

Incorporation of Safety Innovation Measures and Good Practice into Specification

Site Safety Seminar for Capital Works New Works Contracts

26 April 2019
LAU Chee Tim
SM/SH





Reinforcing Site Safety Management

1. Safety Performance Monitoring

- **Upgrading HASAS** to version to 1.6, **HALENSAS** to version 1.2
- **Safety Alert Module** for prompt accident / incident reporting



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Reinforcing Site Safety Management

2. Specification Enhancements

Prevention of fall of person

2.1 Tightened safety measures for floor openings

a) **Cover** to floor opening

- solid and sound material
- cover securely fixed in position
- boldly marked to show its purpose



b) **Railing** to floor opening

- top and mid railing, toe board
- brightly coloured safety net



c) **Safety net** to cover openings with considerable risk

- to catch falling persons and debris





Reinforcing Site Safety Management

2. Specification Enhancements

Prevention of fall of person

2.1 d) **Fall arrest system**

- required when guard-rails or coverings to floor opening is impracticable
- safety harness, lifeline, anchor point
- continuous anchorage of harness



e) Effective **monitoring system**

- checking plan and schedule



- ##### 2.2 Double lock ground release shackle for lifting of H piles
- no need for mancrage





Reinforcing Site Safety Management

2. Specification Enhancements

Use of IT for operation, access and data control

2.3 Enhance safe operation of plant or equipment

e.g. RFID card to authenticate authorised operation

- excavator,
- forklift truck,
- mobile working platform



2.4 Access control and recording

e.g. RFID card monitoring
for high risk area

- basement, lift shaft





Reinforcing Site Safety Management

2. Specification Enhancements

Use of IT for operation, access and data control

2.5 Alert against unsafe acts or conditions

- Height detector in alarm system of tower crane lifting
- RFID for alarm system of detecting worker in danger zone of mobile plant



- Infrared for alarm system of monitoring truck height



o incident



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2. Specification Enhancements

Use of IT for operation, access and data control

- 2.6 Checking and updating information
e.g. Using RFID for checking plant permit,
workers' record



Prevention of falling object

- 2.7 Electrically operated nylon net over bending yard



- 2.8 Interlock for crane hooks





Reinforcing Site Safety Management

2. Specification Enhancements

Prevention of falling object

2.9 Trial lifting of large panel formwork, large metal components and precast concrete elements

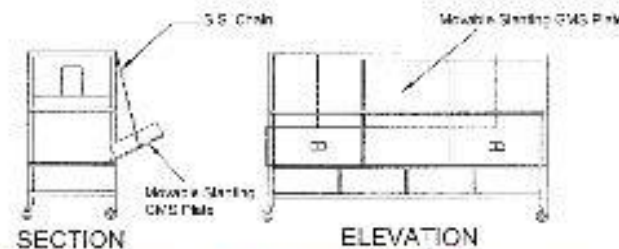


2.10 Catch fan on facade to protect the public



2.11 Nylon net on panel of working platform & increase in height of protective barrier

2.12 Metal plate on gondola to collect loose objects during operations on external wall





Reinforcing Site Safety Management

2. Specification Enhancements

Prevention of falling object

2.13 Enhancement of tower crane operations

- secondary brake
- 2 hours for weekly maintenance
- erection, telescoping, climbing and dismantling in master programme
- separate power for each crane
- CCTV in operator cabin
- camera at crane saddle or end of jib without saddle
- mentor & mentee scheme
- work roster for operators



2.14 Signaller to complete Signaller for Hoisting Operations at Construction Sites Course offered by CIC

(signaller having completed signaller training course and working in industry by 2017 is exempted)



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2. Specification Enhancements

Avoid injury during manual handling

2.15 Measure to reduce risk of manual lifting of rebars during fabrication of large diameter bored piles



2.16 Interlock for bar bending machine - machine will stop when the guard is not closed properly



2.17 Bar bending machine angle indicator



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2. Specification Enhancements

