



DfMA MiMEP Tradeshow 2021 MiC & MiMEP Webinar Forum

### Application of Flexible Sprinkler Drops 5 March 2021

Mr. Victor Ng, General Manager – Operation

InnoTec Engineering Ltd.



### What to be shared ... ...

- The Application of Flexible Sprinkler Drop
- Case Study 1 Traditional Method of Sprinkler Dropper
- Case Study 2 Flexible Sprinkler Drop
- Time and Cost Analysis Value Stream Mapping (VSM)
- Real Case of Application and FSD's Approval
- Takeaway ... ...



### Introduction

- Hong Kong have more than 7.5 million citizens.
- To provide office space for corporations and accommodation for citizens, many buildings are constructed in both public and private sectors each year.
- In 2019, the total gross value of construction work performed by Main Contractor at construction sites exceeded 135 billion Hong Kong Dollars.

Source: DEVB - Gross Value of Construction Work... (168)

- Construction industry in Hong Kong is facing 3 major obstacles:-
  - High Costs;
  - Short Construction Period; and
  - Unsatisfactory Performance.



Modular integrated Construction (MiC) Design for Manufacture and Assembly (DfMA) MultiTrade integrated MEP (MiMEP)

6

### 「創新、專業、年青

Innovation Professionalisation

Revitalisation

Source: "Construction 2.0" 2018

**Construction 2.0** 

# Core challenges facing the Industry

Refer to "Construction 2.0" published in 2018, the following core challenges are identified –

Significant future construction volumes;

High costs;

Inno ec

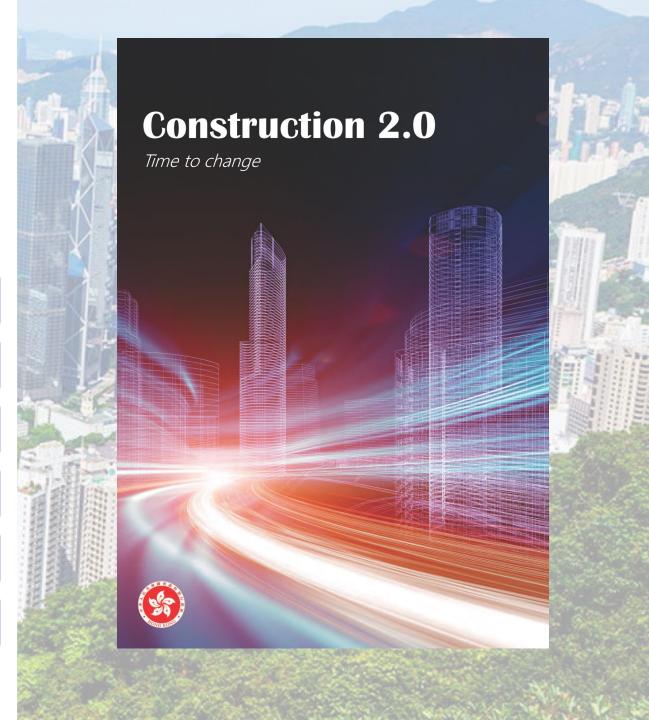
Unsatisfactory mega-project performance;

Unsatisfactory site safety performance;

Declining productivity; and

A lack of creativity & innovation.

Source: "Construction 2.0" 2018, pp.4



# The impact of the Industry in Hong Kong



### Quality of infrastructure



#### **Economic contribution**



InnoTec

#### Employment

Source: "Construction 2.0" 2018, pp.8

#### Important Industry milestones

#### Airport Core Programme

The 10-project Airport Core Programme (ACP) was completed in 1998, with eight projects completed on time and within budget. This performance, when coupled with the scale and complexity of the programme, helped to establish the modern day reputation and regional leading position of the Industry.<sup>4</sup>

#### Construction Industry Review Committee

In response to the public housing incidents referred to above, Government appointed the CIRC which produced a report titled *Construct for Excellence*. The report introduced over 100 recommendations directed at improving industry practices and performance.<sup>6</sup> The report initiated what is now considered to be the first generation of major reform of the Industry.

#### Construction costs taking off

After hitting a trough in 2009, local construction costs commenced a steep upward trend that has persisted in subsequent years. This growth in cost is considered a threat to the overall financial sustainability of Government and the future prospects of the Industry.

#### Project Cost Management Office

As announced in the 2016 Policy Address and the 2016-17 Budget, the Development Bureau (DEVB) set up the Project Cost Management Office (PCMQ) in June 2016 with a mandate focused on achieving Industry-wide improvements in relation to cost and project management of capital works projects by drawing up cost control measures, cost reduction initiatives and steering and monitoring related work undertaken by bureaux and works departments that are responsible for project delivery.<sup>9</sup>

### Building challenges in public housing

1999

2000

2001

2009

In the late 1990's, there were a series of building problems experienced in the public housing market.<sup>5</sup> By way of example, excessive uneven foundation settlements were discovered in the Tin Chung Court development. In that example, the contractor, the external consultant and procedures adopted (including the contracting system and contract documentation) were determined to be responsible. In another case, piling problems at the Yu Chui Court in Shatin were reported, resulting in a number of arrests, including Housing Department (HD) staff. A series of Legislative Council (LegCo) meetings were held to discuss measures to improve building quality in public housing and to rebuild public confidence.

#### Ten Major Infrastructure Projects

To keep pace with the region's development, the 2007-2008 Policy Address of Government introduced the Ten Major Infrastructure Projects (TMIP).<sup>7</sup> A number of these projects, including the Hong Kong-Zhuhai-Macao Bridge (HZMB) and the Shatin to Central Link (SCL) are still under construction at the time of writing. Because of their scale and the duration involved in planning, design and construction, these projects have proven to be a major driver of Industry growth since the time of the Policy Address.

#### Task Force on Managing Cost of Public Works

In order to strengthen cost control for public works, the then Financial Secretary set up a Task force in 2015 to examine the causes behind escalating construction costs and to formulate corresponding measures.<sup>8</sup>



#### Construction Innovation and Technology Fund

In the 2018-19 Budget, the Financial Secretary set aside HK\$1 billion for the establishment of the Construction Innovation and Technology Fund<sup>10</sup> to provide impetus to transform the local construction industry through automation, industrialisation and diritisation.

# What is DfMA?

DfMA stands for Design for Manufacture and Assembly. DFMA is the combination of two methodologies –



**Design for Manufacture** - the design for ease of manufacture of the parts that will form a Product; and



**Design for Assembly** - the design of the Product for ease of assembly.

香港特別行政區政府 The Government of the Hong Kong Special Administrative Region 政府總部 Works Branch **Development Bureau** 發展局 **Government Secretariat** 工務科 18/F, West Wing, Central Government Offices, 2 Tim Mei Avenue, Tamar, Hong Kong : DEVB(PSGO) 38/1 Group : 5 31 March 2020 **Development Bureau** Technical Circular (Works) No. 2/2020 Modular Integrated Construction (MiC) Scope This Circular sets out the policy on the adoption of Modular Integrated Construction (MiC) for new building works<sup>1</sup> with total construction floor area (CFA) larger than 300m<sup>2</sup> under the Capital Works Programme (CWP) to be tendered on or after 1 April 2020. Effective Date This Circular shall take immediate effect. Effect on Existing Circulars and Circular Memoranda This Circular has no effect on existing circulars. Background MiC is a construction method whereby freestanding volumetric modules with finishes, fixtures, fittings, furniture and building services

installation, etc. manufactured off-site and then transported to site for

Ref.

