

26th March 2026

Invitation to Structural Engineering Competition for the Youth 2026
Building with Paper is So Easy! Dual-Arm Tower Challenge

Dear Principal,

On behalf of the Structural Division of The Hong Kong Institution of Engineers (HKIE), I have the pleasure to invite students of Form 4 to Form 5 (or equivalent levels) from your school to participate in the “Structural Engineering Competition for the Youth 2026 – Building with Paper is So Easy! Dual-Arm Tower Challenge” (青少年結構工程競賽 2026: 「起紙」咁簡單! 雙臂高塔大作戰).

The competition provides secondary school students with an opportunity to apply structural engineering concepts through a hands-on STEAM activity. Each team of four students will design, construct and test a dual-arm paper tower using only environmentally friendly A4 paper and adhesive tape supplied by the organizer. Participation will deepen students’ understanding of structural stability, while fostering creativity, problem-solving skills, teamwork and interest in engineering careers.

The important dates of the competition are as follows:

Registration opens:	13 April 2026 (Monday), 9:00 am
Registration deadline:	13 June 2026 (Saturday), 5:00 pm
Briefing session*:	20 June 2026 (Saturday), 9:30 am – 11:30 am Z207, Block Z, The Hong Kong Polytechnic University
Competition:	4 July 2026 (Saturday), 9:00 am – 5:00 pm Z207, Block Z, The Hong Kong Polytechnic University

Online registration will be processed on a first-come, first-served basis. Schools are encouraged to nominate students to participate in the forementioned competition. Interested schools should complete the e-registration form (<https://forms.gle/V85UfutvZQGHUrwW7>) no later than 5:00 pm on 13 June 2026.

For enquiries, please contact Ir Prof LIU Siwei (Tel: 2766 5542; Email: si-wei.liu@polyu.edu.hk). Detailed information about the competition is available at <http://st.hkie.org.hk/>.

We are looking forward to meeting your team at the competition.

Yours sincerely,



Ir Prof Ray SU Kai-leung
Chairman
Structure Division, HKIE

*Note: Briefing session will explain details (rules and guidelines) of the competition as well as basic theories and concepts of structural design.

Encl: Attachment 1 - Event Information (English & Chinese versions)
Attachment 2 - Regulation and Program of the Competition

Attachment 1 – Event Information

Structural Engineering Competition for the Youth 2026
Building with Paper is So Easy! Dual-Arm Tower Challenge

Date of the Activity: 4 July 2026

Time of the Activity: 9:00 am ~ 5:00 pm

Venue: Z207, Block Z, The Hong Kong Polytechnic University

Target participants: Secondary school Form 4 to Form 5 students (or equivalent levels only).

No. of Schools and Quota for Each School: A total of 20 teams will be accepted (one team per school)

Description of the competition: This series of competition has been organized by the Structural Division of The Hong Kong Institution of Engineers since 2015 and is a hands-on STEAM competition. Participating teams are required to design, fabricate and test a dual-arm paper tower using recycled A4 paper and adhesive tape provided by the organizer. The competition helps students develop an understanding of key concepts in structural engineering, particularly in the stability of structures under gravity. At the same time, it cultivates students' creativity, problem-solving skills and teamwork. The activity also aims to provide students with valuable hands-on experience, enabling students to explore future career pathways and deepen their understanding of the structural engineering profession.

Organizer: Structural Division, The Hong Kong Institution of Engineers

Co-organizer: Department of Civil and Environmental Engineering, The Hong Kong Polytechnic University

Supporters:

Education Bureau, The Government of the Hong Kong Special Administrative Region of the People's Republic of China

Department of Civil Engineering, The University of Hong Kong

Department of Architecture and Civil Engineering, City University of Hong Kong

Department of Civil and Environmental Engineering, The Hong Kong University of Science and Technology

Department of Construction and Quality Management, Hong Kong Metropolitan University

Department of Construction, Environment and Engineering, Technological and Higher Education Institute of Hong Kong

Registration method: Participation is free of charge. A maximum of 20 teams will be accepted, with only one team allowed per school. Interested schools should complete the e-registration form no later than 5:00 pm on 13 June 2026 via the link (<https://forms.gle/V85UfutuVZQGHUrwW7>) or QR Code.



