the construction industry. Beside these legislations, there are few Malaysian Standards published by Department of Standard (DSM) and code of practices issued by DOSH.

Currently there are no specific guidelines or master plan on the implementation of occupational safety and health programmes for the construction industry players to improve their performance. But however, there is a provision in the occupational Safety and Health Act 1994, namely Section 4(d) which encourages the development of a system of regulations and approved industry codes of practice to operate in combination with the provisions of the Act which has been designed to maintain or improve the standard of safety and health. Hence this Master Plan for Safety and Health in construction industry is developed to guide the systematic improvement of the standard of safety and health performance in construction industry.

4.2 PROPOSED STRATEGIES ON OCCUPATIONAL SAFETY & HEALTH ENFORCEMENT & LEGISLATION

Compliance to legislation and management systems put in place by industry players need to be monitored and performance evaluated so as to ensure its effectiveness. Therefore adequate control and monitoring mechanism must be in place.

For Occupational Safety and Health in the construction industry, new legislations should be enacted, existing ones to be reviewed and amended and the enforcement agency strengthened.

Action Plan for this focus area is as per **Section 6.1**.

4.3 PROPOSED STRATEGIES ON OCCUPATIONAL SAFETY & HEALTH EDUCATION & TRAINING

Education and training is a continuous process for human development, and therefore construction personnel should be equipped with suitable knowledge and skill on occupational safety and health through increasing the number of education and training programs. Training should be extended to all level of workers in the industry.

Action Plan for this focus area is as per Section 6.2.

4.4 PROPOSED STRATEGIES ON OCCUPATIONAL SAFETY & HEALTH PROMOTIONS

Promotions on Occupational Safety & Health should be one of the main pillars of enhancing safety and health in the construction industry. Promotion activities should be enhanced and aggressively pursued. Stakeholders should be encouraged to organise safety and health promotion activities regularly.

Action Plan for this focus area is as per Section 6.3.

4.5 PROPOSED STRATEGIES ON OCCUPATIONAL SAFETY & HEALTH INCENTIVES

Incentives are crucial for the effective implementation of programs identified under the Master Plan. More incentives should be introduced and the existing one extended to stimulate active participation from industry players. Incentives could be in various forms such as award of recognition, financial support and premium discounts for good risk management.

All stakeholders should jointly provide financial incentives for the successful implementation of the programs outlined in this Master Plan. The requirement for employment of construction Safety and Health Officer for works having contract value above RM 20 million be reviewed in the light of the requirement for contractors to have construction safety and health management system in their enterprise. Such a review would act as a catalyst to further encourage the contractors to invest in safety and health management system.

Contractors should be encouraged to manage their risk by introducing good loss prevention measures at the construction sites. Insurance companies should be encouraged to provide premium discount as a reward for good risk management at construction sites.

The government may consider some tax relieves or tax exemptions to be given for Personal Protective Equipment and safety tools/equipment used in the construction industry.

In tender evaluation, companies certified with OSH Management System shall be given priority or considered as a factor of evaluation to determine their suitability for award of work. In this respect equal recognition should be accorded to Construction Occupational Health and Safety Management System (COHSMS), Occupational Health and Safety Assessment Series (OHSAS) 18000 or MS OSH.

Action Plan for this focus area is as per Section 6.4.

4.6 PROPOSED STRATEGIES ON OCCUPATIONAL SAFETY & HEALTH STANDARDS

In order to enhance Occupational Safety and Health practices in the construction industry mechanisms for good safe work practices need to be established. Therefore necessary standards and guidelines should be developed and introduced to the stakeholders.

Guidelines on MS Construction Occupational Safety & Health Management System should be developed and more certification bodies should be accredited. It is envisaged that an enterprise with good and effective management system should not only have reduce risks to safety and health but should also have high returns on productivity and profitability.

Codes of practice for safe construction works and codes of practice in oil and gas industry should be developed. Guidelines on fall prevention should be developed on fast track basis. Code of practice for certain high risk activities should also be identified and developed. Standard design drawings for scaffolding, workers housing and temporary sanitary system should be developed.

In line with the spirit of self regulation of OSHA, the guidelines and codes of practice should be developed immediately by SIRIM/DSM.

Action Plan for this focus area is as per Section 6.5.

4.7 PROPOSED STRATEGIES ON OCCUPATIONAL SAFETY & HEALTH RESEARCH AND DEVELOPMENT (R & D) AND TECHNOLOGY

R & D and Technology is important for the industry to meet the need for innovative solutions for a better workplace. Therefore, R & D should be further encouraged in the area of construction safety and health, through identification of more research and development projects. More mechanized method of construction should be introduced to reduce labour dependency. Industrialised Building System shall be promoted in Construction Industry.

The existing construction accident reporting mechanism should be reviewed to identify inherent weaknesses and new reporting mechanism should be proposed. It should enable sharing of information among agencies and collation of accident statistics that are more accurate. Above all, it must be able to detect multiple reporting.

Action Plan for this focus area is as per **Section 6.6**.

IMPLEMENTATION

5.0 IMPLEMENTATION

Successful implementation of the "Master Plan for occupational Safety and Health in Construction Industry" depends very much on the stakeholders' incorporation of its guidelines and objectives in their business operations and also use it as part of forward planning document within their organizations. Under this approach, Stakeholders (e.g. contractors, owner organizations and workers organizations) may assume the leadership role to define standards, provide advice and guidance; monitor progress; and remind and urge the members to implement the Master Plan. It is intended that such efforts be reviewed once in every two years.

Figure 3 shows the roles of stakeholders for the implementation of this Master Plan. They are summarized as follows:-

Stakeholders are the driving force for improvement of occupational safety and health performance in the construction industry. Occupational Safety & Health Act 1994 defines that 'the management of safety and health at the work place is the responsibility of those who create the risks and those who work with the risks'. Thus, the participation of all stakeholders such as government agencies, professional bodies, contractor assocations, workers organizations and training providers is a prerequisite for any safety and health program to succeed. It is essential that stakeholders coordinate the implementation of the guidelines and objectives set out in the Master Plan and avoid any duplication of efforts. Performance of the stakeholders will be monitored and evaluated by National Council For Occupational Safety and Health (NCOSH) and if necessary corrective actions or improvement programmes to be introduced by NCOSH.

5.1 ROLES OF STAKEHOLDERS

The assigned roles of each stakeholder are as follows:

5.1.1 Government Agencies

Government Regulatory Bodies monitoring the performance of safety and health in the construction industry are expected to exercise their statutory responsibilities. It could be in the form of enforcement or collaboration with other stakeholders in promotional activities, development of training curriculum and standards.

The performance and achievement in occupational safety and health by government agencies such as JKR is of utmost importance, as this will be used as a benchmark by the industry players; their poor performance will be construed as the Government is not serious in pursuing on occupational safety and health improvement for construction workers.

SOCSO could also play a meaningful role in promoting and attracting maximum participation in occupational safety and health training programs through financial incentives to stakeholders.

Government Agencies to work closely with other stakeholders such as owner and trade association, professional bodies, training providers and other interested parties to ensure that the programs, guidelines, etc recommended in this Master Plan are effectively implemented.

5.1.2 Trade Associations/Contractors

The basic philosophy of the Occupational Safety & Health Act 1994 requires that the Government Agencies, Employers (Owner and Trade Associations) and workers organizations (MTUC / KPPDIB) work closely together, for the improvement of occupational safety and health performance in the construction industry. Thus, commitment by Trade Associations/Contractors to support and actively participate in all the programs and activities initiated by the Government Agencies is essential for the successful implementation of the Master Plan.

Trade Associations/Contractors are encouraged to be more active to develop industry codes of practice and organise training and promotional programmes in collaboration with other government agencies or OSH training providers.

5.1.3 Professional Bodies

The Professional Bodies to give full commitment and support to ensure that the guidelines and standards set for occupational safety and health performance in the construction industry are effectively implemented. Professional Bodies should take action against their members who failed to comply with the provisions of OSHA 1994.

Professional Bodies shall also encourage their members to incorporate occupational safety and health requirements in the planning and design of a project.

5.1.4 Project Owners

Project owners are equally important in the promotion of safety and health program by including requirements for safety and health of workers in the tender/contract document for the project. They could also insist that only contractors with good safety and health track record be selected for the project.