3

assembly.

### Government Policy

Continuous improvement is mandatory in construction industry, not just a policy.

DfMA has become a practice guide and a way of work for E&M as well as other construction activities.



Buildings Department Practice Note for Authorized Persons, Registered Structural Engineers and Registered Geotechnical Engineers

#### Modular Integrated Construction

#### Introduction

Modular Integrated Construction (MiC) refers to a construction method whereby free-standing volumetric modules (with finishes, fatures, fittings, etc.) are manufactured off-site and then transported for constructing buildings. Proven benefits include improved site safety, more efficient and better quality control, shortened construction period, less construction waste, less demand for on-site labour, less disturbance and nuisance to the neighbourhood, etc., not just contributing to the quality and sustainable built-environment but also help case some of the challenges of the local construction industry. To encourage MiC, the Buildings Department (BD) has formulated streamlined measures and guidelines to facilitate the industry in meeting the relevant standards and requirements under the Buildings Originance (BO).



#### Guidance Note on Fixed Electrical Installations with

Modular Integrated Construction Method

#### Introduction

- The purpose of this guidance note is:
  - (a) to draw the attention of the Authorized Persons (APs)/ Consultant and developers to the requirements on the design, construction and installation of fixed electrical installations in buildings/ developments with Modular Integrated Construction (MiC) method;
  - (b) to draw the attention of the Registered Electrical Contractor (REC) and Registered Electrical Worker (REV) to the requirements on fixed electrical installations in buildings/ developments and their obligations; and
  - (c) to give guidance on the requirements which must be met in the design selection and installation of wiring and fixed electrical installations.

uidelines on Application of Construction Noise Permit fo using Modular Integrated Construction (MiC) Method

#### Introduction

Modular Integrated Construction (MiC) refers to construction whereby free-standing integrated modules (completed with finishes, fixtures, and fittings) are manufactured in a prefabrication factory and then transported to a site for building assembly. While building work can be carried out in daytime of normal weekdays in general, the modules which are comparatively large and may need to be transported to and installed at a construction site in restricted hours<sup>1</sup> under the Noise Control Ordinance (NCO), and hence a valid Construction Noise Permit (CNP) issued by the Environmental Protection Department (EPD) would be needed. In view of ever wider use of MiC method in Hong Kong, this paper provides guidance for developers, architects and contractors on the necessary justification when considering applying for an essential Construction Noise Permit (CNP) for MIC.

VV	不 教 者 Water Supplies Department 総部 (Hoadquarters 音池海宇合士打聞士教:人現事務大権 48 権 48年, Immigration Tower, 7 Gloucester Road, Wan Chai, Hong Kong				
本署檔號 : Our ref. : 來函檔號 : Your ref.	(8) in WSD 3318/50 Pt. 7	電話 Tel. 傳真 Fax.	:	2829 4355 2824 0578 20 February 2019	

Distribution: To all Licensed Plumbers and Authorized Persons

Dear Sirs,

ADV-36

Circular Letter No. 2/2019 Procedures for Applications for Water Supply in New Building Projects adopting "Modular Integrated Construction" Method

To facilitate the adoption of the "Modular Integrated Construction" (MiC)<sup>1</sup> method in Hong Kong, the Water Supplies Department (WSD) promulgates below the procedures for the applications for water supply in new building projects adopting MiC method (MiC projects). The WSD has consulted the Technical Committee on Plumbing on the procedures. The WSD will review the procedures from time to time with reference to the development in the adoption of MiC method in Hong Kong and the experience gained in implementing the procedures.

	1000 Contraction	
And States		
In SAME LOW	and the second s	1960 - 1 - 1 - P - P - 1 - 1
CONTRACTOR OF A	and the second sec	
	a data in the second second	THE REPORT OF THE REPORT OF THE
	A4444777	the second second to be a first firs
		A REAL PROPERTY OF A REAL PROPER
		CONTRACT HIGH IN A VIOLEN
22244444444	4144444	ALC: N 100 PM 100 PM 100 PM
	******	11.2 Control of the second se second second sec
Contractor International State		Interest of the second s
	A R P C - Comment where	The second s
	A REPORT OF THE OWNER OWNER OF THE OWNER OW	REDOCT STOLEN AND AND AND
and the second	and the second se	
The second se		ACCESS 2.1 1 1 4 - 0.000 5
THE PERSON AT	and the second sec	
17. 18 10 12	-	a second of the second s
Aug. 100 100 100		Term 2 1 2 1 1 1 1 1 1 1 1 1 1
		1. MAR D P
and a state of the		and the second sec
10 March 10	and the second sec	the second se
10 March 10	A CONTRACTOR OF THE OWNER	and the second
A REPORT OF A R	ALL A MARK & MARK	and the second se
and the second se	100	and the second se
Contraction of Contract, Name		and the second se
and the second se	a state of the sta	Contraction of the second s
	Ś	
消 防 處	4.00	FIRE SERVICES DEPARTMENT
府 防 應	and the second s	LICENSING AND CERTIFICATION COMMAND
牌照及審批總	0e: 🔤(@p>))	
	in Sections	Fire Services Headquarters Building,
香港九覧	701 046	5/F, No.1 Hong Chong Road,
尖沙咀東部康莊道1號5	樽	Tsim Sha Tsui East, Kowloon,
消防總部大廈		Hong Kong
本處檔號 OUR REF .: (48) in FP(LC):	11 / 07 Dr. 8	
	514/07 PL 8	
來函檔號 YOUR REF.:		
國文傳真 FAX: (852) 2723 2	:197	
電子郵件 E-MAIL:		
電 話 TEL. NO.: (852) 2733 7	744	
電 話 TEL. NO.: (852) 2733 7	744	22 March 2019
電 話 TEL. NO.: (852) 2733 7	744	22 March 2019
電 話 TEL. NO.: (852) 2733 7	1744	22 March 2019
		22 March 2019
To: Recipients of FSD Circul		22 March 2019
To: Recipients of FSD Circul		22 March 2019
		22 March 2019
To: Recipients of FSD Circul		22 March 2019

FSD Circular Letter No. 3/2019

#### <u>Guidance Notes on Submission, Approval and Acceptance Inspection</u> of Fire Service Installations and Equipment in <u>Modular Integrated Construction Building Projects</u>