Contact: Ir Prof LIU Siwei (Email: si-wei.liu@polyu.edu.hk)

青少年結構工程競賽 2026

「起紙」咁簡單！雙臂高塔大作戰

活動日期： 2026 年 7 月 4 日

活動時間： 上午 9 時正至下午 5 時正

活動地點： 香港理工大學 Z 座 Z207 室

活動對象： 香港中學中四及中五學生（或同等年級）

參與學校及名額： 共接受 20 隊參加（每校一隊）

活動內容： 此系列競賽自 2015 年起由香港工程師學會結構分部主辦，屬於動手做的 STEAM 競賽。活動邀請中四至中五（或同等年級）學生組隊，使用主辦單位提供的環保 A4 紙及黏貼膠帶，設計、製作及測試雙臂高塔。比賽有助於學生掌握結構工程的核心概念，例如在重力下的結構穩定性。同時培養學生創新思維、解難能力及團隊合作精神；並旨在為學生提供豐富的實踐體驗，協助學生探索職業發展方向，加深對結構工程專業的認識。

主辦機構： 香港工程師學會結構分部

合辦機構： 香港理工大學土木及環境工程學系

支持機構：

中華人民共和國香港特別行政區政府教育局
香港大學土木工程系
香港城市大學建築學及土木工程學系
香港科技大學土木及環境工程學系
香港都會大學建造及品質管理學系
香港高等教育科技學院建造環境及工程學系

報名方法： 費用全免，現誠邀香港各中學中四及中五學生（或同等年級）參與，本比賽共接受 20 隊參加（每校限一隊）。有興趣的學校請於 2026 年 6 月 13 日下午 5 時或之前透過鏈結（<https://forms.gle/V85UfutvZQGHUrwW7>）或二維碼填寫並遞交電子報名表格。



聯絡資料： 劉思威教授、工程師（Email: si-wei.liu@polyu.edu.hk）

Attachment 2 – Regulation and Program of the Competition

Structural Engineering Competition for the Youth 2026
Building with Paper is So Easy! Dual-Arm Tower Challenge
青少年結構工程競賽 2026
「起紙」咁簡單！雙臂高塔大作戰

Co-organized by
Structural Division, The Hong Kong Institution of Engineers
Department of Civil and Environmental Engineering, The Hong Kong Polytechnic University

Supported by
Education Bureau, The Government of the Hong Kong Special Administrative Region of the People's Republic of China
Department of Civil Engineering, The University of Hong Kong
Department of Architecture and Civil Engineering, City University of Hong Kong
Department of Civil and Environmental Engineering, The Hong Kong University of Science and Technology
Department of Construction and Quality Management, Hong Kong Metropolitan University
Department of Construction, Environment and Engineering, Technological and Higher Education Institute of Hong Kong

Date:	13 April 2026 (Registration opens)	9:00 am
	13 June 2026 (Registration deadline)	5:00 pm
	20 June 2026 (Briefing)	9:30 am – 11:30 am
	4 July 2026 (Competition)	9:00 am – 5:00 pm

Venue: Z207, Block Z, The Hong Kong Polytechnic University (Briefing & Competition)

Organizing Committee

Ir Prof Ray SU Kai-leung	HKIE Structural Division (Chairman) The University of Hong Kong
Ir Rayson WONG Wai-hung	HKIE Structural Division (Deputy Chairman) Housing Department
Ir Kylie LAM Nga-yan	HKIE Structural Division (Hon. Treasurer) Arup
Ir Prof Ben YOUNG	The Hong Kong Polytechnic University
Ir Prof LIU Siwei	The Hong Kong Polytechnic University
Ir Prof Paul LAM Heung-fai	City University of Hong Kong
Ir Dr Simon WONG Ho-fai	The Technological and Higher Education Institute of Hong Kong
Ir Jacky ZHONG Ying	China State Construction Engineering (Hong Kong) Limited
Ir Jesse CHAN Hiu-tung	Asia Infrastructure Solutions Limited

Target participants

Secondary school students (Form 4 to Form 5 students or equivalent levels only). Each team consists of four students. Each secondary school may form only one team for the competition.

