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2020年工程和物業管理安全研討會
「風險管理—吊運、高處工作及防止墮物」

講者：合約經理 -簡皿光

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2020年吊運操作的嚴重意外

香港01

【奪命工傷】鰂魚涌重建地盤57歲男工人被起重機夾斃

工業傷亡權益會提醒承建商，進行吊運工序前必須確保吊運現場清空，以免在場工人進入機械操作範圍，確保現場所有機械妥善和安全運作。工業傷亡權益會要求勞工處立即停止地盤運作，徹查並交代意外原因，避免同類意外

2020年1月13日

香港蘋果日報

元朗木倉吊運200公斤木條墮下壓傷工人重創

警方列工業意外，現正在場調查。... 現場消息稱，傷者是雜工，該批木條在吊運途中掉下，疑傷者走避不及被壓中。... 去年5月24日，香港仔黃竹坑道36號一個地盤，一名姓黃48歲工人操作吊機吊起一支打樁用鐵管，其間鐵管

2020年6月19日

香港01

奪命工傷｜跑馬地男工人地底工作遭工字鐵擊中多處骨折送院亡

如涉及吊運，地底不應有其他人同時工作。... 勞工處發言人表示，跑馬地建築地盤發生的工作意外，意外中1名男工在操作1部挖土機時，被1支...

2020年4月28日

頭條日報 Headline Daily

啟德地盤男工遭4噸重管道壓傷 昏迷送院不治 - 港聞 - 即時新聞 - 頭條日報 Headline Daily

(1) 確保吊運現場清空，以免在場工人進入機械操作範圍；... 工業傷亡權益會要求勞工處立即停止地盤運作，徹查並交代意外原因，避免同類意外 ...

2020年7月14日

吊運操作常見意外的成因

主要成因

- 沒有制定風險評估及吊運計畫，包括現場環境及吊運重量等
- 吊運前沒有做足事前檢查工作，包括機械現場環境等

為方便更快開工，自動安全負荷顯示器發生故障，令到過重也不知道

起重裝置上的安全操作負荷展示與證書上的資料不一致

沒有足夠空間讓支重腳撐完全伸展

因油喉漏油或受壓後後爆喉導致物件突然下墮

地面缺乏足夠承托力

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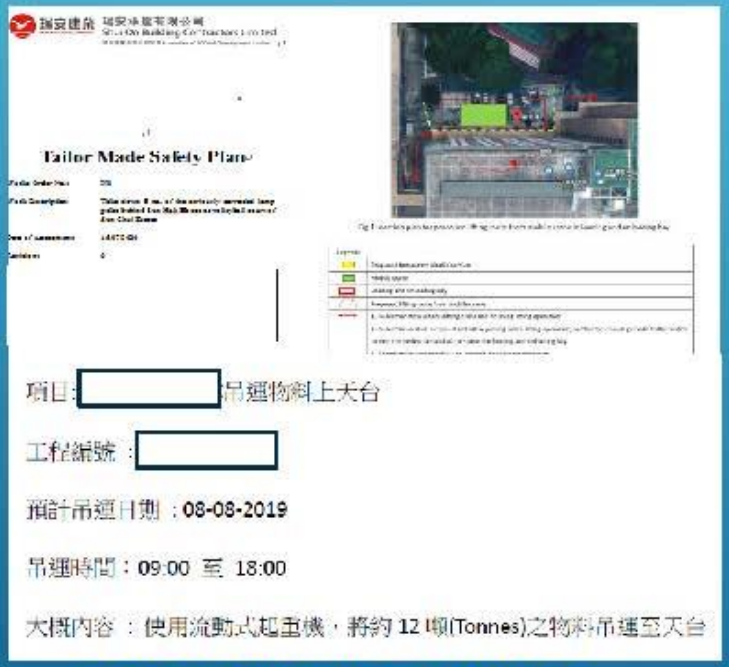
吊運操作的工作前準備



- 事前準備特定的安全計劃書
- 計劃吊運範圍、預計物料重量、時間及放置位置等

索取相關文件及資料是否有效，包括

- 吊機的証書(表格三及五)
- 吊索具的証書(表格六及七)
- 吊運操作員的証書
- 索具員的証書(銀卡)

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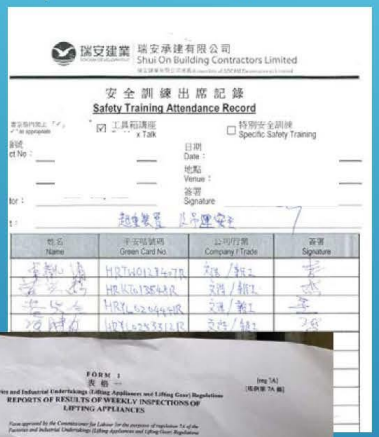
吊運開工前檢查



