Project Final Report for
Professional Services Advancement Support Scheme ("PASS")

1. Project Details

1.1	**Project Reference No.**	:	PS182006
1.2	**Project Title**	:	Guideline on Modern Design Method of Second-order Direct Analysis for Steel Structures
1.3	**Grantee**	:	The Hong Kong Polytechnic University
1.4	**Collaborating Organisation(s)**	:	Nil
1.5	**Implementation Agent(s)**	:	Nil
1.6	**Sponsoring Organisation(s)**	:	Research Engineering Development Façade Consultants Limited
1.7	**Consultant(s)**	:	Nil
1.8	**Project Co-ordinator**	:	(Name) CHAN Siu-lai (Post title) Chair Professor
1.9	**Deputy Project Co-ordinator**	:	(Name) CHAN Tak-ming (Post title) Assistant Professor
1.10	**Project Period (duration)**	:	from 01/07/2019 to 31/12/2020 (18 months)
1.11	**Major Beneficiary Sector(s)**	:	Building and construction-related services sector
1.12	**Approved PASS Grant (HK$)**	:	HK$272,000

2. Project Implementation

2.1 Project Summary

(Please give a summary of the project including objectives, deliverables and target professional service sectors within 100 words.)

To produce a new and modern method named second-order direct analysis (DA) for design of steel structures, which can facilitate the safe and economical design of buildings and structures resulting in enhancing the standards and external competitiveness of Hong Kong's engineering services. This gives an added value of training our engineers to be more efficient and capable of doing safer and more economical design of buildings and structures by the new design method DA. A 1-day workshop was organised. A design guide was published.

2.2 Project Deliverables

(Please compare the actual results achieved with the agreed targets for each item.)

Agreed Targets		**Actual Results Achieved** *(Please submit copies of all relevant supporting materials, e.g. proceedings, attendance records.)*	
Date / Deliverables (with quantity)	*Beneficiaries (estimated no. of local / non-local participants)*	*Date / Deliverables (with actual quantity)*	*Beneficiaries (actual no. of local / non-local participants)*
01/01/2020 – 30/06/2020 One design guideline	Browsers on Internet (10 000 engineers, including 6 000 civil engineers and 4 000 structural engineers in Hong Kong)	Completed: 26/11/2020 One Design guideline	Browsers on Internet http://www.hkisc.org/webinar/PassSeminar20201126.htm
01/09/2020 – 31/10/2020 One 1-day workshop	100 Hong Kong engineers	Completed: 26/11/2020 One 1-day workshop	62 Hong Kong engineers and *3 non-local participants* (**62%** of the target met)

2.3 Project Promotion and Dissemination

(Please compare the actual means used / outcomes with the agreed activities for each item.)

Agreed Activities	**Actual Means Used / Outcomes** *(Please submit copies of all relevant supporting materials, e.g. posters, leaflets, invitation letters, publications, website printouts, dissemination e-mails, newsletters, feedback surveys and analysis.)*
(a) For Project Promotion:	
Promotion of the training workshop	An Announcement flyer was promoted via the following channels: • Website of Hong Kong Institute of Steel Construction (HKISC) http://www.hkisc.org/announcement/PS182006_workshop%20flyer_20201113.pdf • Website of Structural Division, The Hong Kong Institution of Engineers (HKIE) • Invitation emails were sent to HKISC members on 13/11/2020. • E-newsletter were sent to HKIE members on 12/11/2020.
(b) For Dissemination of Project Deliverables:	
The e-version of the guideline will be distributed before the workshop	E-version had been emailed to ZOOM participants and hardcopies of the guideline were printed for those who came PolyU attended the workshop.
The e-version guideline will also be uploaded onto websites of PolyU and HKIE websites before the workshop for free use	Uploaded the e-version guideline onto PolyU, HKIE and Hong Kong Institute of Steel Construction (HKISC) websites. http://www.hkisc.org/webinar/Pass%20Worshop%20Lecture%20Notes%2020201126.pdf
The reports and workshop materials (including the event photos) will be uploaded onto the websites of PolyU and HKIE by end of this project	Uploaded the reports and workshop materials onto PolyU, HKIE and HKISC websites. http://www.hkisc.org/webinar/PassSeminar20201126.htm

3. Achievements and Grantee's Evaluation of the Project

3.1 Number of participants and eligible beneficiaries

Project Deliverables	Eligible Number of Beneficiaries (if known)
(i) One design guideline	*Browsers on Internet*
(ii) One 1-day workshop	62 Hong Kong engineers

3.2 Feedback from participants / users / professional services sectors

Most participants give high rating to the 1-day workshop. From the last question of the survey "Overall, how satisfied are you with the event", 22.7% selected "Very satisfied" and 56.8 % selected "Satisfied".

3.3 Dissemination of project deliverables to relevant professionals

The reports, e-version guideline and workshop materials of the 1-day workshop are uploaded onto PolyU, HKIE and Hong Kong Institute of Steel Construction (HKISC) websites for sharing with the engineers.

http://www.hkisc.org/webinar/PassSeminar20201126.htm

3.4 PASS and other objectives reached *(May choose more than one)*

- ☐ Increasing the exchanges and co-operation of Hong Kong's professional services with their counterparts in external markets
- ☐ Promoting relevant publicity activities
- ☑ Enhancing the standards and external competitiveness of Hong Kong's professional services
- ☐ Others

Please elaborate on how the objective(s) was/were met:

The objectives of explaining the deficiency of the old and traditional First-order Linear Analysis or Effective Length Method (ELM) were achieved and the technique of using the new method "Direct Analysis" was explained.

3.5 Overall achievements of the project

This project gave an added value of training our engineers to be more efficient and capable of doing safer and more economical design of buildings and structures by the new design method second-order direct analysis (DA)

The Project Final Report is prepared by the Grantee.