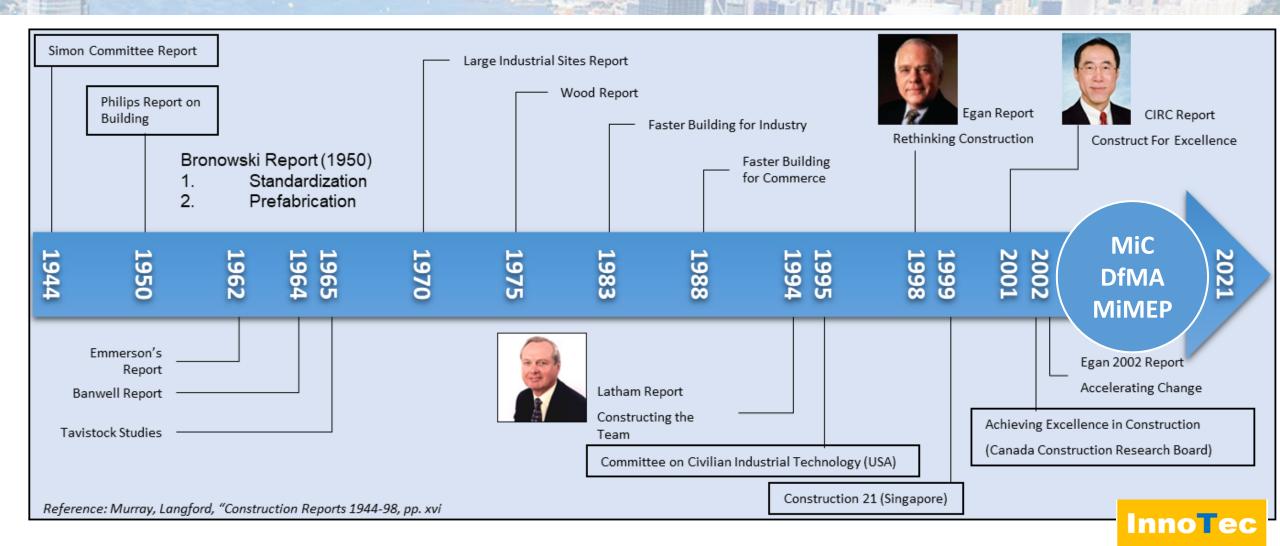
Modular Integrated Construction (MiC) refers to a construction method whereby freestanding integrated modules are manufactured off-site and then transported for constructing buildings on sites. The concept of "factory assembly followed by on-site installation" represents a shift of traditional method from the on-site construction to the modern off-site manufacturing and assembly

### **Client Driven**

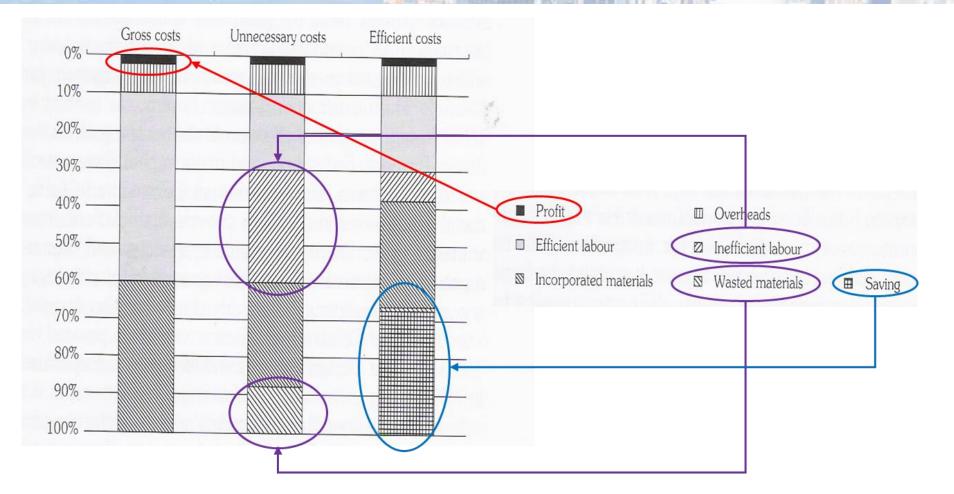
Building Department (BD), Environmental Protection Department (EPD), Electrical & Mechanical Services Department (EMSD), Water Supplies Department (WSD) and Fire Services Department (FSD) had published some guidelines for stakeholders to follow.



# **Unchanged Demand for Improvement**



# Unnecessary Costs





# Lean Timeline of Manufacturing

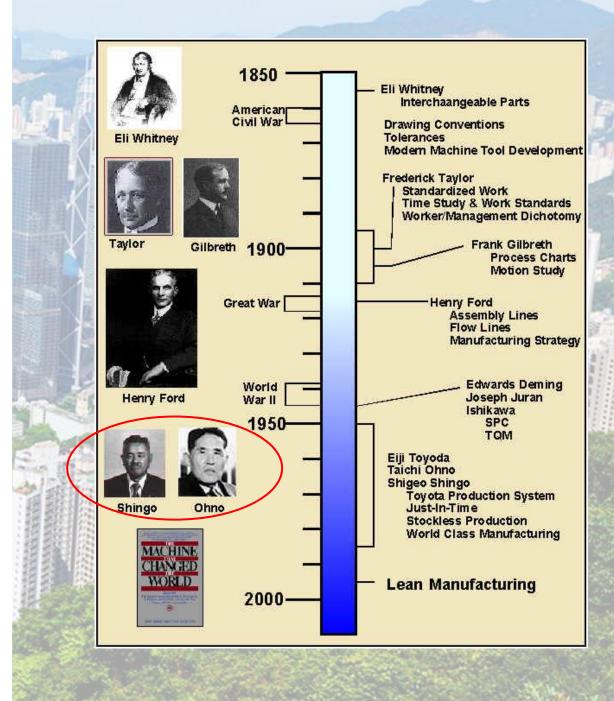
Toyota Production System (TPS)

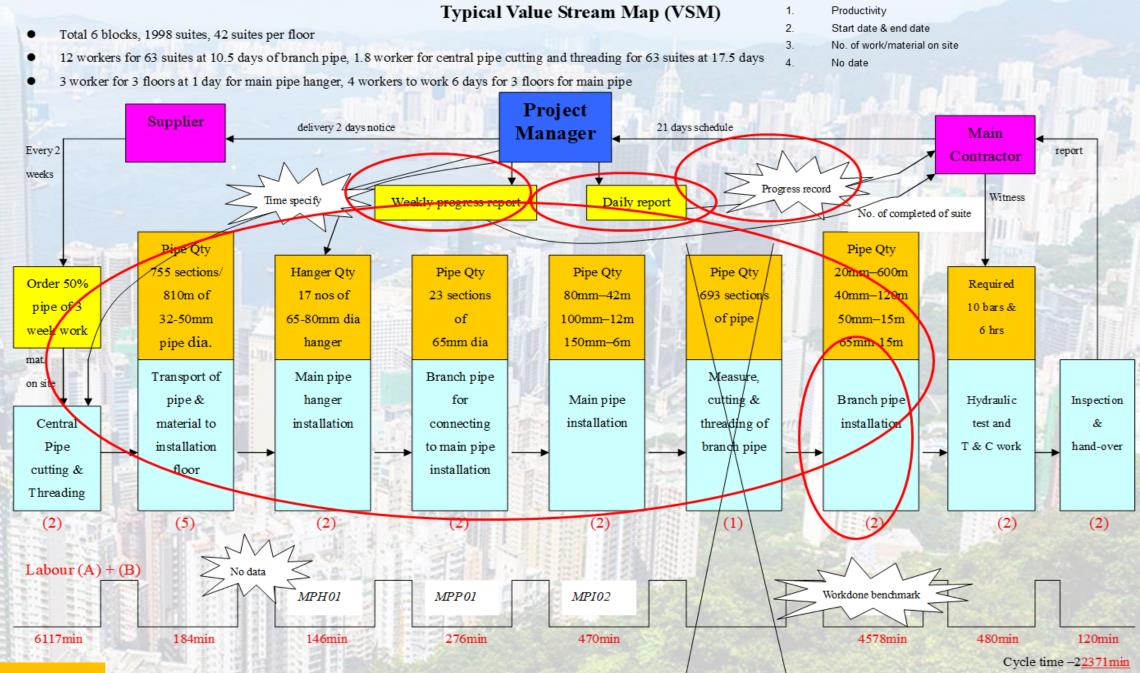
- Muda (無駄,), Waste
  - Non-value added
- Lean Manufacturing
  - Value (why am I doing it?)
  - Pull instead of Push
  - Value Stream