根據吊運檢查表，檢查

- 圍封已足夠及張貼警告告示
- 通訊器材是否足夠電力
- 所有工人已提供安全訓練
- 所有機械經合資格人士檢查後，確保安全可用並簽署表格一
- 所有吊運機械/器具已根據計劃書提供的資料一致
- 確保所有支撐已加設足夠底墊

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吊運時操作安全

- 索具員根據吊運計劃書將帆布帶索於正確位置
- 吊機升起低位，再確保物料已索緊
- 訊號員命令開始吊運，而尼龍織帶需採用垂直吊運方法，並加設尾繩防止物料左右搖擺
- 將物料吊至指定範圍，鬆卸物料後，由訊號員命令吊機可離開

私人工程的不良行為

高空工作一般指於兩米以上進行工作，一般常見工作的地點包括棚架及吊船，但於業界每年發生之意外亦非常多，並中原因包括：

一般意外成因

棚架

1. 沒有一套完善搭棚及拆棚的安全工作制度
2. 工人沒有將安全帶扣在獨立救生繩上
3. 工人貪一時之快，抱著僥倖心態
4. 用破裂或脆弱竹枝

吊船

1. 機件或配件老化欠缺保養
2. 吊船防墮系統失靈，引致吊船突然傾側
3. 吊船載重量超過安全負荷重

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一般維修保養之竹棚架類別

雙行式棚架

外伸桁架式竹棚（俗稱“懸空棚／吊棚”）

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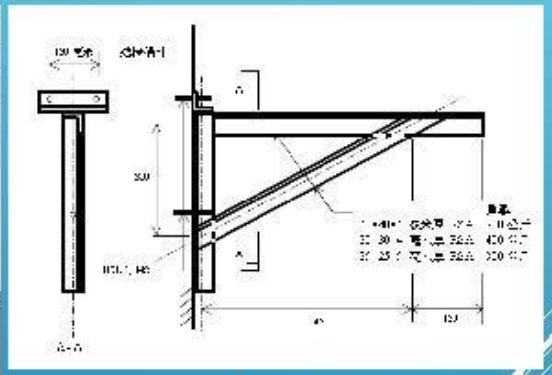
維修保養 - 高空工作安全（棚架）

棚架搭建的工作前準備



- 聘用職安健星級企業的棚架公司
- 確認該公司的合資格竹棚工
- 根據不同工程項目制定危害識別報告及風險評估
- 於不同的場合，揀選合適的鐵托架(狗臂架)進行工作

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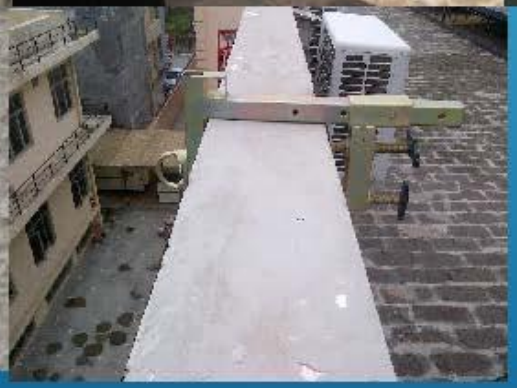
棚架搭建的工作前準備









- 根據不同工程項目選擇適合的防墮裝置(例如，牛眼圈或流動式臨時防墮繫穩裝置)
- 所有裝置(牛眼圈)需由註冊專業工程師使用儀器進行拉力測試後，發出表格6及表格7才可使用

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棚架搭建時的安全工作

- 合資格竹棚工需登記進入棚架搭建的處所
- 合資格棚工視察現場後，由工人開始進行工作
- 確保鐵托架(狗臂架)由三粒爆炸螺絲穩固於外牆
- 確保竹枝沒有爆裂
- 確保已使用合適的拉猛(6mm威也)穩固棚架
- 確保棚架已加設足夠高度的棚網及帆布
- 確保已放設合適的橋板及踢腳板
- 完成搭建後，合資格棚工簽署表格五證明棚架是處於安全狀態方可使用而且需每隔14天進行檢驗一次

一般維修保養之吊船類別

伸縮夾架

車仔架

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維修保養 – 高空工作安全
（吊船）

使用吊船的工作前準備

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[redacted]

Safety Precaution Plan with Risk Assessment

Repair Works to External Wall with [illegible] [redacted]