5.1.5 Training Providers

Training providers are important in the development and upgrading of occupational safety and health performance. They are to be encouraged to identify and develop suitable training courses for the construction industry workers and personnel. The planning for the courses to be based on feedback from other stakeholders and also the guidelines set out in the Master Plan. Training providers must use training modules developed by CIDB or NIOSH and they must be professional in their undertakings.

Regulatory bodies to establish relevant standards and trade associations could help in identifying the actual training needs.

5.1.6 Insurance Companies

Insurance companies to promote and recognise good occupational safety and health performance of contractors through providing discount on insurance premium or other benefits.

5.1.7 Roles of National Council For Occupational Safety & Health

Through exercising the power conferred under Section 11(1) of the Occupational Safety & Health Act 1994, National Council For Occupational Safety and Health to play a major role to ensure successful implementation of the Master Plan. The Council to give direction and appropriate advice to the stakeholders in particular the Government Agencies (such as DOSH, CIDB, JKR, etc.) on the implementation of Master Plan.



ACTION PLAN

6.0 ACTION PLAN

The 'Action Plan' under the Master Plan includes programme identified by the National Occupational Safety and Health Committee for Construction Industry (NOSHCCI) for implementation during the Master Plan period (between 2005 and 2010). A summary of the programs to be implemented for each year under the Master Plan is shown in **Appendix 2**.

6.1 SAFETY & HEALTH - ENFORCEMENT & LEGISLATION

6.1.1 Background

Department of Occupational Safety and Health (DOSH) is a government department under the Ministry of Human Resources Malaysia. This department is responsible for ensuring the safety, health and welfare of persons at work and protection of other people from hazards to safety and health arising from the activities of persons at work in various economic sectors among which is the construction sector.

At present, there are about 700 personnel in the department throughout the country. They are 400 inspectors varying from technicians to engineers and their main job is to enforce the Occupational and Safety and Health Act 1994 and Factories and Machinery Act 1967 and Regulations made there-under.

The Occupational Safety & Health Act 1994 provides for the establishment of The National Council for Occupational Safety and Health (NCOSH) to carry out the objectives of the acts. The membership of the NCOSH shall not be less than 12 and not more than 15. It consists of representatives from government and other related organizations or professional bodies of whom at least one must be a woman. The council has the authorities to do all things expedient or reasonably necessary for or incidental to the carrying out of the objectives of the Act. At the moment, DOSH is the secretariat to the council.

6.1.2 Objective

To improve safety and health performance in the construction industry through enhanced enforcement and strengthening of existing legislations.

6.1.3 Recommended Actions

The guiding principle of Occupational Safety and Health Act 1994 is self-regulation that is employers should comply with the regulations because of self-interest rather than official sanction. However, the alarming rate of accidents since the introduction of the Act suggests that the industry players have not still understood the philosophy behind the Act. Therefore enforcement effort should focus more on continuous promotion and education of stakeholders rather than imposing immediate legal sanctions. Recalcitrant offenders however should be subjected to severe penalties to inculcate sense of ownership and accountability under the law. The following are recommended action plans for implementation:

6.1.3.1 Enhancement of Capabilities of Enforcement Agencies

The increasing number of workplaces, coupled with shortage of enforcers, and poor attitude towards `self regulation' by the industry players necessitates the strengthening of the enforcement unit by the year 2006 as recommended by the NOSHCCI. To complement their officers, the Director General of DOSH may exercise the powers conferred by Sub-Section 6(1) of Occupational Safety & Health Act 1994 to appoint independent consultants. By the year 2007 the enforcement agency should be strengthen with increased manpower.

Enforcement officers are currently recruited based merely on their academic background. They are not well versed with the construction processes or work activities in a construction environment and this has hindered them from performing their tasks effectively. Intensive training program have to be arranged for these officers to improve their capabilities and knowledge level on the tasks they have to perform so that they can discharge their responsibilities towards the enforcement of various provisions in the legislations connected with construction safety, health and welfare effectively.

6.1.3.2 Review of Existing Regulations

The main legislation in Malaysia that governs safety and health in the construction industry are the Occupational Safety and Health Act 1994 (and its 6 Regulations) and Factories and Machinery Act 1967, (with its 15 Regulations). The basis in the enactment of the OSHA 1994 was three-fold: Self-regulatory, Consultation and Co-operation. The provisions in the Occupational Safety & Health Act 1994 complement the provisions of the Factories and Machinery Act and its Regulations. In the event of any conflict, the provisions in Occupational Safety & Health Act 1994 shall prevail.

One specific regulation, which have great influence on the construction industry, is the Building Operations and Works of Engineering Construction (Safety) Regulation 1986 (BOWECS). Other legislations, which have lesser influence on the safety and health in construction industry, are:

- a) Workers Act 1966.
- b) Social Security Act 1969.
- c) Street, Drainage and Building Act 1974.
- d) Uniform Building by Laws 1984.
- e) Environmental Quality Act 1974.
- f) Fire Services Act 1988.
- g) Control of Destruction Disease-Bearing Insect Act 1975.

6.1.3.2.1 Review of Factories & Machinery (Building Operations and Works of Engineering Construction) (Safety) Regulations 1996

Some provisions under Factories and Machinery (Building Operations and Works of Engineering Construction) (Safety) Regulations 1986 do not reflect the current practices in the construction industry and therefore require review. Instead of undertaking review on a piecemeal basis the authorities may consider enacting a new legislation exclusively to govern safety and health in construction industry.

It is proposed that the following provisions to be considered in such review:

- a) to include provisions on appointment of Construction Safety & Health Officer & Site Safety Supervisor funded by the owner for projects costing more than RM 20 million;
- b) to include provision requiring safety and health officers working in the construction industry to undergo mandatory induction course and continuous education course to be conducted by accredited training providers;
- c) to include provisions related to career advancement for Site Safety Supervisor to include provisions for his (her) upgrading to Construction Safety & Health Officers;
- d) to include provisions on mandatory requirements for Principal Contractor to appoint Registered Occupational Health Practitioner to monitor occupational health of the workers for projects more than RM 50 million;

- e) to include provisions for work activities, which are not covered under the current provisions such as lifting operations/use of cranes, the use of safety harness, tunnelling works, etc.;
- f) to include provisions for Mandatory Preliminary Risk Assessment Report by client/project consultant or contractors prior to commencement of construction work for a project;
- g) to include provisions for Mandatory Training Program Tool Box Talks before commencing with the day's work;
- h) to include provisions for designated places for smoking at project site and separate, hygienic and safe cooking amenities at the workers quarters;
- i) to include provisions for designated storage area for hazardous substances such as cement, chemicals and highly inflammable materials by client/contractors;
- to include provisions for all temporary works to be designed by the competent professional engineers and they have to be approved and supervised by the professional engineers engaged for designing the permanent works;
- k) to include provisions for project owners to provide adequate allocation for Principal Contractors to provide PPE, other related safety & health tools and equipment to workers; and
- to include provisions for penalties for non-compliance impose penalties. Provisions for penalties shall include heavier penalty for repeated offenders.

It is proposed that the above proposed revision or new regulations to replace the existing one to be enforced in the year 2006.

6.1.3.2.2 Proposed New Construction (Design & Management) Regulation

A comprehensive new regulation should be developed to define the roles and responsibilities of all parties involved in the project, right from the project owners, consultant/designers, principal contractors and, so on. This should include requirements for preliminary risk assessment by the project owners prior to awarding the contract. It is proposed that DOSH be the lead agency to introduce the new Construction (Design & Management) Regulations by the year 2006. The current legislative models adopted by United Kingdom and Australia to regulate Construction (Design & Management) can be further studied and adopted if suitable.

6.1.3.2.3 Revision on the Provisions for Reporting of Accidents/ Incidents and Diseases

The objective of accident/incident and diseases reporting is not solely for purposes of prosecution. Accidents/incidents statistic is vital for the conduct of comprehensive study and research. It will be also useful to identify trends and weaknesses in the current system adopted for construction work so that recommendations can be made for improvement.

At present, the Department of Occupational Safety and Health (DOSH) is reviewing the current reporting mechanism to enhance its effectiveness through a separate regulation known as Notification of Accident, Dangerous Occurrences, Occupational Poisoning and Occupational Disease Regulations 2004, NADOPOD. This new regulation should come in force by mid 2005 and penalty for contractors, consultants or project owners who fail to report or hide any injuries, diseases and dangerous occurrences should be imposed. As part of continuous improvement exercise provisions regarding penalty for violation should be reviewed in 2009.

