

Safety Forum on Temporary Works

Mechanism for Ensuring Temporary Works (TW) Safety

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Assistant Secretary (Works Policy)

Development Bureau

12 June 2017



發展局
Development Bureau

Zero 意外
ACCIDENT
地盤零意外 關懷建未來
Zero Accident, we Build, we Care

蔣侍郎豆腐

豆腐兩面去皮，每塊切成十六片

用豬油熬，清煙起才下豆腐

用好甜酒一茶杯、大蝦米一百二十個

秋油一小杯，加糖一撮，再滾一回

用細蔥半寸許長，一百二十段，緩緩起鍋。

<https://www.youtube.com/watch?v=V5H9YTKktBc&t=369s>



policy

organization

training

rules

inspections

hazard
analysis

PPE

committees

investigation

promotion

health
assurance

sub
contractors

emergency

**Design for
Safety**

Mechanism

process
control

- Design for Safety
- Focus : TW Design
- 1st TW Excellence Award

建造業安全周2016

Construction Safety Week

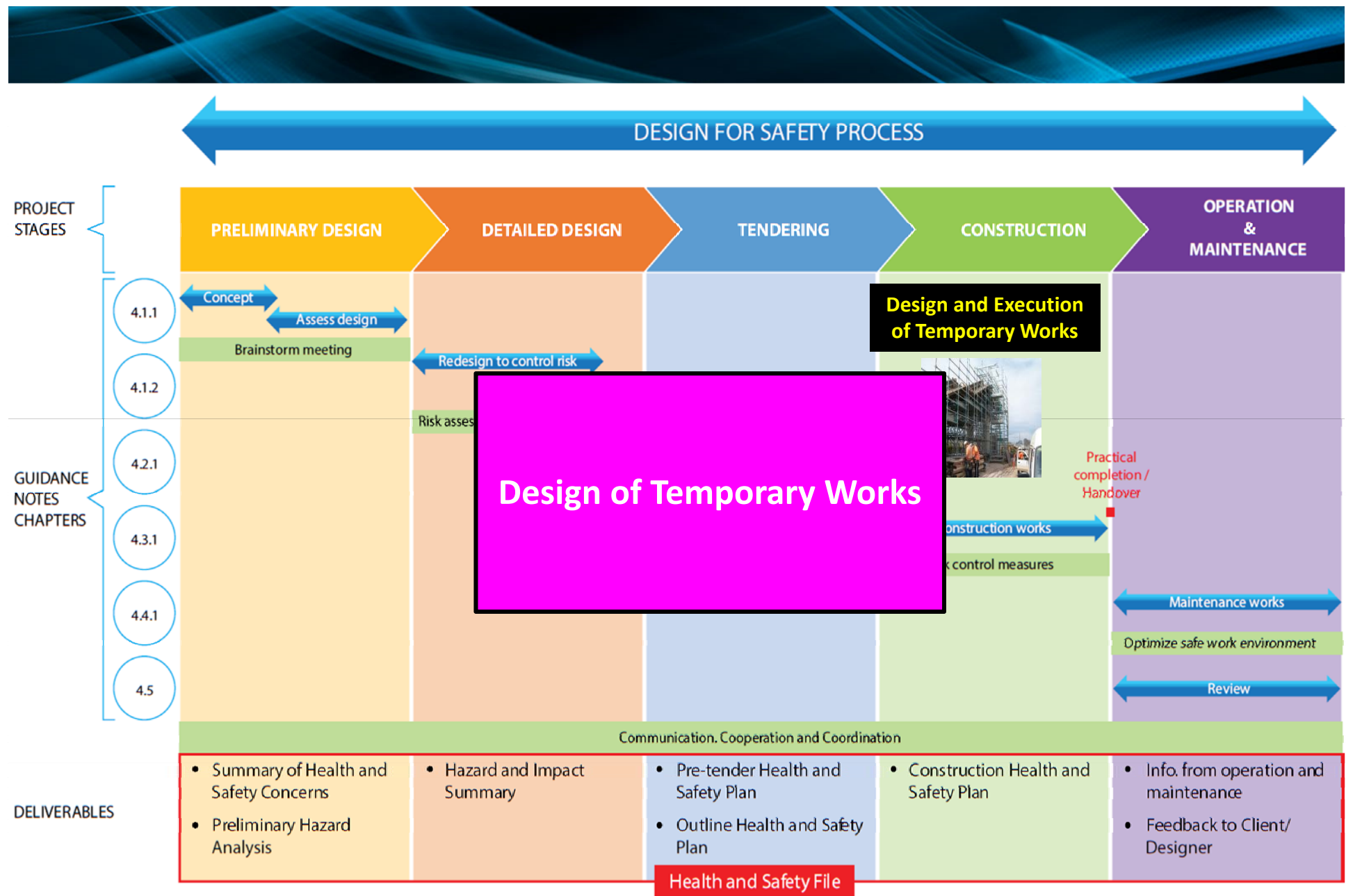
發展局和建造業議會自2012年合辦建造業安全推廣活動「建造業安全周」，獲得業界踴躍支持。主辦單位今年再接再厲，於5月25至27日舉辦「建造業安全周2016」。今年的主題為「建築設計安全」並聚焦於臨時工程設計。