[redacted] 25-28 號

圖例		
1	(yellow line)	[illegible]
2	(green line)	[illegible]
3	(blue dashed arrows)	[illegible]
4.	(blue bar)	[illegible]
5	(red line)	[illegible]
6.	(purple bar)	[illegible]

- 事前準備特定的安全計劃書
- 計劃吊船工作範圍、放置位置、保護設施等

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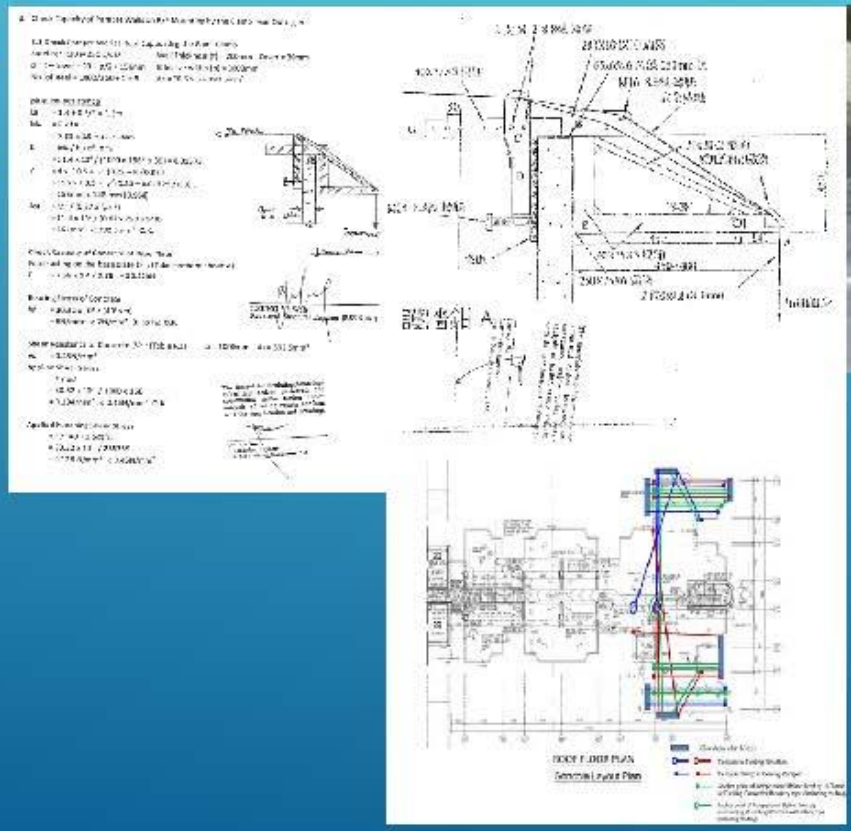
使用吊船的工作前準備

- 由註冊工程師根據現場情況負責制定吊船的設計及構造
- 所有設計及構造必須由專業結構工程師批出
- 批出後，吊船工程需根據批文進行搭建工作



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使用吊船的開工前檢查

- 確保夾架已根據圖則穩固地安裝固定牆上
- 確保獨立救生繩已根據圖則綑綁於適當位置並作出保護，防止磨損
- 吊船需進行傾斜測試，每當吊船的一端下降時，應確保吊船的最大傾側度為1:4(即與水平線成14度角)
- 吊船於安裝或移位後，註冊專業工程師進行檢驗及負荷測試

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維修保養 - 高空工作安全（吊船）

吊船使用時的安全工作

- 每星期由合資格的人最少檢查一次(表格一)及每日開工前須檢查所有懸吊纜索和安全纜索
- 開始工作前需進行磅重測試，提醒工人防止於吊船工作時超重
- 張貼吊船要求(例如，零容忍)、安全告示、安全守則及表格於當眼地方，方便查閱
- 所有工人必須於開工前接受吊船安全訓練才可開始工作

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防止墮物的安全要求

提供膠箱擺放工具
同時亦將膠箱亦提供索帶索緊，防止
開關時引致開合時下墮

提供有D扣之手工具及手尾繩

防止墮物的安全要求

提供有蓋行人通道防止高空墮物

提供安全網防止高空墮物

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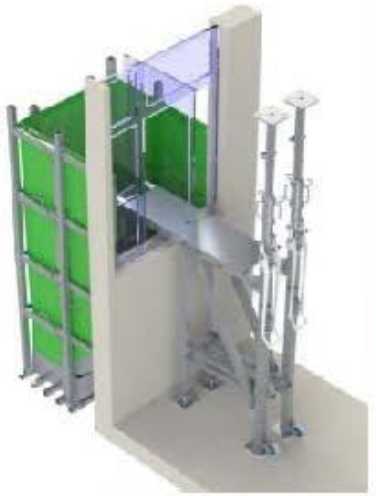
業界最新高空工作安全措施

