This is a clip from the 10 December 2024 recording of the

Hong Kong Housing Authority

"Site Safety Seminar for Capital Works New Works Contracts"

The speaker on stage is

Senior Clerk-of-Works/ Surprise Safety Inspection Programme

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His topic is

"Smart Site Safety System Labelling Scheme (4SLS) in HA Projects"

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(00:24)

Hello everyone. Next, I will briefly introduce to you

the key points of the Smart Site Safety System Labelling Scheme (4S Labelling Scheme)

share the experience of Housing Authority projects participating in this scheme

and highlight points to note

The Smart Site Safety System Labelling Scheme

was jointly launched by the Construction Industry Council (CIC) and the Development Bureau

starting in May 2024

Its purpose is to encourage the industry to adopt Smart Site Safety System technologies

and to give recognition to contractors for implementing Smart Site Safety System technologies

to address identified construction risks

The validity period of this label is one year

and it will also be published on the CIC website

Next, let me explain the application process

First, the contractor must conduct a risk assessment

to decide which Smart Site Safety System technologies to use

Then, after obtaining the Contract Manager's consent

they can apply online

Please note that Housing Authority projects fall under the non-public works category

Afterward, the CIC will assess the application documents submitted by the contractor

If the application documents meet the requirements

the CIC will forward the case to the Housing Authority

Then, the Safety and Health Unit (SHU)

will pass these documents to the relevant Contract Manager

The Contract Manager will then arrange for

an Independent Inspection Team to conduct a site assessment

After completing this assessment

all inspection reports must be submitted to the SHU

Once collected, they will be handed over to the CIC

Finally, the CIC Working Group will approve and announce the results

It should be noted that the site assessment should be completed within one month from the referral date

and the entire application process will take approximately two months

Members of the Independent Inspection Team cannot be from the project team of the specific project being assessed

This ensures the team's independence

What personnel should be included in the assessment of superstructure works?

It can include one Clerk of Works plus one Architect

For foundation works

it requires one Inspector of Works plus one Structural Engineer

to conduct the site assessment

Finally, a Senior Professional Officer

will sign this assessment report

Upon receiving a referred application case

what tasks does the Independent Inspection Team need to perform?

First is the pre-inspection preparation

You need to understand the project

and the proposed Smart Site Safety System requirements

These requirements can be found in the Application Guide for Smart Site Safety System Labelling Scheme

It contains sixteen types of engineering categories

The main engineering category for the Housing Authority will be superstructure works for single-tower building

The guide suggests adopting four smart devices for this category

As for superstructure works for multiple-tower buildings, six smart devices are recommended

And for foundation works, three smart devices are recommended

In the chart, "R" indicates recommended devices

and "O" indicates optional ones to consider

Next, let's look at the

Desktop Checking Assessment Form

Upon receiving it, the first thing we can look at is Part G

What is in Part G?

The CIC Secretariat sometimes writes notes in this section

What might the content be?

It will contain some opinions

for example, the number of Smart Site Safety System devices

the types of Smart Site Safety System

its implementation date

and whether the coverage is sufficient

If you see these comments, pay special attention

or reconfirm with the site if necessary

Even if no recommendations are written

the Independent Inspection Team should still check

if the Smart Site Safety System devices

shown on the Smart Site Safety System location plan

have sufficient coverage to address the relevant risks

If you need the latest Smart Site Safety System location plan for that site

you can request it from the contractor

If there are no issues, you can begin the site assessment

Before conducting the assessment

we also need to prepare an Inspection Checklist

There are a total of nine forms in the Inspection Checklist template

covering: digitalized tracking system, electronic lock

mobile plant alert device, tower crane alert system

smart worker monitoring device, artificial intelligence safety monitoring system

centralised management platform, digitalized permit-to-work system

and confined space monitoring system

Take, for example

this multiple-tower building construction project

What do we see from this

Desktop Checking Assessment Form?