Following the great success of the Construction Safety Week since 2012, the industry-wide safety promotional campaign supported by the industry, jointly organised by the Development Bureau and the Construction Industry Council, returns this year from 25 to 27 May 2016. The main theme of **Construction Safety Week 2016** is "Design for Safety" focusing on Temporary Works Design.

活動節目表 Programme of Activities

25.5 (星期三) 09:00-12:00	26.5 (星期四) 09:00-17:00	27.5 (星期五) 14:00-17:00
開幕典禮暨研討會 ¹ Kick-off Ceremony cum Conference ¹ 香港會議展覽中心 Hong Kong Convention & Exhibition Centre 指閱圖則及模型展覽上畫簿 www.safetyweek.hk Live wallpaper of the ceremony is available for watching at www.safetyweek.hk	工地參觀 ² Site Visit ² 展示良好安全表現之工地 Sites demonstrating good safety performance	第22屆公地地盤設計計劃頒獎典禮 ³ Award Presentation Ceremony for the 22 nd Phase of the Considerate Contractors Site Award Scheme ³ 九龍灣國際展覽中心6樓展覽廳 Kowloonbay International Trade & Exhibition Centre

1. 活動中所有安全設施均屬免費。 2. 歡迎公眾人士。 3. 歡迎傳媒人士。 By invitation only.



DfS: Revised Guidelines, Workshops

GUIDANCE NOTES OF DESIGN FOR SAFETY



**Projects
over \$500M**

WORKED EXAMPLES OF DESIGN FOR SAFETY



職業安全健康局
OCCUPATIONAL SAFETY & HEALTH COUNCIL

發展局
Development Bureau

In-house Safety Training Design for Safety Workshop for Construction Industry

1. **Venue:** Room E, OSHC North Point OSH Training Centre
18/F, China United Centre, 28 Marble Road, North Point, Hong Kong
(North Point MTRC Station – Exit A4)

2. **Course Duration:** 2-day workshop (14 hours)

Time: Morning session - 9:30 – 13:00
Afternoon session - 14:00 – 17:30

3. **Maximum Class Size:** 30 participants per workshop

2016 Q4

建築安全設計工作坊 Design for Safety Workshop for Construction Industry



職業安全健康局
OCCUPATIONAL SAFETY & HEALTH COUNCIL

TW Excellence Award

- Application closed on **30 April 2017**
- Entry submission by **30 June 2017**
- Judging Panel meeting in **August/September 2017**

The screenshot shows the official website of the Development Bureau, The Government of the Hong Kong Special Administrative Region. The page is titled "Temporary Works Excellence Award 2017". A prominent red banner reads "APPLICATION CLOSED". Below this, the "Background and Categories of Award" section explains that the award recognizes excellence in construction professionals' design and execution of temporary works, co-organized by the Development Bureau and the Construction Industry Council. It lists two categories: Building Works and Civil Engineering Works. The page also mentions that awards are offered in Gold, Silver, and Bronze, and that winning entries receive an "Award Trophy". A section for "Application for Entries" is visible at the bottom. The left sidebar contains a navigation menu with links to Home, Secretary for Development, What's New, Issues in Focus, About Us, Publications and Press Releases, Legislative Council Matters, Boards and Committees, Construction Sector Matters (highlighted), Public Forms, Access to Information, and Accessibility of Government Premises, Facilities and Services. The top of the page features the Development Bureau logo, language options (English, Traditional Chinese, Simplified Chinese), a search bar, and a site map link.