雙柱式支撐



夾牆式支撐

快速安裝工作平台系統

- 由鋁合金製成，提供了一個輕量、快捷、耐用及安全的工作平台予窗外的維修、保養、改建及加建工作使用
- 方便平台的運送，採用模組式設計
- 免工具連接

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完

Title: Safety Forum 2020 for Works Contracts and Property Management Services Contracts

Super Safety Forum 2020 for Works Contracts
and Property Management Services Contracts
2 November 2020

VO: Here is the footage from
"Safety Forum 2020 for Works Contracts and Property Management Services Contracts"
which was held on 2 November 2020

Super Mr. KAN Ming-kwong
Senior Project Manager of
Shui On Building Contractors Limited

"Risk Management of Lifting Operation,
Work at Height and Prevention of Falling Objects"

VO: The Speaker is Mr. Kan Ming Kwong, Senior Project Manager of Shui On Building Contractors Limited.
His presentation topic is
"Risk Management of Lifting Operation, Work at Height and Prevention of Falling Objects"

Mr. Kan: Hello, guests
Today we are going to talk about how important risk management is
for lifting operations, working at height and preventing falling objects
especially in terms of maintenance
Just now, Permanent Secretary Mr Tong emphasised raising awareness
Indeed, today, our main goal is not necessarily acquiring knowledge
but rather to raise awareness
As many speakers have mentioned,
There were a lot of serious accidents this year, but I will not go into details
For lifting operations, we could often find the reason of accidents

or incomplete lifting plan without knowing the actual site situation

Was there enough space for the legs of outrigger to be extended?
Did the ground have enough load bearing capacity?
Had sufficient preparation been done before the lifting operation?
Had the machinery been well-maintained?
Some of the hydraulic hoses might be very old
and could cause accidents when pressure was applied during lifting
What kind of preparation should we do before lifting?
First, we have to draw up a special safety plan
Do we know where the area of the lifting is? How much does the load weigh?
Timing is important too, what is the pedestrian flow like at that time?
Especially when maintenance work does not confine to construction sites
but it can be a public area
So the question of how to fence off that area
is something we need to consider carefully in our plan
Another thing to pay attention to is whether the relevant documents are valid
such as crane certificates, Forms No. 3 and 5, rigging certificates
as well as the crane operators' certificates, riggers' certificates, etc
We can check these documents beforehand
Checking before the lifting operation

If the lifting is in a public space, do we have enough fence off?
Do we have enough notices to let passers-by know about our work?
We also have to think about communications equipment
As we may be working in a public place
there may be things obstructing views
Does our communications equipment have enough power?
Are our walkie-talkies fully charged?
Are our workers fully trained?
Only a competent person can check the plant and sign Form No. 1
and after that, work can begin
Is the lifting plant consistent with the lifting plan?
We may have ordered a 200-tonne mobile crane
but what have turned up in the end? These are things to be checked
We have to make sure there is enough support

During lifting, as mentioned by another speaker, there is a 3-3-3 check
The rigger should place fiber slings in the correct positions on the load
Lift the load to a low height and check that it is balanced
and whether there is any instability at the pivot point
Then, the lifting operation can initiate with the signaller's signal
Nylon slings are to be kept vertical at lifting and
lifting taglines to be added to prevent the load from swaying around
Then, after lifting the load to the designated position
the mobile crane can leave the lifting zone after the signaler has issued signal
Now, let us talk about safety measures for maintenance work at height

For working at height, we often use scaffoldings and gondolas

For scaffolding, if we do not have a comprehensive safety system
and let workers work in their own different ways, problems will arise
Some workers may try to save time
and neglect to attach their safety harnesses to the independent lifelines
As for the gondolas, there may be problems with ageing parts
Or failure of the fall arrest system especially
overlooking the exceedance of maximum load
This can cause accidents too
For common maintenance work with bamboo scaffolding
there are two categories: double row scaffolding and truss-out scaffolding
What do we need to prepare before erecting the scaffolding?
For the scaffolding work under contracts of Housing Authority (HA) particularly
we will employ the services of Star Enterprises recognised by the OSHC
There is a guarantee of their work quality
and it also ensures that the company has qualified workers for scaffolding
They can compile reports on hazard identification and risk assessment
for various works projects
and also select the appropriate truss-out scaffolds for different contexts
As Dr. Yeung said just now, we have T-shaped and I-shaped angle brackets
For different kinds of buildings, we have to use different scaffolds
We should prepare this before actual construction work begins
Other preparation works before erecting a scaffold include
choosing the right fall arrestor depending on the nature of the works project
For example, if we use eyebolt
where should the independent lifeline be attached?
Should it be attached to the structure of the building, the eyebolt
or a temporary fall arrestor?