InnoTec

- Continuous Improvement
- Value Stream Mapping (VSM)
  - A set of <u>activities</u>, <u>operations</u> and <u>associated information</u> made up the <u>final product</u>

Source: Womack, Jones, 'Lean Thinking", 2003, pp. 15-17; Carreira, "Lean Manufacturing That Wworks", pp.1-5

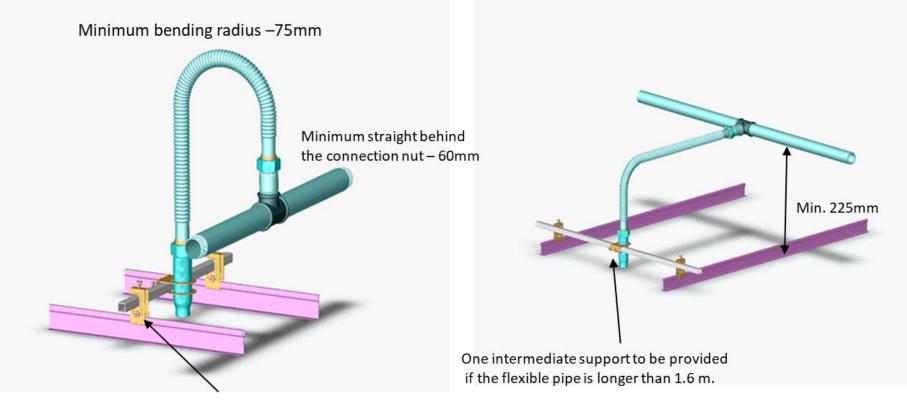




InnoTec

State of the

# Flexible Sprinkler Drop



Bracketed to the grid of ceiling suspension system

### Potential Benefit

- Long product lift-cycle
- Ease of installation
- Eliminate non-valued steps
  - No need for measuring
  - No cutting/ threading
- Standardization of pipe layout
- Reduce installation time

Inno

• Improve construction cycle



### **Approvals and Limitations**

- Dia. 25mm "flexible sprinkler connection" obtains the following approval
  - LPCB approval M.S.P. 16 bar
  - UL listing M.S.P. 12 bar
  - HKFSD acceptable letter
- Dia. 32mm
  - Same as above except item (iii), this is to be followed up.

- Pre-calculated
  - Town-main, up to 1220mm
  - Pumped, up to 1880mm
- Fully-hydraulically calculated
  - up to 3220mm



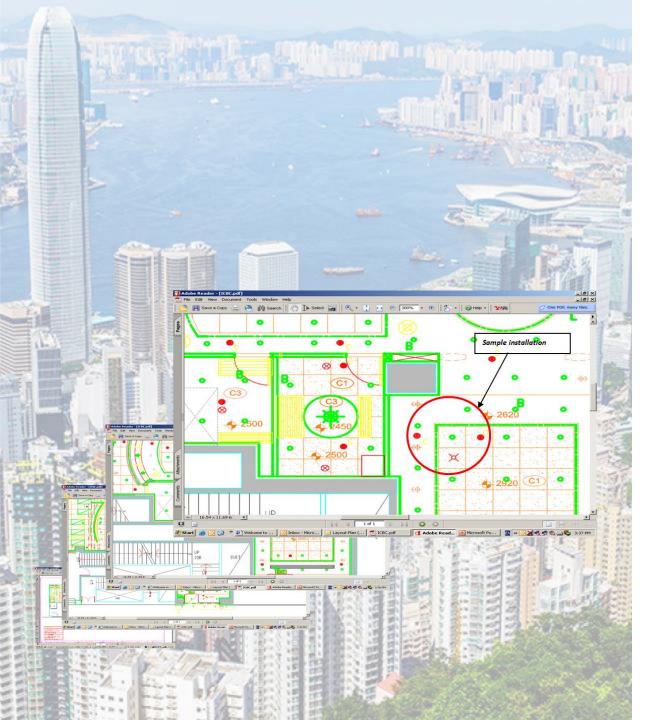


# What the Case Study will Tell You?

- A common case
- From Manufacturing Engineering perspective
- Process and workflow
- Waste identification
- Value Stream Mapping (VSM)

Reference: Arbulu, Tommelein, "Value Stream Analysis of Construction Supply Chain: Case Study on Pipe Supports Used in Power Plants, 2002





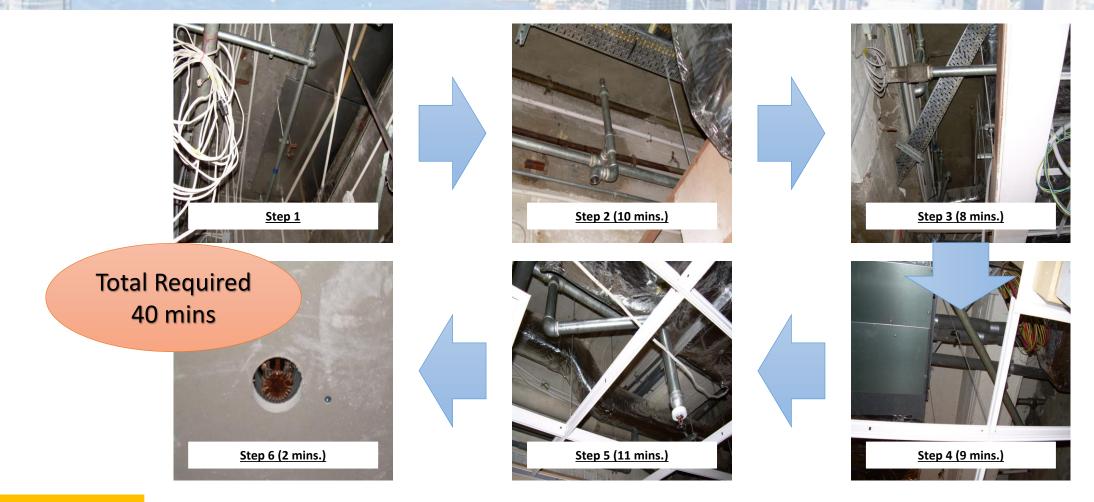
# Case Study

### Objectives:

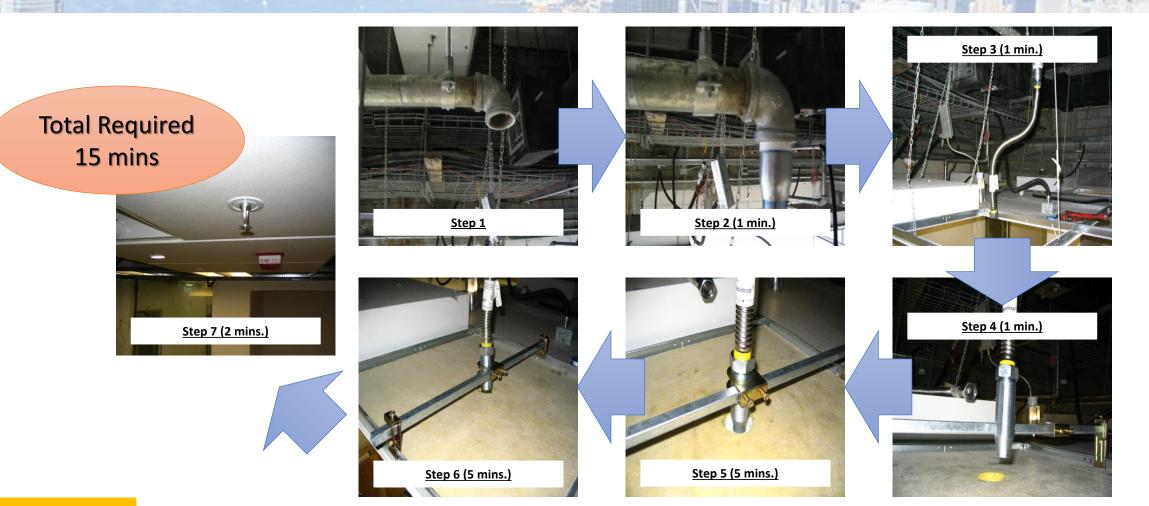
- To compare the difference in waste elimination between applying VSM and traditional measurement through:
  - Mapping the process of installation of flexible sprinkler connection through a sample installation at a job site.
  - Measuring the potential saving on using flexible sprinkler connection to replace traditional G.I pipe dropper.