6.1.3.2.4 Circulars on Occupational Safety & Health Requirements

While reviewing exercise on the Factories and Machinery (Building Operations and Works of Engineering Construction) (Safety) Regulation is in progress, as a short term measure, DOSH to play

an important role on reminding the Government Agencies, Project Owners, Consultants and Project Management Consultants on the need to specify occupational safety & health requirements of the relevant legislations in the tender/contract document. The following items should be highlighted:

- a) Requirements for establishing an Occupational Safety & Health Management System for complying with provisions of Section 15(2)(a), of Occupational Safety & Health Act 1994.
- b) Requirements for appointment of Safety Personnel such as Construction Safety & Health Officer and Site Safety Supervisor.
- c) Requirements for establishing and maintaining a Safety & Health Committee at the work place.
- d) Requirements for client/project owner to allocate adequate funding in the contract sum for the Principal Contractor to make necessary arrangements pertaining to occupational safety and health matters including provision of adequate and suitable PPE, tools and equipment related to safety and health for the workers.
- e) Requirements for existing Safety and Health Officers and Site Safety Supervisors to attend a mandatory course organised by accredited training providers so as to be registered with CIDB as Construction Safety & Health Officer and Site Safety Supervisors respectively. They should attend continuous education program to renew their registration.

6.1.3.2.5 Proposed New Standard for Safety and Health Management System

It is proposed that by the year end of 2005, the relevant regulatory body or agency to develop a standard for safety and health management system for the industry. It is vital so that a uniform and standard assessment can be conducted for all industry players. The standard may be known as Malaysia Standard – Construction Safety & Health Management System.

It is also proposed that by the year 2010, all Grade 7 (CIDB) contractors would have to obtain the MS COSH Management System Certificates (MS COSHMS) or MS OSH or OHSAS 18001. Construction Occupational Safety & Health Management System shall be part of the assessment requirements for selecting and awarding contracts by Government Agencies.

Contractors who have been penalised more than five (5) times (related to construction safety & health) within three (3) years by the enforcement authorities shall have their registration downgraded. It is mandatory for one of their key personnel to attend a specific course conducted by accredited training providers. Curriculum for such program should emphasize on the relevant legal provisions and consequences for failure to comply, real cost of an accident – tangible and intangible costs and benefits of an effective occupational safety and health management system. Registration upgrading could only be considered after the successful attendance of the above training program.

6.1.3.2.6 Statutory declaration by Contractors on accidents and fatalities

Currently conditions of contract require that contractors submit a statutory declaration to client prior to the final payment due to him under the contract. This statutory declaration among others will require the contractor to declare that he has indeed paid all payment owing to the various parties under the contract. In this declaration, a requirement should be included for the contractor to declare the number of accidents/fatalities in his contract and notifications to relevant authorities about the accidents, if any. A copy of this declaration, should be extended to the authorities by the client.

6.2 SAFETY & HEALTH TRAINING & EDUCATION

6.2.1 Background

The construction industry is labour intensive and as such should regard its workers as one of their major resources. It is important that when improving the quality of the industry, the skill and the knowledge of its personnel are also improved. Successive studies carried out by the Health and Safety Executive in the UK has concluded that a significant factor on the cause of accidents is lack of training of the people involved.

Therefore, training on occupational safety and health should be made part of the overall management system. There are different types of trades and levels of training, and training should be regarded as an integral part of trades and management training. Thus training will help people to acquire skills, knowledge and attitude that contribute towards the competence of a person for safety and health related works.

Presently, there are not many approved training providers on safety and health in the country. Besides the National Institute of Occupational Safety & Health, there are few approved private training providers conducting Safety & Health Officer Competency Courses.

6.2.2 Objective

To enable the development of environments that shape safe working behaviour amongst workers.

6.2.3 Recommended Actions

6.2.3.1 Training for Safety & Health Personnel

6.2.3.1.1 Site Safety Supervisors (SSS)

All Site Safety Supervisors should attend a prescribed course to register themselves as Site Safety Supervisors with the authorities. Registered Site Safety Supervisors will be required to attend at least one continuous education program course every year to renew their registration. This program should be implemented in 2005. Factories and Machinery (Building Operations and Works of Engineering Construction) (Safety), Regulations 1986 stipulates that:

- a) main contractors are required to employ competent part-time Site Safety Supervisor at the place of work (Regulation 25 of BOWEC 1986); and
- b) sub-contractors with 20 or more workers must employ competent part-time Contractor's Safety Supervisor at the place of work (Regulation 26 of BOWEC 1986).

Based on the above-mentioned statutory requirements, a standard training module based on the National Occupational Skill Standard (NOSS) for Construction Industry shall be developed.

The ultimate goal of this course is to produce competent Site Safety Supervisors by equipping them with relevant knowledge pertaining to their roles and responsibilities as stipulated under Regulations 25 and 26 of Factories & Machinery (Building Operations and Works of Engineering Construction) (Safety), Regulations 1986. The need for competent Site Safety Supervisor is critical for projects costing less than RM 20 million. For these projects there are no requirements for appointment of safety and health officer under OSHA 1994 and hence the Site Safety Supervisor will be playing a pivotal role in advising the employer on safety and health issues.

Registered Site Safety Supervisors should attend continuous education program as part of their registration renewal requirements. Stakeholders should identify and develop suitable course curriculum.

6.2.3.1.2 Construction Safety & Health Officer (CSHO)

All practicing registered safety and health officers in the construction industry should attend and complete a course to be prescribed by the authorities to register themselves as construction safety and health officers. This program is to be implemented in 2005. Occupational Safety & Health Act 1994 requires all employers and self-employed persons to appoint a full time competent person as a Safety and Health Officer at the place of work. Further provisions were made under the Occupational Safety & Health (Safety and Health Officer) Regulations 1997 and Orders 1997; amongst others those provisions defined the qualifications, roles and responsibilities of a Safety & Health Officer. For building operations and works of engineering construction with contract sum of more than RM20 million, the contractors are required to appoint a full time Safety and Health Officer.

Currently there are two categories of DOSH registered Safety and Health Officers practicing in the construction industry. They are:

- a) individuals with approved Certificate of Competency; and
- b) individuals with more than 10 years of experience in safety and health related works.

In order to obtain the Safety & Health Officer Certificate of Competency, individual must attend a training program either conducted by NIOSH or any other approved training providers and he/she must pass the competency examination organized by the authority. Besides that they must also posses other pre-requisites such as the years of working experiences in occupational safety & health.

Course modules adopted for those training programs are generic in nature. They are not industry specific and the authority may have the rationale for this. Only approximately two (2) hours is allocated to cover construction safety and health. Based on the nature of the construction industry, the extent of coverage given is inadequate for the individual to assist his/her employer to manage the occupational safety & health effectively on construction sites.

For the second category, they did not under-go any formal training as Safety and Health Officers, but solely relying on their hands-on experiences. Their approach varies, depending on their experiences. Normally they are more efficient in playing the supervisory roles rather than advisory roles as stipulated under the Occupational Safety & Health (Safety & Health Officer), Regulations 1997. Matters became worse in situations for those without the industry's background and experience; they are not familiar with the construction processes, working culture and environment. With the shortcomings, they are unable to communicate and manage occupational safety and health effectively.

A tailor-made training program for existing Safety and Health Officer practicing in the construction industry is to be developed and accredited. A training program should be developed specifically for the construction industry safety officers. The main objective of introducing this course is to enhance the knowledge of safety and health officers so as to enable them to perform effectively as Safety & Health Officers within the industry. The groups targeted are DOSH registered Safety & Health Officers who intends to work in the construction industry.

The proposed program should incorporate assessment on knowledge and skill. In the year 2005, successful candidates should be required to register with CIDB as Construction Safety & Health Officer before they can continue and practice in the construction industry. CIDB shall make this as a requirement for all projects with contracts valued more than RM 20 millions.

Registered Construction Safety & Health Officers should attend continuous education program as part of their registration renewal requirements. Curriculum for Construction Safety and Health Officers Continuous Education Program should be identified and implemented in the year 2006.