Development Bureau
The Government of the Hong Kong Special Administrative Region

GovHK 香港政府一站通 TEXT ONLY 繁體版 简体版

SEARCH Enter search key SITE MAP

Home
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Accessibility of Government Premises, Facilities and Services

Home » Construction Sector Matters » Contractors » Temporary Works Excellence Award 2017

Temporary Works Excellence Award 2017

APPLICATION CLOSED

Background and Categories of Award

To recognise excellence of construction professionals at the design and execution of temporary works that contribute to the exemplary performance in safety of the projects, the Development Bureau and the Construction Industry Council co-organise the **Temporary Works Excellence Award 2017** (the Award).

The Award aims at encouraging sharing of temporary works expertise and raising the standards and awareness across the construction industry.

Awards are offered in two categories:

1. Building Works
2. Civil Engineering Works

There will be Gold, Silver and Bronze Awards for the Awards in each category of awards. Each winning entry shall receive an "Award Trophy", which contains the name of the participating company, brief project title and date of the award.

Application for Entries



What Went Wrong?

INQUIRY INTO COLLAPSED GRAYSTON PEDESTRIAN BRIDGE BEGINS

Presiding officer Lennie Samuel is scrutinising reports from various companies involved in the project.



In South Africa:
*“Supplier told the inquiry it only supplied the scaffolding and had **no role** in the design of the project”*

An aerial view of the scene of the collapsed temporary bridge over the M1 in Sandton where scaffolding caved in passing cars, killing three people and injuring 22. Picture: Aki Anastasiou/EWN.



Failure of temporary works

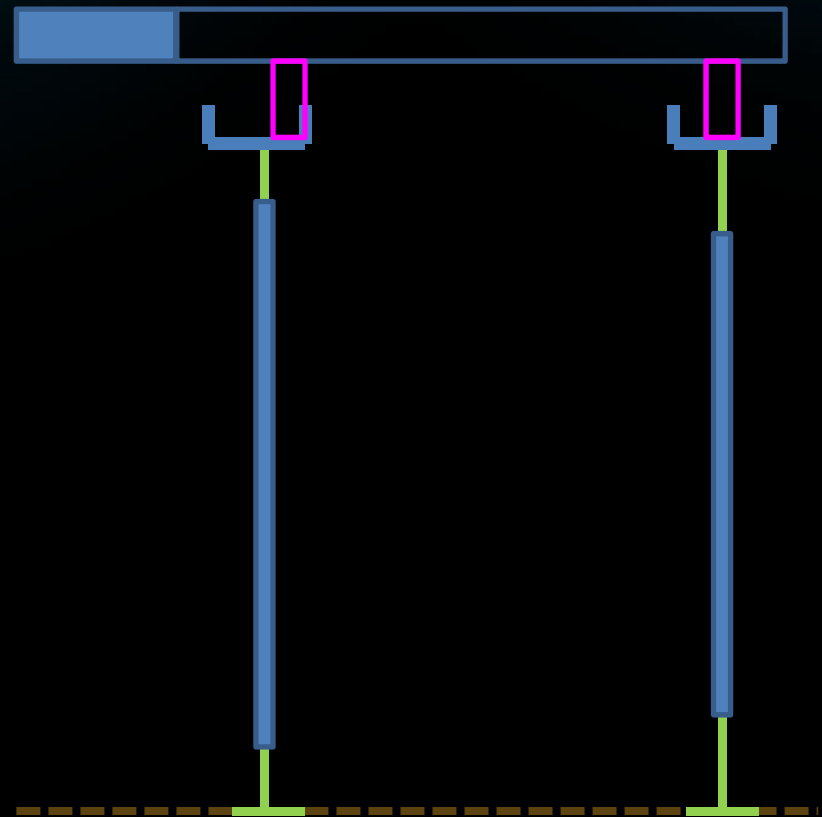
- Loss of lives
- Delay of construction programme
- Economic loss
- Damage of reputation of organisations involved
-

Observations of common deficiencies (*administrative*):

- Unclear detailing in design drawings
- Incomprehensive ICE design certificates
- Inadequate ICE's actions for as-built certificates
- The Engineer's tolerance
- Form 5 (for scaffolding) regarded as fulfilling for TW (falsework)
- Insufficient site supervision

Observations of common deficiencies (*technical*):