Avoid injury during manual handling

2.18 Hanger for cable of generator



2.19 Two wheeled wheelbarrow with hand brake



2.20 Mobile pneumatic breaker rack



2.21 Extendable ladder for different heights of working platform of reverse circulation drill



2.22 Suitable material for gangway on bamboo scaffold to reduce manual handling



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2. Specification Enhancements

Avoid injury during manual handling

2.23 Measures to eliminate risk of section being cut from striking person during strut removal



Avoid electrocution

2.24 Cordless power hand-held tools



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2. Specification Enhancements

Avoid injury by moving machinery

2.25 Operator presence sensing system to cease operation of forklift truck



2.26 Installing CCTV in material hoist

Avoid exposure to harmful substances

2.27 Advance cement grout mixing system - abate dust nuisance



2.28 Plastic cushion for piling final set operation



Foster safety and caring culture

2.29 Pay for safety extended to cover Occupational Safety and Health Award



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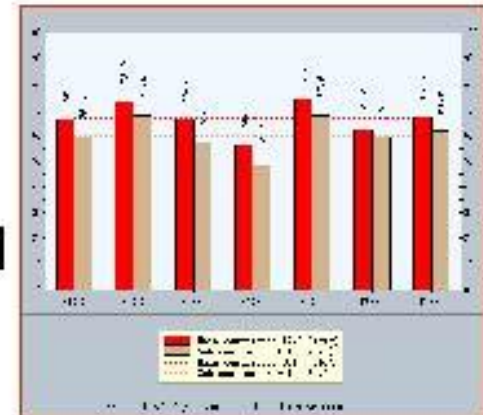


2. Specification Enhancements

Foster safety and caring culture

2.30 Safety climate index survey

- gauge safety awareness of site personnel



2.31 Work safe behaviour programme

2.32 Accreditation of safety supervisor under

Hong Kong Safety and Health

Accreditation Scheme managed by OSHC



2.33 Reference Materials on Site Welfare, Health and Safety Measures of CIC

- rest area close to workplace,
first aid room, misting machine,
air conditioners in plant cabins





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Housing Department
The Secretariat of the Policy Review Group for Building Safety

Site Safety **oincident**

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What's New

- [Safety Auditing] Housing Authority Site Safety Auditing System version 1.8
- [Safety Auditing] Housing Authority Lift and Escalator Nominate Subcontractor Safety Auditing System (HA-JEN3AS, Version 1.2)
- [Safety Auditing] Housing Authority Safety Auditing System for Maintenance and Improvement Works (AM-AS/MAI) version 1.2
- [Safety Auditing] Checklist for Site Safety Inspection Programme (2010 Edition, 2010)
- [Seminar] Site Safety Seminar with Work Committee to be held on 20/4/2010

Now

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Last revision date: 11 April 2010

Safety First

Thank you

● Caring ● Customer-focused ● Committed ● Creative

Here is the footage of

“Site Safety Seminar for Capital Works New Works Contracts”

which was held on 26 April 2019

by the Hong Kong Housing Authority

The Speaker is

Mr. Timothy Lau, Senior Manager (Safety and Health) of Housing Department

His topic is

Incorporation of Safety Innovation Measures and Good Practice into Specification

We have come to the last session

Just now, we touched on good practices

We have sorted out from Safety Audit in the past years

good practices of contractors and incorporate into

standard specification for implementation through contracts

But due to contract issues, some ongoing projects

were controlled by time and construction cost constraints

New items will be added to contracts

for tendering on or after 1st April 2019

For contracts tendering on 1st April 2019

contracts are likely to be awarded in August or September

Safety audit will tentatively be carried out at end of year

It is right for contractors to be concerned about these items

Because the majority of them could be new to contractors

Perhaps only a few contractors have experience in such items

How to look for these items? I will explain

If there are innovations that have never been seen before

and there is no way to find them in the market

No need to worry, discuss with the Housing Department (HA)

resident site staff in charge of your project

Let site colleagues liaise with Safety & Health Unit

We can provide related information for site colleagues

That mainly involves computer technologies

Maybe related companies in the market

would know the execution procedures

Continual revision has just been discussed

HASAS version 1.6 and HALENSAS version 1.2

HASAS version 1.6 and HALENSAS version 1.2

became effective on 1st April 2019

Reminder: Reporting of site accidents / incidents

We use the Development and Construction Site Mobile System (DCSMS)

#NAME?