6.2.3.1.3 Career Advancement for Site Safety Supervisors

A career advancement scheme for Site Safety Supervisors should be identified. Site Safety Supervisors with certain number of years (minimum five years could be reasonable) should be considered to be upgraded as Safety & Health Officer. Knowledge and skill assessment should be part of the additional pre-requisites.

6.2.3.1.4 Designated Person

Certain provisions under the Factories & Machinery (Building Operations & Works of Engineering Construction) (Safety), Regulations 1986 requires employer/occupier of a work place to appoint competent persons as designated person in order to assist in the supervision of work as stipulated under the Regulations. The designated persons to be appointed are:

- a) Public Vehicular Traffic Reg. 18 (1);
- b) Concrete Work, Formwork, Shoring & Other Supports Reg. 29 (1), (2) & (3);
- c) Safety Belt / Safety Harness Reg. 54(1);
- d) Safety Net Reg. 57 (1);
- e) Scaffolds Reg. 74 (1) & 85 (1);
- f) Demolition Reg. 103;
- g) Excavation Work Reg. 111 (2) & 113 (2);
- h) Piling Reg. 125 & 127; and
- i) Blasting & Handling of Explosives Reg. 135

A specific competency-based training program for this group of personnel should be identified and developed. A two days training is recommended.

6.2.3.1.5 Safety & Health Committee Members

Safety and health committee members should be trained to execute their functions effectively. Section 30, of the Occupational Safety and Health Act 1994 requires employers with forty or more workers or as directed by the Director General of DOSH to establish a safety and health committee at the place of work. The committee shall be equally represented by the management and workers.

Roles and responsibilities of such committee stipulated under the Occupational Safety & Health (Safety & Health Committee) Regulations 1996 are as follows:

- a) To assist in the development of safety and health rules and safe system of work.
- b) To review the effectiveness of the safety and health programs. To carry out studies on the trends of accidents, dangerous occurrences, occupational poisonings or occupational diseases that occurs at the workplace. To report to the employer of any unsafe or unhealthy conditions or practices together with recommendations for corrective actions.
- c) To review the safety and health policy and make recommendations for any revision.
- d) To inspect the workplace at least once in every three (3) months.

e) To investigate accidents, dangerous occurrences, occupational poisonings or occupational diseases that occurs at the workplace and discuss the findings and recommendations for corrective and preventive actions.

To ensure that the safety and health committee members carry out their duties effectively, they shall be adequately trained. Training curriculum shall be tailor-made to suit their tasks as committee members.

Stakeholders should develop curriculum for the Safety and Health Committee members training based on their duties as mentioned earlier.

6.2.3.2 Senior Management's Training

Managerial personnel being policy makers for their organizations, they must be aware and well versed with the safety and health legislative requirements. Their commitment is vital for effective implementation of safety and health program within their organization.

Relevant agencies may organise courses and seminars to attract Senior Management of contractors to attend. Stakeholders should identify and develop necessary training programs for these groups. The curriculum may include but not limited to the following:

- a) Legal Provisions OSHA 1994, FMA 1967, Construction & Design Management Regulations and other applicable Acts & Regulations.
- b) The Real Cost of an Accident.
- c) Safety & Health Leadership.
- d) Safety and Health Accountability;
- e) OSH Management System; and etc.

6.2.3.3 OSH Competency to be Pre-Requisite for Registration of Professional Architects, Engineers and Quantity Surveyors and other related professionals

Currently Board of Engineers Malaysia (BEM) has made it mandatory for graduate engineers to attend a 12 hours course on safety and health. Attendance in this course is one of the pre-requisite for registration as a professional engineer. It is recommended that the Board of Architects and Board of Surveyors adopt the same training methodology or modify if necessary. Thus safety and health course attendance be made a pre-requisite for registration of professional engineers, architects and surveyors in the year 2007.

6.2.3.4 Workers' Training

As part of a good safety and health management system in construction, all level of personnel shall be adequately trained. Contractors should identify and develop general training curriculum/kit for construction workers, which should include but not limited to general awareness, tool-box talks, hazard identification techniques, basic first aid, handling and reporting of accidents, etc. The purpose of the proposed kit is to enable Principal Contractors to organise and conduct on-site training program.

6.2.3.5 Safety Induction for Construction Personnel

All construction personnel are required to undergo a one-day (minimum six hours) induction course prior to being allowed to work on site. Upon completion of such course they will be issued with CIDB Green Card or NIOSH Coupon. Enforcement Agencies should improve enforcement of the induction program.

The current program did not make any provision for CIDB Green Card or NIOSH Coupon holders to undergo a refresher program for renewal. Construction personnel should be kept informed on the latest development in the construction safety and health issues, thus stakeholders should formulate, develop and implement a refresher program for the inducted personnel. The following shall be considered:

6.2.3.5.1 Senior Management

Senior management personnel should be encouraged to attend at least one safety and health management course or seminar a year. Stakeholders should ensure that this program is to be implemented in the year 2006.

6.2.3.5.2 Professionals/Sub-Professional

All engineers, surveyors (quantity and land), architects, technical assistants, site agents, technician, clerk of work should be encouraged to attend at least one approved occupational safety and health related course or seminar or workshop a year organized either by their respective professional organization or accredited training providers. Training providers should issue certificate of attendance. This program may be implemented in 2006.

6.2.3.6 Seminars

To enhance the level of awareness, stakeholder should collaborate to organize a number of construction occupational safety and health seminars annually at national and state level. These seminars may be organized by relevant government agencies such as CIDB, DOSH, NIOSH, SOCSO, MBAM, PKMM, MTUC, KPPDIB and Professional bodies such as BEM, BAM, ACEM, PAM, IEM, and etc.

6.2.3.7 Other Trainings

6.2.3.7.1 Competency & Skill Training

In the introduction of Industrialised Building System, new plant, machinery and new technology will be introduced to the construction industry. Some of the plant, machinery and new technology require competent person to operate them. Stakeholders should identify and develop training curriculum for specific plant, machinery and tools. The curriculum should not only cover the skill requirements but also must include the safe and healthy usage and handling of such plant, machinery, new technology and tools.

6.2.3.7.2 Specialised Training for High Risk Jobs

There are jobs or tasks in construction work that expose workers to high hazards and risks (such as working in high rise buildings, bridge construction, tunnelling work, etc.). Prior to allowing them to perform such work, they must be adequately trained with proper techniques of identifying associated hazards, assessing potential risks and introducing suitable control measures.

Stakeholders should identify and develop suitable training program for high-risk operations, which should include but not limited to Job Safety Analysis, Risks Assessment Methodology, etc.

6.2.3.8 Training Providers/Individual Trainers

Currently there is no standard and clear guideline for organization or individuals to be accredited as safety and health training providers. Therefore regulatory bodies should define the pre-requisite and conditions for the accreditation purposes.

As a general guide, only organization with qualified and competent trainers with adequate facilities should be allowed to conduct competency-based training.

Construction work is unique by itself. The nature of the work is totally different from other industries. Work conditions and environment on site keep on evolving from the start up to the completion. Therefore only those who had the experiences working on construction sites are well versed with the art of it. The objective is to ensure only qualified trainers are allowed to conduct approved training programs in order to achieve and maintain the quality and standards of the programs.

To ensure all training programs are being run effectively, trainers must be of high quality and standard. Thus, all trainers shall undergo a competency test to be conducted by regulatory bodies as prerequisite for accreditation. Potential training providers/individual trainers shall register with relevant authorities. This program should be implemented as soon as possible.

6.2.3.9 Training on "DO IT YOURSELF" (D.I.Y) OSH Management System for Construction Industry & its Certification.

6.2.3.9.1 General

Stakeholders should collaborate to organize a course or seminar to assist the contractors in understanding and implementing the OSH Management System through "DIY" concept. The curriculum shall cover each fundamental element of the management system. After completion of seminar or course, contractors shall be guided in developing and implementing the system in their organization. The training concept of "DIY" for ISO 9000 currently being conducted by CIDB may be adopted.

6.2.3.9.2 Certification

Contractors should be encouraged to seek certification on OSH Management System. To encourage more contractors to adopt OSH Management System and to seek certification "DIY", concept of developing OSH Management System should be widely promoted. By the year 2007, the industry should endeavour to have at least 100 contractors certified to OSH Management System.