First, the centralised management platform

Yes is checked, meaning this system is present

Form 7 is needed

Second, digitalized permit-to-work

Yes is also checked here, meaning this system is present

Form 8 is needed

Third, mobile plant alert system, which requires Form 3

Fourth, electronic lock, which requires Form 2

Fifth, smart worker monitoring system, which requires Form 5

Sixth, AI camera, which requires Form 6

Finally

the tower crane alert system, which requires Form 4

In summary, a total of seven checklists are needed

We must note that when filling them out

do not change the numbers on the checklists

What is next?

We need to fill in the proposed number of installed devices

on the corresponding checklists

to determine the number of devices we need to inspect

Each checklist

has a minimum requirement for the number of inspections

For example, for the mobile plant alert system

we hope to fully inspect this device

So, if the proposal is to install two sets of mobile plant alert systems

we need to inspect if two sets exist

Next, worker smartwatches

There are five in the proposal

Since the requirement here is to check at least five

we also need to check five

And so on

Then, plan the inspection route

and mark the number of devices to be checked on the location plan

This avoids having to look through documents on-site

or missing any devices to be checked

For example, there is one electronic lock

The electronic lock requires Form 2

so it is marked as 2.1 on the location plan

Because there are two mobile plant alert systems requiring Form 3

they are marked as 3.1 and 3.2 at the mobile plant locations

And so on

When conducting the on-site inspection, first record the start time

conducting a brief introduction

reconfirm with the contractor the devices, number, and inspection route for today's inspection

If there are differences, make a record and change accordingly

Also, note that the inspection route should be led by the inspection team, not the contractor

Next, we need to remind the contractor

that photos will be taken at any time during the inspection for record-keeping

Also, remind the contractor that during the inspection

they will be asked to demonstrate some devices

If the demonstration fails

it will affect the application result

Finally, if necessary

the contractor can give a brief introduction to the installed devices

If the device is not a product already approved by the CIC Construction Innovation and Technology Fund

the contractor may have the opportunity to give an introduction and demonstration

When starting to inspect the devices

what are the inspection criteria?

They are based on existence and workability

For example, when inspecting electronic locks

we first inspect according to the pre-planned route and number

During the process, we will randomly ask the contractor to demonstrate

The electronic lock in the picture requires a special key card to open

These key cards are not easily duplicated

Alternatively, an authorized account

can scan the QR code on the lock with a mobile phone

to open this lock

If there is unauthorized or illegal opening

the device will sound an alarm

notifications will be sent via mobile phone or the centralised management platform

safety personnel can be immediately notified and take follow up actions

Please watch the video on the right

demonstrating opening the lock by scanning the QR code on the lock with a mobile phone

Next is the mobile plant alert system

The model in the picture uses ultra-wideband technology

It has sensors installed on the machinery

and workers' safety helmets are equipped with these smart tags

which we call SmartTag

When a worker approaches a preset dangerous zone

it will alert the worker, operator, and safety personnel

Note that if this technology is used

ensure there are enough smart tags to be installed on workers' safety helmets

We also need to check the number of tags

You can watch the demonstration video on the right

Next is also a mobile plant alert system

but this technology uses 360-degree camera technology

It has cameras installed on the front, back, left, and right of the machinery

When the system detects a worker approaching a preset danger zone

it will issue an alert to the worker, operator and safety personnel

There is a demonstration video on the right

(Reminder again, leave the danger zone immediately)

Now for the tower crane alert system

When the hook is within a 7-meter radius of the danger zone

or when the lifted object is more than 3 meters above the ground

this technology activates the device, emitting sound and flashing lights

Moreover, when a worker appears within this range

it will issue an alert and notify safety personnel to follow up

The video in the upper right corner demonstrates the activation of the tower crane hook device

The video in the lower right corner demonstrates the alarm device being triggered

after a worker enters the lifting danger zone

(Warning, lifting in progress, please leave immediately)

Next, the smart worker monitoring system

The smartwatch in the picture can be used to detect a worker's health status

such as heart rate, body temperature, etc

When the data reaches a preset level

it will issue an alert

This device can also detect the worker's location

and has a distress signal function to notify safety personnel

Some models also have a fall detection function for workers

However, when too many smart devices are used

it may not be possible to see

enough workers wearing them on-site

But we can see the real-time number of workers wearing devices

on the central management platform

or check if there are enough spare watches

or sufficient charging facilities

for the smartwatches

which can prove whether the quantity matches what is stated in the application

The video in the upper middle demonstrates

the smartwatch detecting a worker's health, location, and distress signal function