# Case Study 1 – Traditional Method



# Case Study 2 – Flexible Sprinkler Drop



# Time Saving Analysis

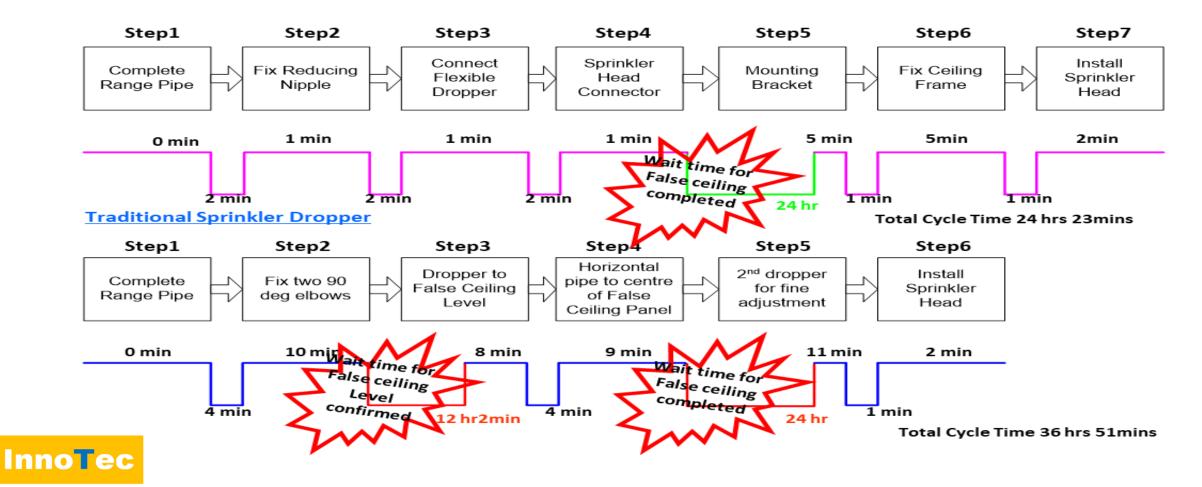
Traditional Sprinkler Dropper Installation Time (Unit in min.)		Flexible Sprinkler Dropper (Unit in min.)	Flexible Sprinkler Dropper Installation Time (Unit in min.)	
Step1	0	Step1	0	
Step2	10	Step2	1	
Step3	8	Step3	1	
Step4	9	Step4	1	
Step5	11	Step5	5	
Step6	2	Step6	5	
		Step7	2	
Total Installation Time	40	Total Installation Time	15	
		Time Saving	25	

# Time Saving Analysis

Traditional Sprinkler Dropper Installation Time (Unit in min.)		Flexible Sprinkler Drop (Unit in min.)	Flexible Sprinkler Dropper Installation Time (Unit in min.)	
Step1	0	Step1	0	
Step2	10	Step2	1	
Step3	How about a project have 10,000 sprinkler droppers?			
Step4	10,000 sprinkler points x 25 mins			
Step5				
Step6	250,000 mins or 556 mandays			
		Step7	2	
Total Installation Time   40		Total Installation Time	15	
		Time Saving	25	

# Time Saving Analysis Using VSM

#### Flexible Sprinkler Dropper



# Revisit Time Saving Analysis

		Flexible Sprinkler Dropper Installation Time (Unit in min.)	
Step1	0	Step1	0
Step2 Valit time for False Ceiling Level	10	Step2	1
Step3 12 hours	8	Step3	1 Wait time for
Step4	9 Wait time for	Step4	False Ceiling Frame completed 24 hours
Step5	11 False Ceiling Frame completed	Step5	5
Step6	2 24 hours	Step6	5
		Step7	2
Total Installation Time	36 hours 51 minutes	Total Installation Time	24 hours 23 minutes
		Time Saving	12 hours 28 minutes

# Revisit Time Saving Analysis

Traditional Sprinkler Dropper Installation Time (Unit in min.)		Flexible Sprinkler Dropper Installation Time (Unit in min.)	
Step1	0	Step1	0
Step2 False Ceiling	10	Step2	1
Level Step3 Step4 Step5	Saving 33% of Co	onstruction Time	Wait time for False Ceiling Frame completed 24 hours
Step6	2 24 hours	Step6	5
		Step7	2
Total Installation Time	36 hours 51 minutes	Total Installation Time	24 hours 23 minutes
		Time Saving	12 hours 28 minutes



# Other's Findings

Wilson D., (Reference: Womack, Jones, "Lean Thinking", 2003, pp. 51)

- 84% of construction time occupied by
  - Waiting
  - Rework

Arbulu & Tommelein (Reference: Arbulu, Tommelein, "Value Stream Analysis of Construction Supply Chain: Case Study on Pipe Supports Used in Power Plants, 2002)

- 96% of time in supply chain of pipe support in non-value added
- Redesign accounted for 20% of time



#### InnoTec

Date: 11 Sep 2018 Our Ref.: L/155/09/2018

Hong Kong Fire Services Department

Licensing & Certification Command Fire Services headquarters Building, 5<sup>th</sup> Floor, No.1 Hong Chong Road, Tsim Sha Tsui East, Kowloon, Hong Kong

Dear Sir,

Re: Design and Build for Fire Services installations (FS) At 3/F – 5/F, Tsuen Wan Industrial Centre, 20 – 248 Texaco Road, Tsuen Wan, New Territories

We write to seek your opinion on using flexible sprinkler droppers for an upgrading project for Possehl Electronic's new manufacturing facilities located in Tsuen Wan.

InnoTec Engineering Limited

Sheung Yuet Road, Kowloon Bay, Hong Kong

Tel : 3706 6333 Fax Email: info@innoteceng.com

Unit 1109, 11th Floor, Tower 3, Phase 1, Enterprise Square

Fax: 3706 6300

#### Background

- Possehl Electronics (<u>https://www.possehlelectronics.de/en/</u>) will relocate their manufacturing facility starting this month, they will move from Possehl Building, 18 Ma Kok Street, Tsuen Wan to Tsuen Wan 3/F – 5/F, Tsuen Wan Industrial Centre, 20 – 248 Texaco Road, Tsuen Wan.
- PossehI is a global company, a leading and innovative semicon company which develops, and manufactures a broad range of etched parts for the semiconductor and automotive industry. These parts are used in a wide range of micro-electronic applications for automotive, communication and mobile solutions, consumer, industrial automation applications, security and control systems.
- Possehl's factory specializes in photo mask etched and electro-plated product with 250 employees is one of unmatched manufacturing facilities still maintaining their footprints here.
- 4. There are not many similar world-class manufacturing factory now in Hong Kong.