Description of the competition

The main purpose of this competition is to raise secondary school students' understanding and interest in structural engineering through the design and construction of a paper tower subjected to gravity loads. Hopefully, this competition can provide students with valuable experience which can facilitate the career planning of students and enrich their knowledge of engineering industry or the career paths of engineers.

The competition involves the design, fabrication and testing of a **dual-arm tower**. The model shall be assembled / fabricated with A4 paper and adhesive tape provided by the organizer.

Regulations

The regulations consist of two parts: Model Requirements and Competition Rules.

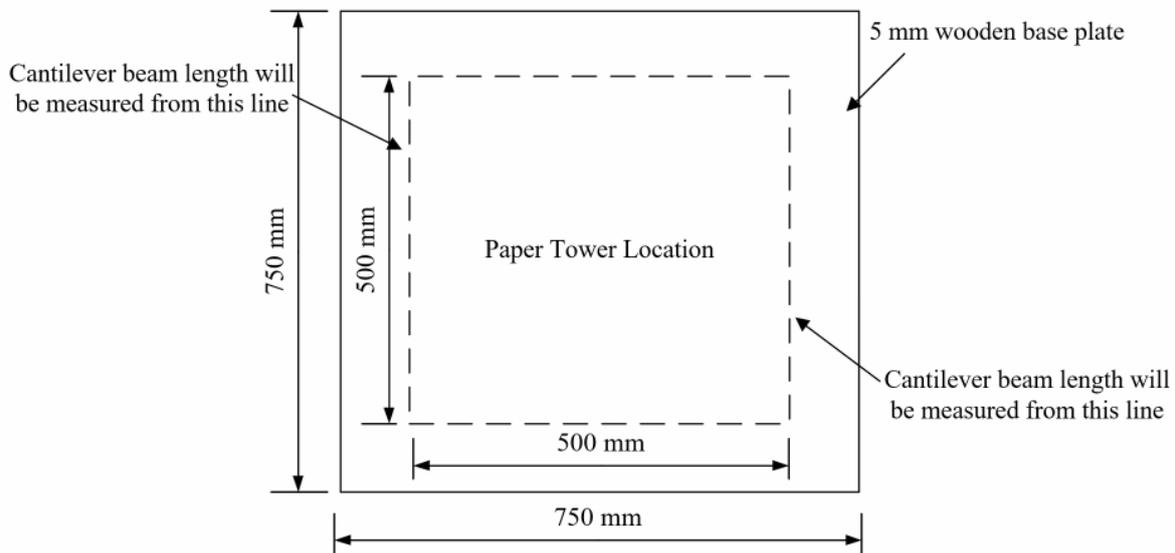


Figure 1: The base limit of paper tower

Model Requirements

1. The design of the tower must be innovative and aesthetic. It should be structurally stable and effective.
2. The tower must be constructed using the materials provided by the organizer.
3. There is no restriction on the structural form of the tower. Each team is free to adopt any structural system or configuration.
4. The total height of tower should be between 1.0 m and 1.5 m. As illustrated in Figure 1, the length and width of the base shall not exceed 50 cm (A 50 cm x 50 cm square will be shown on the baseboard). The length of each cantilever beam is between 20 cm and 50 cm (which is measured from the edge of the base to the loading point). Towers that do not meet these size requirements will be DISQUALIFIED. The headroom below the two cantilever beams must be at least 50 cm (which is measured from the lowest point of the cantilever arm to the base). The loading point of each cantilever beam must be designed by the students.
5. A loading test will be carried out by progressively adding weight to a hanger (to be provided by the organizer). The structure will be considered a failure if the hanger touches the ground within

10 seconds after adding weight.

6. The paper tower must be firmly fixed to the wooden baseboard using adhesive tape provided by the organizer.
7. Each team must prepare an A4-sized poster to present their design ideas. The poster may be prepared before the competition.