The worker first collects the watch

Each watch is paired with a different worker's identity

Now the worker simulates feeling unwell, so he presses the distress signal

After the signal is sent, his location can be known on the centralised management platform

and the safety personnel on-duty are notified to follow up immediately

The video below demonstrates

an alarm being issued when a worker falls

This is with Mandarin narration

The situation is also similar

First, pair the watch

Then, simulate a worker falling

On the centralised management platform

an alert immediately appears that a worker has fallen

Next is the Artificial Intelligence safety monitoring system

Using AI cameras to help monitor workers

to see if they are using appropriate personal protective equipment

such as safety helmets, reflective vests, etc

It can also monitor whether workers have entered preset restricted areas

As seen in the picture, this area is set as a restricted area

If a worker walks into this area, the device will sound an alarm

The video in the picture demonstrates an AI camera

detecting a worker not wearing a reflective vest

The one above is a closer angle

The one below is a wide angle

It can detect workers at different distances

Next is checking the systems

What systems are there?

Including the centralised management platform and the digitalized permit-to-work system

First, the centralised management platform is not mandatory

But if this platform is used

we can see if it can display

the Smart Site Safety System devices used on that site

But remember, only one centralised management platform

can be used to manage all Smart Site Safety System devices

More than one platform monitoring the same site is not acceptable

All demonstrations

can be held in the office or control room

Now for the digitalized permit-to-work (e-Permit)

which can be applied to hot work, lifting operations, or entry into lift shafts, etc

We require the contractor to demonstrate

how to apply for and approve a digital permit-to-work

They also need to show records of digitalized permits-to-work

including valid, expired, cancelled ones, and their locations

The video in the upper right corner

demonstrates the process from application to cancellation of a permit

From application to cancellation, you can see how the process works

Next is how to fill out the system check forms

Checking the centralised management platform

you can see the status and records of all applied Smart Site Safety System devices

Most importantly, all information should be reported back to the centralised management platform

Is there a designated person monitoring this platform?

If no, the system is useless

If there is, record this person's name, position, and role

Record it in the red area shown in the diagram

Next is Policy Checking

In the policy checking form

we need to see if the contractor has appointed a person

to maintain the entire Smart Site Safety System

If so, record this person's name and position

Ask the contractor if they conduct regular checks

to ensure the Smart Site Safety System devices are functioning normally

If so, ask for the schedule of regular checks

Generally, checks are done once a month

Finally, the post-inspection work

What documents need to be submitted to the SHU?

First, the inspection checklists signed by the two inspectors

Second, photos; about one to two photos for each type of device

Third, if there are updated Desktop Checking Assessment Forms or different location plans

they must also be submitted to us

Finally, the assessment report signed by a Senior Professional Officer

As of November 14, 2024

12 Housing Authority projects have awarded the Smart Site Safety System Label

It is expected that more projects will appear on the award list after undergoing assessment

However, for projects that have already awarded the label

contractors should continue to properly implement the Smart Site Safety System

The CIC may conduct surprise inspections

to verify if the site is effectively implementing the Smart Site Safety System

If there is a serious violation of this scheme

the Smart Site Safety System Label will be revoked

If you want to learn more

you can refer to the CIC's reference material

the “Guide to Smart Safety Related Technologies for Construction Sites”

Of course, the most important one is the CIC's

“Application Guide for Smart Site Safety System Labelling Scheme”

Today, Mr. Lau Chi Tim and I have introduced

the contractual requirements for the Smart Site Safety System

and the key points of the Smart Site Safety System Labelling Scheme

This is the Housing Authority's site safety website

Here you can find some accident statistics

safety and health alerts and video recordings of past safety forums and seminars

Colleagues, if you have time, please browse it to increase safety awareness

Let’s work towards site safety together

Thank you all

Thank you for watching

(23:47)