A common assessment and evaluation system based on merit point assignment for compliance and achievement to measure contractors' safety and health performance should be established and made effective by the year 2008.

Contractors with low performance (based of predetermined standards) shall be given further guidance for them to improve.

6.2.3.10 Construction (Design & Management) Course for Professionals

The proposed Construction (Design & Management) Regulations to be promulgated will place duties on all those who can contribute to health and safety of a construction project. Duties are placed upon clients, designers and contractors and the regulations create a new duty holder-the planning supervisor, whereby the main role of this Planning Supervisor is to advise the client and the Designers on all relevant safety matters including their duties. He can also play the role as designated person to give advice on health and safety management to the client and the designers. Since the word planning supervisor seems to suggest speciality in planning rather than safety, it is proposed that the designation be Safety Advisor or Safety Coordinator.

Since construction involves teamwork of client, designers (including architects, engineers and surveyors) and contractor, all parties or duty holders must work together towards a better safety consciousness and contribute accordingly.

There are three courses/seminars, which must be introduced before the implementation of the said regulation. First, will be the Malaysian CDM Regulations awareness course/seminar. It's an introduction kind of course/seminar whereby the salient points of the regulations needs to be highlighted and addressed. The main target group will be the client and the designers.

Secondly, for the Principal Contractors this course/seminar must be designed for contractors who are required to undertake the role of principle Contractors as defined in the new regulations.

Thirdly, for the Designers/Safety Advisor this course/seminar must be designated for person or company who are required to undertake the role of safety advisor. The objective of this course/ seminar is to ensure that the appointed personnel are capable of carrying out their duties as stipulated under the proposed CDM (Malaysia) Regulation.

To help the designers to fulfil their safety duties, relevant regulatory bodies should take the lead to provide a code of practice or guideline before it can be implemented.

All engineers, surveyors (quantity and land) and architects should attend the "Construction (Design & Management)" course/seminar to be introduced in 2007 upon the promulgation of the Construction (Design & Management) Regulation.

6.2.3.11 Role of Trade Associations in Training

Trade association such as Master Builders Association Malaysia (MBAM), Persatuan Kontraktor Melayu Malaysia (PKMM) and others are the umbrellas for their members. Indirectly they have the control on their members, specifically in promoting and encouraging contractors to participate in safety and health training programs, thus they shall disseminate information on safety and health training to their member.

6.2.3.12 Role of Workers Organizations

Workers organizations such as Malaysian Trade Union Congress (MTUC) and Kesatuan Pekerja-Pekerja Dalam Industri Binaan (KPPDIB) shall endeavour in promoting and encouraging their members/ workers to participate in occupational safety and health programs in the industry.

6.2.3.13 Integration of Occupational Safety and Health Content into the Curriculum of Trade Schools, Local Colleges and Universities

All undergraduate, Diploma and trade certificate programs in engineering, architecture, surveying and all other related courses conducted by local universities, colleges and trade schools to incorporate occupational safety and health content into their course curriculum. Regulatory bodies should work jointly with the professional bodies to set this requirement as a pre-requisite for the recognition of their qualification. For the diploma and certificate level courses, National Accreditation Board should be consulted to make this as a requirement for accreditation of these courses. Regulatory bodies should implement this policy in 2006.

6.2.3.14 Capacity Building of Enforcement Agencies Officers

Enforcement Officers (inspector) are fully trained and experienced in matters of enforcing health, safety and welfare related legislations. As Enforcement Officers are multi-tasking, they are required to carry out inspection and auditing in the construction safety and health. Therefore they must upgrade their knowledge & skills on construction techniques as well as occupational safety and health. The capacity of enforcement officers should be enhanced.

The success of all education & training programs rely on the commitment of the industry stakeholders. Therefore effective collaboration amongst stakeholders should be encouraged.

6.3 SAFETY & HEALTH PROMOTIONS

6.3.1 Background

CIDB is currently implementing a number of promotion activities to promote excellence and creativity in the industry. Among the activities include the award of Annual Malaysian Construction Industry Excellence Award for various project categories, the promotion of Occupational Health and Safety Assessment Series - OHSAS 18001 " DO IT YOURSELF" scheme to industry players, training programs in construction occupational safety and health, a number of publications and publicity through media. The existing promotion programs are insufficient and specific programs need to be outlined to guide safety and health promotion within the construction industry. The stakeholders are encouraged to implement the promotion programs identified in this Master Plan.

6.3.2 Objective

To raise the awareness of employers, workers, the public and other stakeholders about safety and health in construction industry and the proposed action plans for them to implement in order to improve the safety and health performance within their enterprise.

6.3.3 Recommended Actions

6.3.3.1 Promotion through electronic media

Regulatory bodies should consider sensitising through electronic media such as television, radio and Internet. Utilisation of Internet facilities should be maximised by encouraging the stakeholders to establish occupational safety & health columns on their existing websites. This program should be implemented as soon as possible. Regulatory bodies should liase with relevant media organisation to ensure all information and issues pertaining to safety and health are highlighted during primetime.

6.3.3.2 Stakeholders role in promoting MS-OSHMS through 'DO IT YOURSELF' program

Regulatory bodies should encourage owner associations and trade associations to promote and assist their constituent members in setting up Malaysian Standards Occupational Safety and Health Management System within their enterprise through the "DO IT YOURSELF" program. The approach taken by CIDB for ISO 9000 DIY Scheme should be adopted. The concept should be widely promoted to industry stakeholders through media, exhibitions and seminars in the year 2006.

6.3.3.3 Formation of Malaysian Construction Safety and Health Association - MCSHA

Stakeholders should initiate the formation of Malaysian Construction Safety and Health Association (MCSHA) by inviting major industry players to lead the formation of pro-tem committee to register the Association. This program will be implemented as soon as possible. Stakeholders should work together to make this program a success. The objective of forming this association is to pool the industry stakeholders' resources under one umbrella body to further enhance construction safety and health.

6.3.3.4 Promoting Safe Work Practices

Relevant Government's Agencies should encourage stakeholders and trade associations to promote the following safe work practices:-

6.3.3.4.1 Development of Standard Safety Signs

Relevant Government's Agencies (such as DOSH) should collaborate with relevant parties (such as NIOSH) to develop and publish guidelines for the development of standard safety signs in local languages (English and Bahasa Malaysia) in consultation with and for implementation by, industry

players (stakeholders, Trade associations and worker unions). This program will be implemented as soon as possible.

6.3.3.4.2 Safety promotion by stakeholders

Regulatory bodies should encourage owner associations, trade associations and worker unions to organize regular safety and health promotion activity such as safety campaigns in every state or district.

6.3.3.5 Annual Award

Annual award for Best Project Owner (who has contributed to safety and health) should be introduced. Currently awards are only available for best contractor. Project owners play a pivotal role as much as the contractors, and therefore should be recognised for their effort and commitment.

Regulatory bodies should draw up the selection criteria or assessment methodology for all safety and health related awards and announce it widely to the industry stakeholders. This program is to be implemented as soon as possible.

6.3.3.6 Special Certificate of Achievement for Best Practice In Occupational Safety & Health

CIDB and DOSH may jointly issue Special Certificates of Achievement for Best Practice in Occupational Safety & Health in Construction Industry, to first 100 contractors and 20 developers who may achieve a certain pre-determined standard, annually beginning the year 2006. Relevant parties should formulate the assessment methodology to be used.

6.3.3.7 Publication of Safety & Health Prosecutions

Currently news on legal proceedings related to occupational safety and health is rarely published in the major newspapers and in the electronic media. Due to the lack of awareness on this matter, majority of the employers are not aware of the legal consequences for not complying with the statutory requirements.

The objective is to enhance the level of awareness particularly the employers and generally the public on occupational safety & health in the construction sector.

To utilize publicity as a training tool, regulatory bodies should establish an effective mechanism to facilitate dissemination of such information to the public through appropriate channel and websites.

6.4 SAFETY & HEALTH ON INCENTIVE & DISINCENTIVE

6.4.1 Background

CIDB currently provides funding mainly for training programs in construction. Amongst the funding provided include the funding for safety and health induction course for construction industry personnel and safety and health management course for contractors. The existing financial incentives focus very little on construction safety and health per se and there is no specific program to stimulate the improvement of safety and health performance within the industry. To overcome these deficiencies, stakeholders should consider the following programs to stimulate the improvement of safety and health performance vertices are stimulated to stimulate the improvement of safety and health performance within the industry.