My smart phone can receive a report of a Senior Clerk of Works

Recently there were late accident reports

some are reported a few months after the accident

Your help is needed

If there is an incident or accident on the construction site

please report it. Site agent please trigger the reporting

by using preliminary Form DCMP-F787 to report without delay

Reporting site accident and incident is necessary

Cover floor openings, fix the cover by nails

Put up a warning sign for unused floor openings

Fenced off properly

Provide toe-boards, top and mid rails with plastic nets

If hazards are present under the floor opening

that may be life threatening, add a safety net

If there is a need to work within or near the opening

the workers ought to be protected

There should be an eye bolt to secure the safety harness

The risk of workers falling will be minimized

Other measures include

Mark up and put up warnings at all floor openings on site

Regular inspections to ensure effective implementation

This item 2.2 was shared by a foundation contractor

This was shared in the Safety Forum 2017

This is a double lock ground release shackle for lifting H piles

Workers on the ground could use wires and undo the clamps

Men cages are no longer used to lift workers to undo lock clamps

This reduces the risks of working at height

This involves computer technologies

Input workers' information, install a card reader

like swiping an octopus card to identify workers

After positive identification, insert the key to start the machine

The key alone is useless

unless you are an authorised operator

you will not be able to start the machine

The adjacent photo is a scissor platform

You can climb up there but will not be able to start it

Without the card, you cannot start the machine

There was an incident in the past

A plant owner walked over there

He noticed that his excavator was improperly parked

He attempted to start the vehicle

However his operation technique is poor

although he was a trained operator years ago

he was not fit for the job now for due to lack of practice

The plant overturned as it was operated improperly

No card, no operation

Then, accident will not happen again

This card can also control workers entering danger zones

for example, lift shafts

Without a card, you cannot get in

When you swipe the card, we will know you are inside

and whether you have come out

This technology applies to lifting operation too

When the lifting hook is lowered to a certain height
the alarm will be triggered

Workers below will then realise they have to stay away

The crane is in motion

If there are RFID tags on workers' safety helmets

RFID sensor will detect people approaching

The alarm in the operator cabin will be triggered

when workers go near the danger zone

You have to pay attention to workers' safety

There are infrared sensors at the entrance gate

If the jib is too high, the alarm will be triggered

That reminds vehicles going in and out of the site

to lower their jibs

Ok. Is the machine licence renewed when it is expired?

Is there a certificate?

What is it like when the worker is undergoing training?

Swipe the card and add RFID to the system

Then all can be checked

Of course, you need a data base and renew data regularly

This is electrically operated safety net

Even when a worker drops a tiny broken piece carelessly

it can be obstructed and stopped

Of course, it does not work for big pieces

Another side function is to screen off sunlight

There is an interlock device for crane hooks

This prevents dangers caused by safety latch malfunction

In our industry, there are large panel formwork

large metal components and pre-cast concrete elements

When raised to 300-500 mm above ground

do stop and see if it is sturdy

Lift only when it is sturdy. Do a trial lifting

Also, HA does not require scaffolding for buildings on site
If the building is near the site boundary abutting pavement
pedestrians nearby may be injured if there are falling objects
We will consider regulations set by the Buildings Department
project a plane inclined at 10 degrees from the
vertical line of building roof top
there must be some protection for areas beyond this plane
Catch fan at related external area is required
Protective catch fans at a lower height
may go beyond pedestrian footpath towards carriageway
The purpose is to prevent objects from falling from height
We have raised the height requirement for metal railing
It was 1.1m before, 1.35m now
There is a nylon net inside to prevent falling objects
Sometimes when workers on gondola are drilling exterior walls
loose objects might fall down
If there is a metal plate
the dangers of falling objects would be reduced
This occurs quite frequently
We have discussed with HK Professional Hoisting Engineering Association
There was an incident where a tower crane was lifting a load
suddenly the load dropped down
If a secondary brake had been installed
the accident would have been avoided
When there is a sudden mishap with the drum
or the accelerator speeds up suddenly
That is, the machine is malfunctioning
The secondary brake will stop the operation
There must be a 2-hour maintenance every week
In the work procedures, allow time for crane climbing
A separate electric power is needed