#### The sprinkler system to be installed for Possehl

- 5. The total floor area of new manufacturing facility is about 90,000 sq.ft, 700 numbers new sprinklers are to be installed.
- These sprinklers will be fed from the existing sprinkler system of Tsuen Wan Industrial Center.

#### InnoTec

InnoTec Engineering Limited Unit 1109, 11th Floor, Tower 3, Phase 1, Enterprise Squar 9 Sheung Yuet Road, Kowiloon Bay, Hong Kong Tel : 3706 6333 Fax : 3706 6300 Email: Info@innotxceng.com

#### Sprinkler system of Tsuen Wan Industrial Center

- 7. The sprinkler system of Tsuen Wan Industrial Center was built about 30 years ago.
- All sprinkler sub-mains of each floor are directly connected to the raising main of the sprinkler system without any subsidiary valve in between.
- Whenever upgrading work/maintenance work is to be carried out, the entitle sprinkler system of the building will be drained off leaving the whole building without any sprinkler protection.
- 10. The drain off action will take at least 4 hours each time, if not more.

#### Why flexible sprinkler drops

11. Suit Possehl's operation needs.

12. Reduce down time of the entire sprinkler system to improve fire safety.

#### What we shall do

- LPCB approved flexible sprinkler drops and <u>self-supported brackets fixed to ceiling</u> (Victaulic sprinkler drop and Style AB12 bracket) will be used.
- 14. FS 251 and detailed plan will be submitted to highlight the locations of flexible sprinkler drops after completion of the upgrading works.
- 15. Inspection report will be issued by RPE (Fire) together with FS 251 as additional measures to ensure compliance.

We look forward to hearing from you soon.

Yours faithfully, For and on behalf of InnoTec Engineering Limited

Managing Director

This was a "Fast Track" project. 4 months construction period.

#### Why flexible sprinkler drops

- 11. Suit Possehl's operation needs.
- 12. Reduce down time of the entire sprinkler system to improve fire safety.

#### What we shall do

- 13. LPCB approved flexible sprinkler drops and <u>self-supported brackets fixed to ceiling</u> victaulic sprinkler drop and Style AB12 bracket) will be used.
- 14. FS 251 and detailed plan will be submitted to highlight the locations of flexible sprinkler drops after completion of the upgrading works.
- 15. Inspection report will be issued by RPE (Fire) together with FS 251 as additional measures to ensure compliance.
  - The sprinkler system to be installed for Posseh

InnoTec

Hong Kong Fire Services Department

Licensing & Certification Command

Date: 11 Sep 2018 Our Ref.: L/155/09/2018

- The total floor area of new manufacturing facility is about 90,000 sq.ft, 700 numbers new sprinklers are to be installed.
- These sprinklers will be fed from the existing sprinkler system of Tsuen Wan Industrial Center.

#### InnoTec Engineering Limited Unit 1109, 11th Floor, Tower 3, Phase 1, Enterprise Square 9.Sheung Yerk Rady, Kavokon Bay, Heng Kong Tel: 3706 6333 Fax: 3706 6300 Email: info@innotesenE.com

5) caco Road, Tsuen Wan, New Territories Ikler droppers for an upgrading project for

d in Tsuen Wan.

will relocate their will move from Possehl Building, 18 Ma Kok Ien Wan Industrial Centre, 20 – 248 Texaco

tive semicon company which develops, and

the semiconductor and automotive industry. cro-electronic applications for automotive, industrial automation applications, security ched and electro-plated product with 250

ned and electro-plated product with 250 facilities still maintaining their footprints

uring factory now in Hong Kong.

#### InnoTec

InnoTec Engineering Limited Unit 1109, 11th Floor, Tower 3, Phase 1, Enterprise Squar 9 Sheung Yuet Road, Kowloon Bay, Hong Kong. Tel: 3706 6330 Fax: 3706 6300 Email: info@innoteceng.com

#### Sprinkler system of Tsuen Wan Industrial Center

- 7. The sprinkler system of Tsuen Wan Industrial Center was built about 30 years ago.
- All sprinkler sub-mains of each floor are directly connected to the raising main of the sprinkler system without any subsidiary valve in between.
- Whenever upgrading work/maintenance work is to be carried out, the entitle sprinkler system of the building will be drained off leaving the whole building without any sprinkler protection.
- 10. The drain off action will take at least 4 hours each time, if not more.

#### Why flexible sprinkler drops

- 11. Suit Possehl's operation needs.
- 12. Reduce down time of the entire sprinkler system to improve fire safety.

#### What we shall do

- LPCB approved flexible sprinkler drops and <u>self-supported brackets fixed to ceiling</u> (Victaulic sprinkler drop and Style AB12 bracket) will be used.
- 14. FS 251 and detailed plan will be submitted to highlight the locations of flexible sprinkler drops after completion of the upgrading works.
- Inspection report will be issued by RPE (Fire) together with FS 251 as additional measures to ensure compliance.

We look forward to hearing from you soon.