6.4.2 Objective

To encourage more construction personnel to undergo training programs and also encourage construction related organizations to play active role in promoting occupational safety and health in construction industry.

6.4.3 Recommended Actions

6.4.3.1 Incentives for Construction Safety & Health Officer Course and Site Safety Supervisor Course

Interested organizations may consider sponsoring or subsidising training programs for Construction Safety & Health Officer and Site Safety Supervisor.

6.4.3.2 Incentives by SOCSO

Annually SOCSO has to pay millions of Ringgit for workplace accident compensations. As a counter measure to reduce the compensation, SOCSO should continue it's current program of providing grants and sponsorship for occupational safety and health training.

In 2003, SOCSO has paid RM754 million ⁴in compensation for all industrial accidents. Out of this, it is estimated that RM37 – RM40 million was paid as compensation for accidents in construction industry. To reduce the compensation, SOCSO may want to consider increasing the grant for safety and health programs organized by interested parties in construction industry. The provision of such grant may encourage stakeholders to organize and participate in occupational safety and health programs. Thus, this will lead to a more knowledgeable and skilled workforce in construction industry, and could minimize work place accidents and compensation to be paid by SOCSO. Stakeholders'

4. Source: New Straits Times – Front page, 19th April 2004

cooperation and commitment is vital for the successful implementation of this recommendation.

6.4.3.3 Incentives from Insurers for Good Risk Management

Stakeholders should seek the assistance of the Director General of Insurance and the Persatuan Insuran Am Malaysia (PIAM) to recognise construction companies with MS-OSHMS or MS-COHMS and rated good safety and health performers to be awarded with lower insurance premium. The formula and incentives should be worked out and implemented immediately.

6.4.3.4 Itemisation of Safety and Health item in Preliminary

Project owners or clients shall itemise safety and health management items in the preliminary section of Bill of Quantities and not to be lumped under the lump sum.

6.4.3.5 Tax-Exemption for PPE, all tools and equipment related to safety and health used in the Construction Industry

Government may consider exempting tax on personal protective equipment (PPE) used for the purpose of securing safety and health of construction workers.

6.4.3.6 Reduction of fee for Occupational Safety & Health Management System Certification

CIDB may work with certification bodies to encourage more construction related companies and contractors to be certified with Occupational Safety & Health Management System. Higher incentives may be considered in the initial years (2006 – 2010) and may gradually reduce thereafter.

6.4.3.7 Incentives for Courses to be Organised by the Proposed Malaysia Construction Safety and Health Association

All construction safety and health seminars to be organized by the Proposed Malaysian Construction Safety and Health Association for the year 2006 may seek incentive from SOCSO and other agencies having interest in reducing accident at work place.

6.4.3.8 Incentives From Employers

Construction employers to encourage their workers and staffs to participate in OSH trainings and campaigns by granting them paid leave.

6.5 SAFETY & HEALTH STANDARDS

6.5.1 Background

Standards are the documents established by consensus and approved by recognized body that provides, for common and repeated use, rules, guidelines, codes of practice or characteristics for activities or their results, aimed at the achievement of optimum degree of order in a given context. Standards should be based on the consolidated results of science, technology and experience, and aimed at the promotion of optimum community benefits.

A code of practice can be defined as a document prepared for the purpose of providing practical guidance on acceptable way of achieving compliance with statutory duties and regulatory requirement. Code of practice shall be followed, unless there is another solution which achieves the same or better result.

Standards are important to ensure that every working man and woman in a nation would be provided safe and healthy work conditions while preserving the national human resource. Standards would provide proper guide for good practice in occupational safety and health. Good practice in occupational safety and health means one can expect that the number of accidents at workplace could be minimized or reduced systematically over the years.

6.5.1.1 Malaysian Standards

Malaysian Standards is a consensus standard developed by Standard Development Committees within the Malaysian Standards Development System and approved by the Minister of Science, Technology and Innovation accordance with the Standards of Malaysia Act 1996 (Act 549). There are few types of standards as listed below: -

a) Adapted Standard

An adapted standard is a standard that is adapted from regional standards or other foreign national standards which is technically modified to suit local needs.

b) Confirmed Standard

A confirmed standard is a standard which has been reviewed by the Standard Development Committee and considered to be satisfactory without change and indicated by the word 'Confirmed' together with the year of confirmation on the front cover of the standard.

c) Indigenous Standard

An indigenous standard is a standard which is prepared either based on a collection of references including literature or data collected from industry, association, survey or data obtained through research and technology development. Such standards are usually unique to local conditions in Malaysia.

d) Revised Standard

A revised standard is a standard which is reviewed in terms of its technical content and presentation i.e. where technical content is found to be obsolete or inappropriate in the light of current technological development. A revised standard supersedes the standard published earlier.

e) Provisional Standard

A provisional standard is a standard developed as a result of urgent needs such as for legislative requirements and implementation of government policies. It does not need to go through the normal procedure for the development of standard as provided in clause 15 of the Standards of Malaysia Act.

6.5.2 Objective

To guide industry players to adopt good practice guidelines acceptable to the industry that will enable them to achieve compliance with occupational safety and health legislation.

6.5.3 Recommended Actions

6.5.3.1 Guidelines on MS Construction Occupational Health and Safety Management System (MS COHSMS)

Fatal accidents in the construction industry are still among the highest compared to other industrial accident. Moreover, to train all workers and staffs at construction site on occupational safety and health may not be practical as the level of understanding, ability to perform a task in safe manner and knowledge on potential hazard may not be fully understood by everyone at construction site.

Further, legislation alone cannot ensure safety and health at the workplace. Addressing occupational safety & health issues require a good management system. A good occupational safety and health management system is a self-regulatory system, which usually addresses the general duties of employers and employees as well as designers, manufacturers and suppliers. It provides protection to the safety, health and welfare of persons at work and of others that may be affected by hazards originating from activities of persons at work. Specific OSH Management System for specific industry could further strengthen the self-regulation system.

A tailor-made Construction Occupational Health & Safety Management System or in short COHSMS need to be developed by the industry. COHSMS is to help in reducing the risk of construction occupational accidents.

In addition, the guidelines will encourage the establishment of manuals in order to effectively implement risk assessment at construction site. It will promote self-sustained safety and health management system.

MS 1722:2003 on Occupational Safety and Health Management System which was approved in 2003 is a general management system on occupational safety & health and applicable to all industries. Similar goes to OHSAS 18001:1999.

Therefore, and as recommended by the special committee set up by CIDB (NOSHCCI), it is high time to develop a specific guidelines on MS Construction Occupational Safety and Health Management System (MS COHSMS) so that both effective management systems at business office and project site could be addressed systematically and be audited.

An effective MS Construction Occupational Health & Safety Management System (MS COHSMS) shall take into consideration the fundamental factors on corporate responsibility, social and moral obligation, good business sense and legal obligation. Good and effective safety and health management system does not only reduce risk to safety and health but also ensures high returns in terms of productivity and profitability.

DSM, SIRIM, CIDB and DOSH shall collaborate to develop COHSMS by 2005. By the year 2006 COHSMS must be ready to be used and accredited certification bodies must also be available for certification purposes. Certification scheme need to be developed. Thus COHSMS needs to be reviewed by the year 2008 and 2010 to incorporate latest development and legislation requirement.

6.5.3.2 Guidelines for Safe Construction Works

6.5.3.2.1 Guideline on Prevention of Falls at Construction Sites

The guidelines for prevention of falls at construction site have to be developed on a fast track basis and must be ready by end of 2005 (Provisional Standard). The reason is, falling from height is the major cause of accidents reported in the construction industry in Malaysia and other part of the world. It is also the major cause of accidental death in construction industry. Currently, there is no specific Code of Practice or guidelines for prevention of falls at Construction Sites. Those existing standards such as MS ISO 10333-1:2003, MS ISO 10333-2:2003 and MS ISO 10333-3:2003 are meant for Personal Fall Arrest System- dealing with the tools and devices only and does not specifically address the detailed prevention measures. Prevention measures are vital to reduce the possibility of falling from height.

A specific guideline for Prevention of Falls at Construction Site is necessary covering both the prevention measures and fall injury prevention systems to combat the increasing number of accidents reported in construction industry.