- Ineffective **bracing/lacing**
- Insufficient extent of **formwork**
- Primary bearers position inducing **eccentric loading**
- **Excessive extension** of jacks
- Deteriorated **materials** after repetitive use
- **Uneven** placement of wet concrete
- **Excessive fall** of wet concrete



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Mechanism for Ensuring TW Safety

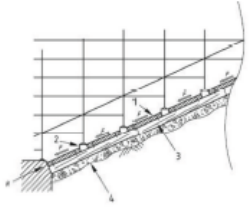

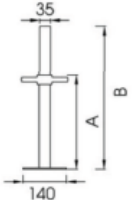

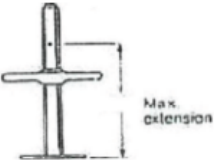

Guidelines

- BS 5975
(Code of Practice of Falsework)
- *LD/OSHC* Guidance Notes on
Falsework - Prevention of Collapse
- *ArchSD* Guidance Notes on
Falsework Safety
- *Temporary Works Forum*
Clients' guide to temporary works
- *IStrE/Concrete Society*
Technical Report TRSC 4

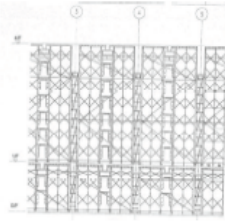

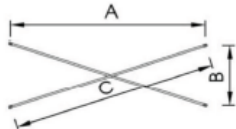

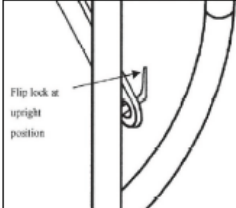



ArchSD Guidance Notes

Annex A - Typical items to be checked for Plane Frame Falsework

Items	Acceptance Criteria	Site Checks
1. Baseplate Check the adequacy of falsework support according to the approved drawings. Falsework supported directly on soil shall be prohibited.	 See the approved drawings	 Baseplate support conforms to the approved drawings.
2. Baseplate Check the size and condition of baseplates according to the manufacturer's instructions.	 See the manufacturer's instructions	 Sizes / conditions of baseplates conform to the manufacturer's instructions.
3. Baseplate Check whether the baseplate extensions are excessive according to the manufacturer's instructions.	 See the manufacturer's instructions	 Extension of base jack conforms to the manufacturer's instructions.

Annex A - Typical items to be checked for Plane Frame Falsework

Items	Acceptance Criteria	Site Checks
10. Bracing and Lacing Check the spacing and positions of bay bracings, cross bracings and lacings according to the approved drawings.	 See the approved drawings	 Spacing and positions of bay bracings, cross bracings and lacings conform to the approved drawings.
11. Bracing and Lacing Check the size and condition of bay bracings, cross bracings and lacings according to the manufacturer's instructions.	 See the manufacturer's instructions	 Sizes / conditions of bracings conform to the Manufacturer's Instructions.
12. Bracing and Lacing Check proper and secured fixing of bay bracings to props	 See the manufacturer's instructions	 Bay bracings are checked to ensure flip locks at upright positions.