Rules

1. If a team uses materials not provided by the organizer (or uses the provided tools as part of the model), the team will be disqualified.
2. Misconduct by any one of the team members will result in the disqualification of the entire team.
3. Team members must move the model from the fabrication location to the loading area.
4. If there is any damage caused to the model during the checking, transportation, and installation process, the team members will be held responsible.
5. Teachers are not allowed to enter the fabrication area or to communicate with students by electronic devices or other means during the competition.
6. Teams are not allowed to bring their trial models to the fabrication area.
7. Teams can bring their design drawings to the fabrication area.
8. Modification of the model after the dimension check is not allowed.
9. Teams are not allowed to damage the baseboard.

Materials for each team

4 rolls of adhesive tape.

250 pieces of A4 paper (75 – 80 gsm).

Upon completion of the modelling, each team must return ALL unused materials to a collection box. Each team may bring along scissors, cutters, rulers and pens.

Judging Criteria

The competition is assessed by a judging panel to be assigned by the organizer. The Judging panel will comprise engineers and academic staff.

(1) Height

The height of the paper tower is between 1.0 m and 1.5 m. It is measured from the top level of the cantilever beam to the base of the tower. The total height of the tower should not exceed 1.5 m.

The height of the paper tower will be measured and marks will be granted according to Table 1 and illustrated in Figure 2.

(2) Base length and width

As illustrated in Figure 1, the base of the tower should not exceed the boundary defined by a 500 mm × 500 mm square. If the base of the tower lies outside this boundary, the team will be **DISQUALIFIED**.

The length and width of the tower above the ground level will not be limited (except the dimension criteria in cantilever beam).

(3) Dual cantilever beams

The length of the cantilever beam is taken as the distance from the edge of the tower to the point where the load is hung, as shown in Figure 2. The length of each cantilever beam is between 20 cm and 50 cm. If the length of each cantilever beam is outside the range, it will be DISQUALIFIED. If the length of each cantilever beam is longer than 20 cm, marks will be awarded according to Table 1.