6.5.3.2.2 Guidelines on Working at Confined Area

Not knowing the dangers of confined areas/spaces has led to the deaths of many construction workers. Often those killed include not only those working in the confined space but also those who is not properly equipped, try to rescue them. Work in confined areas requires skilled and trained people to ensure safety. If work cannot be avoided in a confined space, it will often be safer to bring in a specialist for the job. There should be a safe system of work for operation inside or at confined space/areas. This guideline shall be developed and ready for the use/reference by 2006.

The proposed guideline shall include specific requirement for entry into confined spaces. The guideline shall provide guides in minimizing the need to enter confined spaces and avoiding exposure to hazards that may be experienced when entry to a confined space is necessary.

6.5.3.2.3 Guidelines – Working at Noisy and Dusty Area

Regular exposure to high noise levels can cause deafness. The exposure of anyone to noise from work activities should be assessed and controlled. Where risk to hearing cannot be eliminated, employer must provide hearing protection to their workers. This guideline has to be developed and ready by 2007.

Contractors shall improve their assessment of noise hazards, control measures and training of employees. The most effective way of controlling exposure to workplace noise is through reduction of noise at it sources.

The proposed guideline shall emphasis on acceptable level of noise and noise control measures at construction sites. The employer must provide proper hearing protecting devices.

6.5.3.2.4 Other guidelines

Other guidelines such as guideline on Construction Activities at Night, Safe Movement of Vehicles at Construction Sites; Manual Handling, etc. to be developed as well.

6.5.3.3 Standards for Scaffolding material and jointing method, workers housing and amenities

It is vital and timely to produce standard design/drawings on scaffolding, workers quarters/housing and temporary sanitary system at construction sites.

There are not many types of scaffolding available in the market. It is therefore highly recommended that standard design and drawings be produced by DOSH to assist the contractors to erect these approved scaffolds safely and confidently. Also by having standard design & drawings, the project owners or consultants can incorporate these standard drawings in their master list of drawings for tender or construction purposes.

Similar approach should be considered by other relevant authorities to produce standard drawings and design for workers housing and temporary sanitary system. These standard design & drawings should be ready for the industry's use as soon as possible.

6.5.3.4 Guidelines on Construction (Design & Management) Regulations (CDM)

CDM is a new regulations being proposed in this Master Plan. Traditionally, the duties and responsibility on safety and health in construction industry placed on contractors.

This newly proposed CDM regulations will be imposing duties on five key parties, namely; client, designer, planning supervisor, principal contractor and other contractors to a contract. This guidelines need to be developed by 2007.

When this regulations approved and come into force, a proper guidelines need to be developed to facilitate the project owners, consultants, planning supervisor and contractors to understand and incorporate safety and health elements in the design and construction at a later stage. The guidelines on CDM shall explain the client, designer, planning supervisor, principal contractor and other contractor's duties and other significant requirements in the CDM Regulations.

6.5.3.5 Code of Practice on Construction at Highly Hazardous Workplace

The Code of Practice on construction at highly hazardous workplace may be similar to the normal construction but extra precaution and emphasis must be given on hazard prevention measures especially for those new construction projects approved nearby or within highly hazardous area such as working near or within existing plant, which is under operation. Safe construction systems need to be established.

For oil and gas construction sites, due to its highly hazardous workplace, specific code of practice has to be developed.

6.5.3.6 Hand Book on Good Practice – Occupational Safety and Health at Construction Sites

The proposed handbook on good practice for occupational safety and health at construction sites has to be handy and simplified for the use of every employee or worker at construction sites. This handbook must be drafted and available for use or reference as soon as possible.

As there are quite a number of general workers who could not read or write properly in construction industry, it is proposed that the contents of this handbook be illustrated and explained by using cartoons, drawings and simple & plain language (in Bahasa Malaysia, English, Chinese and Tamil).

6.5.3.7 Department of Standard Malaysia To Accredit Certification Body For MS COHSMS

In order to speed up the process to certify contractors to MS COHSMS (MS for Construction Occupational Health and Safety Management System) and for the effective implementation of 'Do - it-Yourself' Program, Department of Standard Malaysia shall accredit and recognize relevant agencies (CIDB, NIOSH, etc) beside SIRIM QAS to carry out certification exercise on OSH Management System. This program needs to be implemented as soon as possible.

Those agencies or organizations that have been identified by DSM for the accreditation purpose shall train their staffs to be qualified auditors on MS COHSMS or general OSH management system.

6.5.3.8 Green Lane Approval for Standard Design and Drawings – Scaffolding, Workers Quarters and Temporary Sanitary System

The relevant government agencies (DOSH, KPKT and JKR) should facilitate the industry to develop standard design and drawings on scaffoldings, workers quarters, canteen and temporary sanitary system. Once developed, authorities shall encourage the project owners and consultants to use these approved standard design and drawings on scaffolding, workers quarters and temporary sanitary system for their projects. This program must be implemented by the year 2006.

The advantage of using these pre-approved design and drawings is that, project owners or consultants do not need to make submission to relevant authorities in regards to scaffolds, worker quarters and temporary sanitary system. This would speed up the construction activities and at the same time will ensure that the scaffolding are erected and dismantled according to the approved specifications, safe and hygienic worker's quarters built at construction sites and proper & hygienic temporary sanitary system lay at construction sites.

6.5.3.9 Revision to Codes of Practice & Guidelines to Incorporate Latest Legislation & Technology

As a general requirement, standards need to be reviewed every five years. However, if there is a need to review the Codes of Practice and Guidelines on the proposed Occupational Safety and Health Code of Practices / guidelines especially when the need arises due to amendments in law or regulations / introduction of new technology in safe work systems or changes in construction methods, it is strongly recommended that these Codes of Practice or guidelines be reviewed even before the said five years period.

6.6 SAFETY & HEALTH R & D AND TECHNOLOGY

6.6.1 Background

Research into the working life within the construction sector in Malaysia is important for describing various aspects of the current working life situation and for analysing causes and relations. Research can help to provide a sound basis for decision making, both at strategic level and directly in the worksite. Research that is relevant to improving safety and health in the construction industry might include a detailed study of the industry's structure contractual and bidding practices, workers training and education, risk assessment of construction tasks, high risk work practices, or incentives or constrains to adopting good work practices or equipment that could reduce occupational injuries or illness.

We have a poor understanding of how either individual attitudes and behaviour or management action is related to safety in the construction industry. Thus, a research to understand the factors that influence safety behaviour and compliance with safety requirements on construction site should be undertaken.

Technology in the economic and industrial context is seen as a combination of four visible forms, all of which dynamically interact and together enable the accomplishment of desired transformations. The four visible forms which can exist in various degrees of sophistication are object, person, document and institution. Objects like machines and factories enhance the muscle power and brain power of individual human beings. Documented facts store accumulated knowledge so as to avoid reinventing the wheel. Personal abilities generate, operate and maintain all objects. Institutional frameworks help plan, organize, activate, motivate and control transformation processes. All four visible forms are complimentary to one another and are required for any industry. Hence technology provides the means to achieve transformation of available inputs into desired outputs.

Development of technology may be dependent upon services which may be available internationally but application is dependent upon politics, economics and the culture of the society where it is to be utilized.

CIDB's current policy on technology emphasizes on moving away from labour intensive activities towards technology driven activities.

6.6.2 Objective

To reduce occupational safety and health hazards by introduction of mechanization and new method of construction that will optimise labour utilization in the industry.

6.6.3 Recommended Actions

6.6.3.1 Construction Accident Reporting Mechanism

Currently construction accidents are reported to a number of agencies. To fulfil the requirement of Factories and Machinery Act a report is lodged with DOSH. To fulfil the requirement of penal code a report is lodged with the police. To fulfil the requirement of social security Act and the workmen's compensation Act (depending upon local or foreign worker) report is lodged with SOCSO and Insurance Company respectively. All these agencies currently maintain their own accident statistics. There is no single agency that coordinates the collection of these data. To improve coordination and to avoid multiple reporting, a standard reporting procedure and common reporting form need to be developed. In addition, all the agencies should be able to share and retrieve information whenever necessary. Therefore it is proposed that DOSH lead the other agency to undertake a study to identify the weakness inherent in the present system and propose best method of reporting that will enable all agencies to share information as well as to collate accident statistics that are more accurate for future use.