Some may be attached to the door skirting
This may be the case for some of our mobile installations
Also, after installation, especially for eyebolts
it should be certified by registered professional engineer
Before he/she certifies, a pull out test has to be conducted
then Forms No. 6 and 7 can be issued
Since I am a registered professional engineer and this is my profession
I would like to mention here that
for this particular test, only a portable tool is required

After preparation, we can start the erection of the scaffold
when site works start
the qualified workers have to register when they enter the building
Also, the site should be inspected for determining how to erect the scaffold
We are to prepare for the work and have a plan
and to check the site situation
Only after inspection can the workers start erecting the scaffold

We also have to make sure the truss-out scaffold has three anchorage bolts
and that there are enough wall ties
Also, make sure there is enough height of scaffolding, netting and canvas
and there are planked platforms and toe boards in appropriate places
We often use metal planked platforms and aluminium grained boards now
Convenient and effective
After the scaffolding has been erected, a competent person has to sign Form No. 5

He/She has to make sure that the scaffold is in a safe condition
And he/she will have to sign it again every 14 days
For maintenance work at height, we often use gondolas
There are two kinds of gondolas
One is parapet clamp-typed gondola
The other is counterweight gondola
Especially for HA works, depending on different kinds of buildings
We will use different kinds of gondolas
Before working on a gondola
we need to have a safety plan
we specify the extent of work of gondola in the safety plan
Here we see different ranges, large and small
When the gondola is in use, the fenced off area is larger
After close of play of a day
how should the fenced off area be contracted?
These are things we have to work out in advance
It is true that we fence off a larger area at work
but if it is too large, it will affect residents in and out
We also need to consider
after close of play every day, we reduce the fenced off area
for the convenience of the residents
Before using the gondola
registered engineer inspects the site conditions
Then, a gondola design and structure is proposed
and it is approved by a professional engineer
After approval, we install it according to the approved plans
Check before work
We need to check if it is installed according to the approved plans
and the independent lifeline is tied to the correct position

Especially if it has to been fixed to part of the building structure
Provide protection to lifeline to prevent it from being worn out
Also, we need to test the gondola before use
There are tests for inclining and weight capacity
Professional engineers will conduct the checking
When the gondola is in use
There is at least a check every week by a competent person
Before work every day, the slings and ropes need to be checked
weight checks have to be conducted before work begins
Remind workers that we cannot exceed maximum load capacity
For example, if a worker is going to hack off loose concrete
we must note the weight of the buckets of debris /concrete chunks collected
What is the maximum number of buckets the gondola can hold?
The worker can only bring a set number of buckets onto the gondola
If all the buckets are filled, the gondola has to come down
so then we can take out the debris /concrete chunks
before raising the gondola upwards again
So, every time, we weigh each bucket of debris and
to calculate the total load of the gondola to ensure there is no overweight
Also, there are notices posting onto the gondola saying ‘zero tolerance’
Before work, all workers need to receive training by the gondola company
Another measure is the prevention of falling objects while working at height
We usually install some plastic boxes in the gondola
tools are stored inside these plastic boxes
On the gondola, we have to fasten anything that are loose easily
no matter it is the box or the box lid
To avoid these components from falling down in strong wind
And we attach D-ring to every tool
What is a D-ring? It can become a hand strap
Every tool is to be tied to the worker’s hand before it is taken out
The second line of defence against falling objects is protection under the gondola
We provide covered walkways—these are our second line of defence
Of course, the most important is ensuring nothing falls down in the first place
but if we have this second line of defence
we can prevent any falling objects from injuring passers-by
Lastly, apart from the knowledge and awareness
new technology can also help us
There is a design that was initiated by the OSHC
and now on trial at the HA contracts
Our company is one of the contractors who is going to try out
this safety measure for working at height this year
It is a rapid demountable platform (RDP)
It is a system made of aluminium alloy
and it is very light, quick and durable
After looking at it myself, I found it very convenient
No tool is required during installation
Every component can be installed without using tools
When workers are installing the system, they do not need to step out of the building
After the main installation, they then step out to fix the other components
I believe that this new platform system will be beneficial to the industry
and it is something we can promote or try out in our maintenance work
We are still learning about it and trying it out
so here is a brief introduction to it for everybody
Thank you

VO: Thank You For Watching