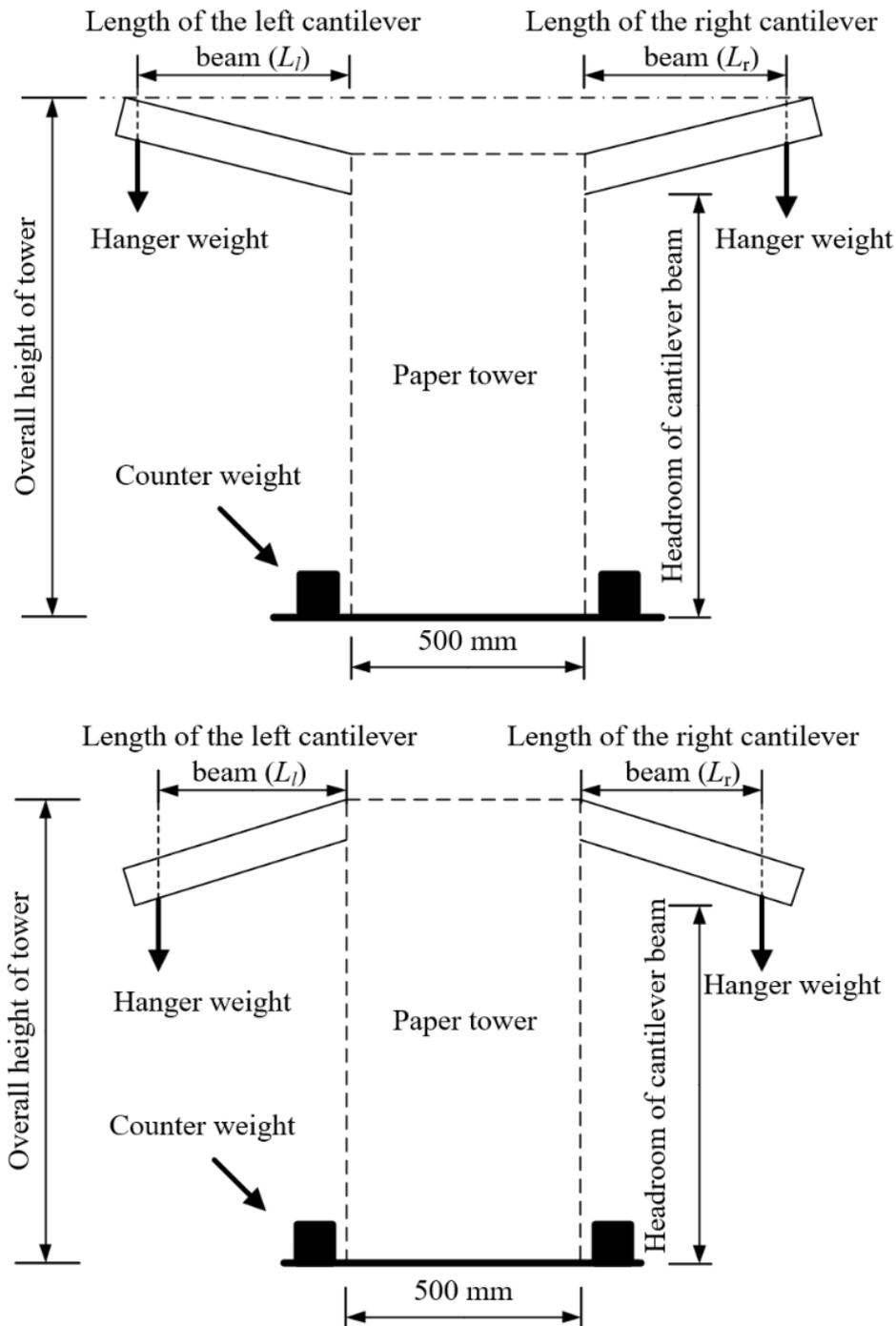


Figure 2: Measurement of overall height, headroom and cantilever beam length

(The headroom of the cantilever beam (which is measured from the lowest point of the cantilever beam to the base) as shown in Figure 2, must be at least 50 cm. If the headroom is more than 60 cm, points will be granted according to Table 1.)

(4) Loading

During the loading test, member(s) from the team will add weight to the hanger which is attached to the model. Each team may design and determine the loading point location on each cantilever arm based on their constructed structure; As illustrated in Figure 3, each team is given a 25 mm long hook-and-loop fastener (黏扣帶) for the students to connect their cantilever beam to the hanger for loading. In case the tower cannot suspend any load with the fastener, the team will be DISQUALIFIED.

During each loading attempt, loads must be applied simultaneously on both cantilever arms to ensure balanced structural behavior. Each team is allowed up to three loading attempts, regardless of success or failure. The applied load may be increased progressively, and the highest successfully completed loading level will be taken as the valid result. Scoring will be based on both the applied load and the distance from the loading point to the cantilever beam length measurement line shown in Figure 1, in accordance with Table 1. It is important to note that the maximum weight that can be added to the structure is 1000 g. If the hanger of the structure touches the ground within 10 seconds after weights are added, it will be classified as a "failure".



Figure 3: Fastener for hanger load

(5) Lightness

The assessment will involve weighing the model created by each team. The team with the lightest structure will receive 100 points for this part of the evaluation. Points will be awarded based on the criteria outlined in Table 1. Furthermore, the team that achieves the lightest model capable of supporting a minimum weight of 500 g will be awarded the "Commendation on Lightest" distinction.

(6) Aesthetic and Innovative

The tower will be assessed for aesthetic appeal and innovation. Each team should prepare a poster in A4 size to explain their design idea. The poster can be prepared before the competition and it must be self-standing. The judging panel will rank the towers based on the poster, the innovative structural form and the aesthetic overall outlook. The team with the highest rank will get 50 points from this part of the assessment. "Commendation on Aesthetic and Innovative" will be given to the team with the highest rank in aesthetic and innovation.

Safety and Security

During the competition, the organizer will take every possible precaution to ensure the safety of the participants and the spectators. However, participants and spectators shall be responsible for their own safety and personal property.

Adverse Weather Arrangements

If a Pre-No. 8 typhoon warning signal (預告懸掛八號颱風訊號) or above remains hoisted at 7:00 a.m. on 4 July 2026, the competition will be postponed. The arrangements are also applicable when a black rainstorm warning signal is hoisted.