Peter Lam Managing Director PL/lw

# ## ## YOUR REF.:L/155/09/2015         # # # # YOUR REF.:L/155/09/2015         # # # # YOUR REF.:L/155/09/2015         # # # # X : # # 2-26 # 2000         # # # # X : # # 2-26 # 2000         Imno Tece Engineering Limited Unit 1109, 11/F, Enterprise Square, 9 Sheing Yuet Road, Kowloon Bay, Kowloon Bay, Kowloon, Hong Kong (Attn. Mr. Peter LAM)         Dear Sir,         3/5-5/F, Tsuen Wan Industrial Centre, 220-248 Texaco Road, Tsuen Wan, New Territories Texible Sprinkler Droppers         Image: The state of the same of	消防虚 際 照及審批總 匹 汚防設備課 者泡九購考常(2)(累十一號 新明大旗二權	FIRE SERVICES DEPARTMENT LICENSING AND CERTIFICATION COMMAND UP, Centre Parc, 11 Sheung Yuer Road, Kowloon Bay, Kowloon, Hong Kong	
<text><text><text><text><text><text><text><text><list-item><list-item></list-item></list-item></text></text></text></text></text></text></text></text>	本處檔號OUR REF.: FP19/11465 11		and the second s
<text><text><text><text><text><text><text><list-item><list-item></list-item></list-item></text></text></text></text></text></text></text>	來 函 檔 號 YOUR REF.:L/155/09/2018		
<ul> <li>a network store</li> <li>b s</li></ul>	图文傳真FAX: 852-2367 3206		10 10 10 10 10 10 10 10 10 10 10 10 10 1
<ul> <li>Unit 1109, ILF, Tower 3, Phase 1, Enterprise Square, 9 Sheung Yuet Rood, Kowloon Bay, Kowloon, Horg Kong</li> <li>(Att. Mr. Peter LAM)</li> <li><b>3r5:Ff. Tsuen Wan Industrial Centre, 220-248 Texaeo Road, Tsuen Wan, New Territories</b> <u>Flexible Sprinkler Droppers</u></li> <li><b>3r5:Ff. Tsuen Wan Industrial Centre, 220-248 Texaeo Road, Tsuen Wan, New Territories</b> <u>Flexible Sprinkler Droppers</u></li> <li>Arefer to your above letter dated 11.9.2018 seeking our view on your prooposed adoption of flexible sprinkler droppers for an upgrading project in the captioned premises.</li> <li>Ar our ground for application is well considered. In view of inevitable suspension of automatic havoits which would lead to a temporary loss of sprinkler protection to the entire building, I would divise you that this office would have no objection in principle, for the sake of fire safety, to your proposed use of flexible sprinkler droppers for final sprinkler head connections to range pipes privided the following are strictly observed: -</li> <li>Al Il flexible sprinkler droppers shall be listed products complying with LPS 1261. The istallation instructions specified under the listing condition by the relevant product certification body with workmanship and installation details conforming to the requirements.</li> <li>Corm FSI/31/AA and amended plans should be submitted in case of change of any change of submitted timely according to the Fire Service (Installations and Equipment) Regulations.</li> <li>/2</li> </ul>	電 話TEL: 852-3961 5299	2 November 2018	11 11 11
Dear Sir, <u>34:547; Suen Van Industrial Centre, 220-248 Texaco Road, Tsuen Wan, New Territories</u> <u>Provided Provided Pr</u>	Unit 1109, L1/F, Tower 3, Phase 1, Enterprise Square, 9 Sheung Yuet Road, Kowloon Bay, Kowloon,		
<text><text><list-item><list-item></list-item></list-item></text></text>	(Attn. Mr. Peter LAM)		
Firstible Sprinkler Droppers    I refer to your above letter dated 11.9.2018 seeking our view on your prooposed adoption of flexible sprinkler droppers for an upgrading project in the captioned premises. Moru ground for application is well considered. In view of inevitable suspension of automatic prinkler installation without subsidiary zone valve in the cause of fiture alteration of sprinkler protection in principle, for the stake of fiture safety, to your proposed use of flexible sprinkler droppers for final sprinkler head connections to range pipes provided the following are strictly observed:- (a) All flexible sprinkler droppers shall be listed products complying with LPS 1261. The requirements of TBZ272.4: 2015 shall be complied with. (b) All flexible sprinkler droppers should be securely fixed onto ceiling with steel brackets or installation instructions specified under the listing condition by the relevant product. (c) Form FS1/314A and amended plans should be submitted in case of change of any change to the sprinkler installation with clear indication on the proposed amendment. FS 251 should be submitted timely according to the Fire Service (Installations and Equipment) Regulations/2 REF NUMBER AND LAKE BOUNTED IN REFERENCE TO THIS LETER	Dear Sir,		12 10 10 10 10
<ul> <li>Your ground for application is well considered. In view of inevitable suspension of automatic sprinkler installation without subsidiary zone valve in the course of future alteration of sprinkler playouts which would lead to a temporary loss of sprinkler protection to the enfire building. I would advise you that this office would have no objection in principle, for the sake of fire safety, to your proposed use of flexible sprinkler droppers for final sprinkler head connections to range pipes provided the following are strictly observed: -</li> <li>(a) All flexible sprinkler droppers shall be listed products complying with LPS 1261. The requirements of TB227.2.4: 2015 shall be complied with.</li> <li>(b) All flexible sprinkler droppers should be securely fixed onto ceiling with steel brackets or installation body with workmanship and installation details conforming to the requirements.</li> <li>(c) Form FSI/314A and amended plans should be submitted in case of change of any change to the sprinkler installation with clear indication on the proposed amendment. FS 251 should be submitted timely according to the Fire Service (Installations and Equipment) Regulations/2</li> </ul>	Flexible Spr	inkler Droppers	and the second se
<ul> <li>(b) All flexible sprinkler droppers should be securely fixed onto ceiling with steel brackets or installation instructions specified under the listing condition by the relevant product certification body with workmanship and installation datalis conforming to the requirements.</li> <li>(c) Form FSU/314A and amended plans should be submitted in case of change of any change to the sprinkler installation with clear indication on the proposed amendment. FS 251 should be submitted timely according to the Fire Service (Installations and Equipment) Regulations/2</li> <li>REF NUMBER AND CATE SHOULD BE QUOTED IN REFERENCE TO THIS LETTER</li> </ul>	Your ground for application is well conside sprinkler installation without subsidiary zone layouts which would lead to a temporary loss o advise you that this office would have no objec	red. In view of inevitable suspension of automatic alve in the course of future alteration of sprinkler f sprinkler protection to the entire building. I would tion in principle, for the sake of fire safety, to your	
installation       instructions       specified under the listing condition by the relevant product         certification body with workmanship and installation details conforming to the requirements.       (c) Form FSI/314A and amended plans should be submitted in case of change of any change to the spinkler installation with clear indication on the proposed amendment. FS 251 should be submitted timely according to the Fire Service (Installations and Equipment) Regulations.        /2         REF_NUMBER_AND DATE SHOULD BE QUOTED IN REFERENCE TO THIS LETTER        /2			
the sprinkler installation with clear indication on the proposed amendment. FS 251 should be submitted timely according to the Fire Service (Installations and Equipment) Regulations. /2 REF. NUMBER AND DATE SHOULD BE QUOTED IN REFERENCE TO THIS LETTER В ПАТЕИМ Я ПИБИДИЕ	installation instructions specified und	er the listing condition by the relevant product	
REF. NUMBER AND DATE SHOULD BE QUOTED IN REFERENCE TO THIS LETTER 凡從及本保保護領領旗旗條度及目標			
人现及本的味道引出局就及日间	the sprinkler installation with clear indi-	cation on the proposed amendment. FS 251 should	
	the sprinkler installation with clear indi-	cation on the proposed amendment. FS 251 should service (Installations and Equipment) Regulations.	- THE
FS 107A (Rev. 10/6)	the sprinkler installation with clear indi- be submitted timely according to the Fire	eation on the proposed amendment. FS 251 should Service (Installations and Equipment) Regulations. /2	
	the sprinkler installation with clear indi be submitted timely according to the Fire REF. NUMBER AND DATE SHOULD BE	ation on the proposed amendment. FS 251 should Service (Installations and Equipment) Regulations. /2	

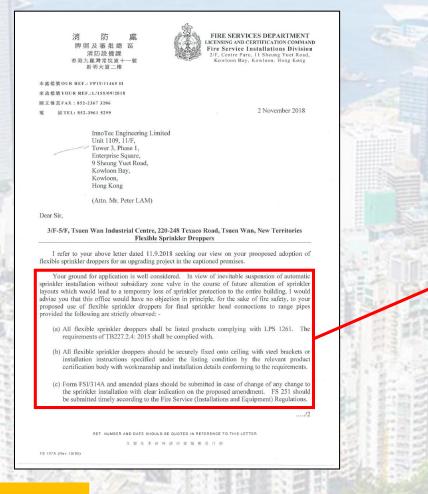


-2-

Yours faithfully.

(LEUNG Kam-man) for Director of Fire Services





You are reminded that this approval is strictly restricted to the case basis and it must not be taken as a precedent case for any other applications.

-2-

Should you require further clarification, please feel free to contact Mr. W.L. CHAN at 3961 5200 or the undersigned at telephone No. 3961 5299.

Internal: CFO(LC)

SDO(NP) SDO(FSITF)

SBSI(FSI

Your ground for application is well considered. In view of inevitable suspension of automatic sprinkler installation without subsidiary zone valve in the course of future alteration of sprinkler layouts which would lead to a temporary loss of sprinkler protection to the entire building, I would advise you that this office would have no objection in principle, for the sake of fire safety, to your proposed use of flexible sprinkler droppers for final sprinkler head connections to range pipes provided the following are strictly observed: -

- (a) All flexible sprinkler droppers shall be listed products complying with LPS 1261. The requirements of TB227.2.4: 2015 shall be complied with.
- (b) All flexible sprinkler droppers should be securely fixed onto ceiling with steel brackets or installation instructions specified under the listing condition by the relevant product certification body with workmanship and installation details conforming to the requirements.
- (c) Form FSI/314A and amended plans should be submitted in case of change of any change to the sprinkler installation with clear indication on the proposed amendment. FS 251 should be submitted timely according to the Fire Service (Installations and Equipment) Regulations.