Install CCTV in operator cabin

Record the operator's operation process

Check if he displays any irregular behaviour

How he monitors the control gear

There could be unexpected movements

We do not want to see any of these

The CCTV will help him — you are being observed

in some cases the camera could not capture

what is happening below the jib

Originally, a camera is installed on the jib

In fact, it should be on the crane saddle

If the crane has no crane saddle

then the camera can be installed on the jib

Also, there is the mentor and mentee scheme just mentioned

work roster is introduced

The aim is not to overwork crane operators

However the industry has to come up with a solution

Theoretically, it can be from 7am to 7pm

This in fact is a very long time

The signaller issue was discussed just now

I do not want it to be a huge impact on the industry

Workers joining the trade in or before 2017 can continue

But those joining after that

please apply for the Signaller for

Hoisting Operations at Construction Sites Course offered by CIC

It is hoped that their skills will be enhanced

Regarding their physical strength

Workers are getting older

The assistance of machines is a good idea

The bar bending machine below has its guard lowered

before the bar bending machine is turned on

This will prevent hands from being jammed

Angle issues

Sometimes, you wish to bend 90 degrees

but it turns out 180 degrees because you press the wrong button

It will be a big hazard if you are struck by a steel bar

Therefore, angle indicators are necessary

These involve manual handling

Hanger for cable of generator

A wheelbarrow has 2 wheels

The pneumatic breaker rack can be pushed by a handcart

This ladder is extendable

It is fine if plankings of scaffold are of wood

But metal ones are lighter and thus better

For metal ones, the 45000-ohm requirement must be considered

For resistance lower than 45000 ohm

there must be an equipotential bonding

Usually, it will not be lower than this

This is a foundation contract

When I-beams are cut, they could spring up out of control

This contractor has the iron bars harnessed before cutting them

After cutting, workers will pull them down

This has to be carried out gradually

There is more than one brand of cordless tools

When using them, provide a charging station in the work zone

Full charging would facilitate work

For the forklift truck

when an operator does not sit on it for 2 seconds

the forklift truck would not operate

Accidents of moving forklift trucks could be avoided

This foundation contractor set up an extra control room

By pressing a button in this control room

the grout outside will be mixed

Then, the dust will not affect the workers

Using a plastic pad to replace the iron pad

in piling set operation

No fire sparks, crumbs or iron fragments will fall outside

For award

“Pay for Safety Scheme” will cover

Occupational Safety and Health Award

This is a big prize of OSHC

The award is now included in pay for safety items

I understand some contractors

have joined the grand prize activity before

Now the Pay for Safety Scheme covers this award also

Safety Climate Index Survey

This should cover at least 30% workers every half a year

Work Safe Behaviour programme

You will realise what trades have dangerous work tasks

or high rates of injuries

Then, you will need to show care and concern

For Accredited Safety Supervisor (Construction)

the deadline is extended to end of 2019

Before the end 2019, complete CIC or OSHC's enhancement course

Applicants may not be able to finish registration in time

But if you have applied

you can assume your application is accepted

This is a temporary arrangement

Hopefully, all will be endorsed next year

Consider the good practices of CIC

More rest areas, first aid room and misting machines will be provided

It is very hot in plant cabin. Provide air conditioning

Together we will improve site safety

For the innovative site safety measures just mentioned
some of them may need companies in computer technologies
to provide the service

I know some contractors are using external help

In case of problems, do not worry. Go to our site staff

We do have a way out for you

We need everybody's help to improve site safety

Thank you

Thank you for watching