Please note that public announcements made by the Government's Education Department affecting primary and secondary schools, technical institutes and post-secondary colleges will also apply to the competition.

Table 1 Scoring System

Items	Criteria	Score
Height (from the top level of cantilever beam to the base of tower)	≤ 1.0 m	DISQUALIFIED
	1.0 – 1.1 m (1.1 m inclusive)	20
	1.1 – 1.2 m (1.2 m inclusive)	40
	1.2 – 1.3 m (1.3 m inclusive)	60
	1.3 – 1.4 m (1.4 m inclusive)	80
	1.4 – 1.5 m (1.5 m inclusive)	100
	> 1.5 m	DISQUALIFIED
Headroom of cantilever beam (from the lowest point of the cantilever beam to the base)	≤ 50 cm	DISQUALIFIED
	50 – 60 cm (60 cm inclusive)	0
	60 – 70 cm (70 cm inclusive)	20
	70 – 80 cm (80 cm inclusive)	40
	80 – 90 cm (90 cm inclusive)	60
	90 – 100 cm (100 cm inclusive)	80
	> 100 cm	100
Cantilever length (left arm)	≤ 10 cm	DISQUALIFIED
	10 – 20 cm (20 cm inclusive)	0
	20 – 30 cm (30 cm inclusive)	5
	30 – 40 cm (40 cm inclusive)	10
	40 – 50 cm (50 cm inclusive)	15
	> 50 cm	DISQUALIFIED
Cantilever length (right arm)	≤ 10 cm	DISQUALIFIED
	10 – 20 cm (20 cm inclusive)	0
	20 – 30 cm (30 cm inclusive)	5
	30 – 40 cm (40 cm inclusive)	10
	40 – 50 cm (50 cm inclusive)	15
	> 50 cm	DISQUALIFIED

Items	Criteria		Score	
Loading	In case the paper tower could not hang up any weight above the ground		DISQUALIFIED	
	(a) Base loading score	10 points per 125 g		
	(b) Cantilever length factor	$L_{avg} = \frac{L_l + L_r}{2}$	Average cantilever Length (L_{avg})	Length factor k
			10 – 20 cm (20 cm inclusive)	1.00
			20 – 30 cm (30 cm inclusive)	1.10
			30 – 40 cm (40 cm inclusive)	1.25
			40 – 50 cm (50 cm inclusive)	1.40
Final loading score		Base loading score $\times k$		
Lightness	the lightest tower		100	
	the 2nd lightest tower		90	
	
	the 10th lightest tower		10	
	the 11th lightest tower and afterwards		0	
Aesthetic and Innovation	the highest rank		50	
	the 2nd		40	
	
	the 5th		10	
	the 6th and afterwards		0	

Important Dates:

Registration opens: 13 April 2026 (Monday) 9:00 am

e-Registration Form	
https://forms.gle/V85UfutvZQGHUrwW7	

- Registration deadline: 13 June 2026 (Saturday) 5:00 pm
A total of 20 teams will be accepted, with registration granted on a first-come, first-served basis.
- Briefing: 20 June 2026 (Saturday) 9:30 am – 11:30 am
- Competition: 4 July 2026 (Saturday) 9:00 am – 5:00 pm
- Venue: Z207, Block Z, The Hong Kong Polytechnic University
(Briefing & Competition)

Certificates

An attendance certificate will be issued for each participant.

Prizes

Prizes will be presented to the Champion (\$3,000), First Runner-up (\$2,000), Second Runner-up (\$1,000).

Commendation on Lightest (\$1,000).

Commendation on Aesthetic and Innovative (\$1,000).

Competition Schedule:

Time	Program
8:30 am	Registration
9:00 am	Opening address
9:30 am	Model fabrication
12:30 pm	1. Return the unused materials 2. Submissions of Model 3. Height and weight measurement
1:00 pm	Lunch (Judging panel assesses the structure models)
2:30 pm	Competition Loading tests
4:30 pm	Prize Presentation and Photos
5:00 pm	End

Notes:

1. The judging panel reserves the right to make the final decision and other interpretations.
2. For enquiry, please email to: si-wei.liu@polyu.edu.hk.

- END -