6.6.3.2 New Methods For Preventing Fall From Height

Falling from height is one of the leading causes of occupational fatalities and disabling injuries in the construction Industry. Fall Protection is defined as any means or system used to protect employees from falling from an elevated walking or working surface. It involves the elimination, prevention and/or control of fall hazards.

Currently statutory provisions regarding fall prevention or working at height are very minimal and brief in nature. There are no standards or approved guidelines or codes of practice with respects to this available for reference.

As general control measures industry players currently adopt the provision of scaffolds, safety belt, safety lines and guardrails as means of protection and prevention. Unfortunately due to lack of enforcement and as a cost saving measure those precautionary measures are implemented half heartedly.

In order to improve the above situation industry stakeholders and training centres should be encouraged to:

- a) Develop new methods of prevention through research and development.
- b) Consider the introduction of mobile elevation work platform (MEWPS), mast Climbing Work Platforms (MCWPS) and motorized mobile scaffold.

6.6.3.3 Research and Development on Project Safety and Health

Currently there are not many research projects that focus on improving construction safety and health. DOSH, CIDB and other industry players should jointly identify more research and development projects that will enhance safety and health in construction industry. The following R & D projects are recommended for consideration by CREAM and Universities.

6.6.3.3.1 A Study should be conducted to identify and examine the Socio-economic factors that shape the development and/or adoption of safety and health management in the construction enterprises in Malaysia. The essence of this study is to develop an understanding of the decision processes involved in investing on safety and health solutions; including the initial drivers of the decision to invest; the influence on the type of investment processes. The study may not have to be limited to construction industry but extended to cover all other industries particularly the small and medium scale industries managed by the Malaysians.

6.6.3.3.2 A comprehensive study should be conducted to identify effective ways of rewarding construction enterprises to improve safety and health performance. Areas to be covered shall include:

- a) Introduction of insurance Premium Discounts for a construction in proportion to the number projects completed without accident claims perpetually to an agreed maximum amount.
- b) Good safety and health performance of an enterprise should be a factor of good corporate governance as well as good corporate citizenship. For this purpose the current corporate environmental performance reporting can be extended to include safety and health performance reporting. The possibility of tying up this requirement as one of the pre-requisites for upgrading of companies listing status from the second board to the first board should also be investigated.
- c) The existing projects success factors could be extended to include safety and health and environment management. This requires a paradigm shift among construction industry professionals as well as the possibility of building into construction contract agreement to reward the contractor for good safety and health performance. The reward could be either from the government or the project proponent in pursuance of the "caring society policy" or 'Dasar Masyarakat Penyayang' as enunciated in the vision 2020 policy as well as in the Third Outline Perspective Plan.
- d) A comprehensive study of causes of accident and the circumstances leading to a loss of life within the construction industry in Malaysia between 1997 to 2004 should be carried out. Such, a study will provide an essential foundation for understanding the nature of construction safety and health in Malaysia.
- e) A study to develop construction safety and health management guidelines for owners, constructors, subcontractors and consultants to guide them on the roles each of them should play in order to achieve good safety and health performance in their project.
- f) A study to develop standard safety and health training modules for use by all categories of contractors ranging from G1 to G7. Training materials such as training manuals, guides, work books and videos should be developed. Wherever possible those developed by the International Labour Organisation (ILO) could be modified and adopted.
- g) A study to look into the possibility of making the provision of minimum safety requirement to workers by the contractor to be a precondition for full payment of compensation by SOCSO and insurance companies should be undertaken. In the event of failure on the part of the contractor to provide the minimum requirement, then SOCSO and insurance company will only be required to pay partial compensation and the remaining to be borne by the contractor. The viability of introducing such scheme should be studied from the legal, human and fundamental insurance prospective.

6.6.3.4 Improving the Signal System for Site Traffic Management

DOSH and NIOSH should spearhead the task of improving the signal system for site traffic management and the latest state of art temporary traffic management system. DOSH and NIOSH to work jointly with JKR and relevant organisations.

6.6.3.5 E-Portal for Construction Occupational Safety & Health and On-Line Accident Reporting

NIOSH has already developed and maintaining an e-portal for occupational safety and health. This e-portal should be enhanced and the industry to utilize it to communicate issues on construction occupational safety and health matters. The e-portal should provide information related to training, accredited training providers, safety and health news, etc. related to construction occupational safety and health. Hyper link should be created at all government, trade association and related bodies.

Enforcing Agencies such as DOSH may work jointly with NIOSH, CIDB, SOCSO, MCSHA and other interested parties in establishing an on-line accident reporting facilities.

6.6.3.6 Personal Protective Equipment, Safety tools and Equipment for Working at Height

DOSH or NIOSH should identify and recommend suitable PPE necessary to secure the safety, health and welfare of the worker working at height. They should also endeavour to make it mandatory the use of safety harness with straps attached to horizontal lifeline.

6.6.3.7 Tools and Equipment for Working in Confined Spaces

All monitoring safety equipment and PPE used in working at confined spaces should comply with the latest international standards.

6.6.3.8 Standard Drawings for Temporary Works Implemented by BEM and PAM

Regulatory bodies should make it mandatory for design consultants to prepare design drawing for a standard temporary works and to incorporate safe erection and installation during construction stage and safe occupancy and maintenance of permanent works. DOSH should implement this policy jointly with the BEM, IEM and PAM.

6.6.3.9 Industrialized Building System (IBS)

The introduction of IBS has brought in new technology and methodology for construction activities. This includes the introduction of pre-fabricated components and requirement for use of mechanical plant and equipment, thus leading to minimum utilization of manpower. In other words the number of workers being exposed to hazards and risks has been minimized. Unfortunately the utilization of machinery, plant and new materials may create new hazards and risks. Therefore regulatory bodies should incorporate occupational safety and health requirements in the IBS program. Those requirements may include on the provisions for heavy lifting and manual handling.

6.6.3.10 Study on the Suitability and Practicability of Personal Protective Equipment and Safety and Health Tools and Equipments for use in Construction Industry in Malaysia.

Currently there are many personal protective equipment that are imported and used in this country. Their suitability in tropical country like Malaysia need to be studied and acceptable ones should be recommended for industry use.

The National Occupational Safety and Health Committee for Construction Industry (NOSHCCI) consist of the following representatives:-

Ir. Dr. Johari bin Basri (Chairman)	Jabatan Keselamatan dan Kesihatan Pekerjaan – Director General (Up to 31 May 2004)
Ir. Haji Abu Bakar bin Che' Man	Jabatan Keselamatan dan Kesihatan Pekerjaan – Current Director General (2004/2005)
Ir. M. Ramuseren	Construction Industry Development Board
Ir. Amir bin Hj Yahya, P.M.P	Jabatan Keselamatan dan Kesihatan Pekerjaan
Tn. Hj. Awang Che Seman	Perbendaharaan Malaysia, Kementerian Kewangan
Ir. Nazari Hashim / Ir. Hashim Buyu	Jabatan Kerja Raya, Malaysia
En. Nordin Mohamed Salleh	Jabatan Kerajaan Tempatan, Kementerian Perumahan dan Kerajaan Tempatan
Dr. Mohamed Azman Aziz Mohamed	Pertubuhan Keselamatan Sosial
Hjh. Maimunah Hj. Khalid	National Institute of Occupational Safety & Health
Ir. Dr. Abdul Khalim Abdul Rashid	Universiti Kebangsaan Malaysia
En. Hazman Jaafar	Persatuan Kontraktor Melayu Malaysia
Mr. Foo Chek Lee	Master Builder Association Malaysia
Ir. Kesavan Jeganathan	Institution of Engineers, Malaysia
Ar. Jerry Sum Phoon Mun	Pertubuhan Akitek Malaysia
Ir. Mohd Mazlan Md Ismail Merican	Association of Consulting Engineers Malaysia
Mr. Lee Yee Kuang / Mr. Christopher Tio	Persatuan Pemaju Perumahan & Hartanah
Mr. S. Santhanasamy	Kesatuan Pekerja-Pekerja Dalam Indusri Binaan
En. Iqbal Abdullah	Petroliam Nasional Berhad
Mr. Ong Ang Sung	Persatuan Insuran Am Malaysia
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