REF NUMBER AND GATE SHOULD BE QUOTED IN REFERENCE TO THIS LETTER 凡後及本信時語引近偏聚及目期 FS 1074 (Rev 10/85)

# Real Case Application



Style AB12 • Suspended ceilings

Hard-Lid ceilings

 Item
 Description

 1
 Style AB12 Bracket Body

 2
 #2 Square Drive Set Screw

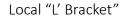
FM/VdS Approved.



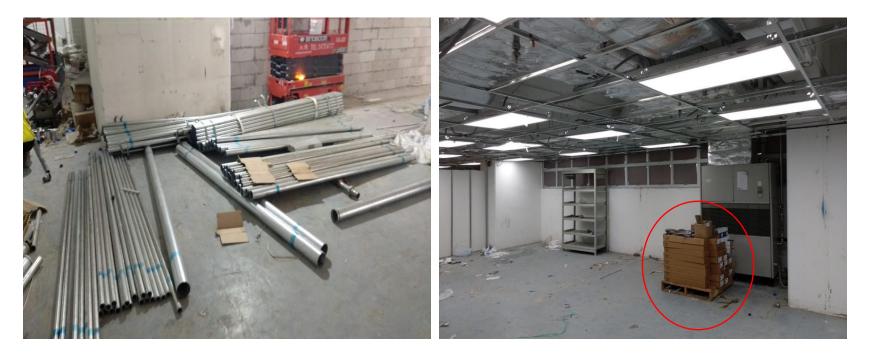
Two type of "L" angle bracket c/w Threaded Rod is required and to suit leveling adjustment (for horizontal adjustment)







# Real Case Application

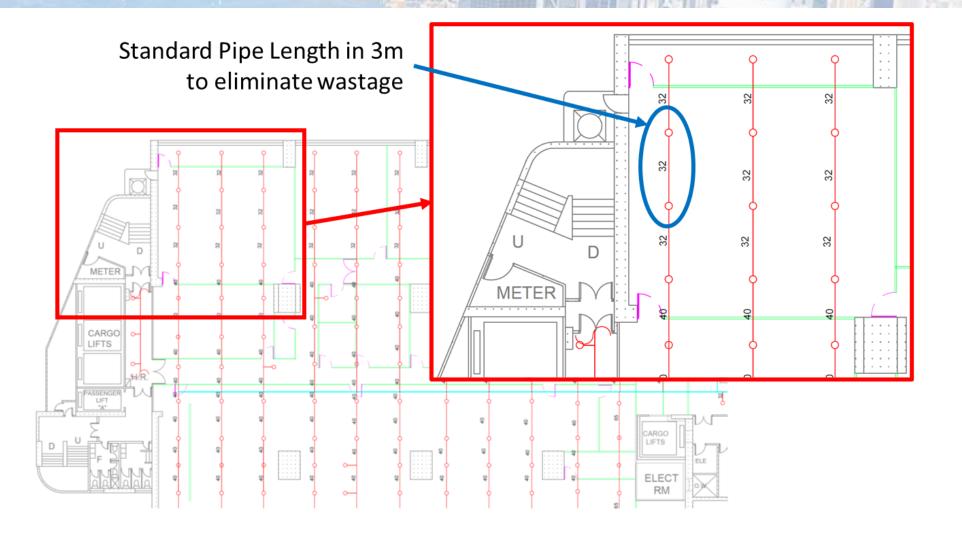


Traditional G.I. Pipe work and fittings need occupies a larger space

Easy and small place to store the flexible sprinkler (say: 180 pcs flexible sprinkler need 1.5 x 1.5 area)

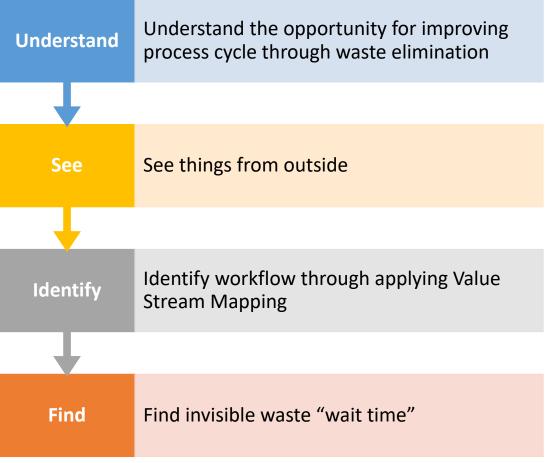


# Standardization of Pipe Length





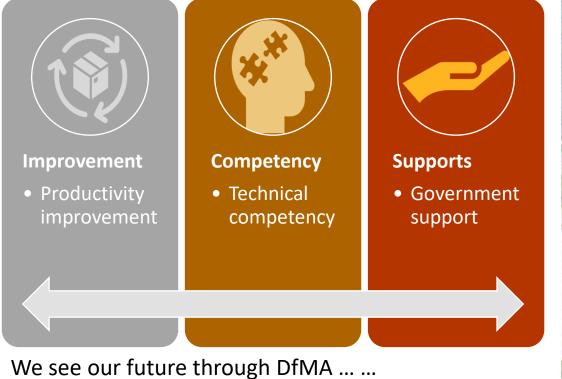
### Takeaway ... ...

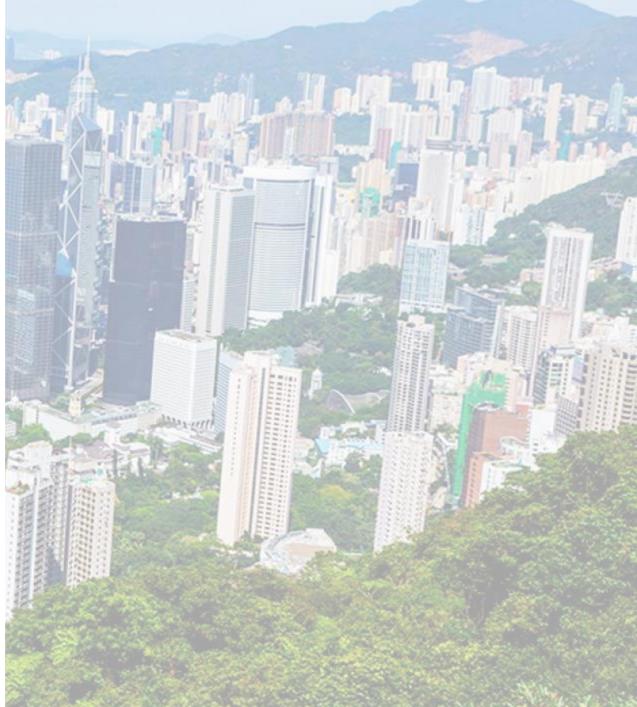




### Takeaway ... ...

### To apply DfMA, we shall fully understand the Ecosystem of DfMA –









### DfMA MiMEP Tradeshow 2021 – MiC & MiMEP Webinar Forum

# Thank You!

5 March 2021 Application of Flexible Sprinkler Drops