Annex B – Sample Checklist for Falsework Safety

Checklist for Falsework Safety				
Contract Title / No.:				
Contractor:				
	Yes	No	N/A	
Part I: Submission				
1.	The Contractor has submitted to the Architect an updated Safety Plan to include a safe system of work for erection, alteration, loading and dismantling of falsework as required under Clauses 3 and 8A of the PS on Site Safety.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	Prior to the falsework erection, the Contractor has submitted to PSE for approval the design, supporting calculations, working drawings and working procedures of falsework as required under Clause 6.02 of the G.S. for Building.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.	When specified in the Contract or subsequently ordered by the Architect (refers to SCC65 or Clause 3 of ER), the Contractor has provided independent checking and certification for identified types or locations of falsework.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Part II: Supervision by the Contractor				
1.	The Contractor has deployed suitable TCPs to supervise all stages of falsework erection, alteration, use and dismantling according to the Code of Practice for Site Supervision issued by Buildings Department. When the Contractor submits a request for inspection form to the RSS for inspection of falsework, the Contractor's related inspection records on falsework are available for reference.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	<u>The duties of the TCPs has included, but are not limited to:-</u>			
	<u>(i) Ensuring that any falsework erection, alteration and dismantling is carried out in accordance with the design drawings, method statement and conditions imposed by the Independent Checking Engineer if any;</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<u>(ii) Inspecting the falsework prior to loading and dismantling. Relevant inspection forms signed by the TCPs shall be displayed on the falsework prior to loading;</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<u>(iii) In the event that the loading of the falsework is required to be by stages, separate inspection form for each stage, with the load limit stated, shall be displayed;</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2-3.	When specified in the Contract or subsequently ordered by the Architect (refers to SCC65 or Clause 3 of ER), for identified types or locations of falsework, the Contractor has submitted to the Architect a certificate signed by or on behalf of the Contractor and by the ICE confirming that the falsework has been constructed in accordance with the certified design before loading is applied to the falsework.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3-4.	The Contractor has appointed CP to conduct falsework inspection (i) after erection before use, (ii) at intervals not exceeding 14 days, (iii) after substantial alteration or (iv) after exposure to adverse weather likely to have affected its strength.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4-5.	The Contractor's Safety Officer and Safety Supervisor have conducted safety inspections in accordance with the Safety Plan mentioned under Part I – Item 1.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5-6.	For new works contracts where Site Safety Cycle is a mandatory requirement, the Contractor has designated a person to check for falsework safety after each day's works as required under Clause 16(1.8) of the PS on Site Safety.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Part III: Supervision by the Consultant / RSS / PSE / RE				
1.	The architectural consultant for outsourced project has prepared, regularly reviewed and updated a Quality Site Supervision Plan for the works including those related to falsework safety.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

DEVB Handbook/Technical Circulars

- **Project Admin Handbook** Chapter 5, para 9.35
(Subsumed from TC 3/97)
 - TC 26/2004 – **SCT** 3
 - **GCC** Clauses 7 & 16
 - **SCC** Clause 26
 - PAH Appendix 5.11 – **PS**
- **Contractor Management Handbook** Appendix 4B –
Guidance Notes for Completion of Report on
Contractor's Performance

SCT 3 Submission of Temporary Works Design

- (1) The tenderer shall submit with the tender a method statement of proposals for (which shall include proposals for the foundations and support of) the following Temporary Works #[to demonstrate his technical competence in executing the Works]

List the items of work for which this requirement applies. Particular attention shall be paid to the lateral stability of the Temporary Works.

GCC 7

Drawings
provided by the
Contractor for
the Works

7. (1) When the Contractor is required to provide Drawings or other documents in connection with the Works, unless the Contract provides to the contrary, all such Drawings and documents shall be submitted in duplicate to the Engineer at a reasonable time before the work shown or described thereon is to be carried out so as to permit the Engineer sufficient time to examine the Contractor's proposals properly. The Engineer shall give or refuse his approval in writing to such proposals within a reasonable time.

(2) If the Engineer has reasonable cause for being dissatisfied with the proposals set out in the Contractor's Drawings or documents the Engineer shall require the Contractor to make such amendments thereto as the Engineer may consider reasonably necessary. The Contractor shall make and be bound by such amendments at no additional expense to the Employer.

(3) The Contractor shall provide the Engineer with the type and number of copies of such Drawings and documents as may be specified in the Contract within 14 days of the Engineer's approval.

(4) Should it be found at any time after approval has been given by the Engineer that the details do not comply with the terms and conditions of the Contract or that the details do not agree with the Drawings or documents previously submitted and approved by the Engineer, the Contractor shall make such alterations or additions as in the opinion of the Engineer are necessary to remedy such non-compliance or non-agreement at the Contractor's own expense.

(5) No examination by the Engineer of the Drawings or documents submitted by the Contractor under the provisions of this Clause nor any approval given by the Engineer of the same, with or without amendment, shall absolve the Contractor from any liability for the same.

GCC 16

16. (1) Within 14 days of the acceptance of the Tender or within such other period of time as may be specified in the Contract the Contractor shall submit to the Engineer a programme showing the sequence, method and timing, including (in so far as such work is described in the Contract) due allowance for the carrying out of Specialist Works and work by utility undertakings, in which the Contractor proposes to carry out the Works and shall, whenever required by the Engineer, furnish for the Engineer's information, particulars in writing of the Contractor's arrangements for carrying out the Works and of the Constructional Plant and Temporary Works which the Contractor intends to supply, use or construct as the case may be.

Programme to be
furnished

(2) The submission to the Engineer of such programme, or revised programme in accordance with Clauses 50 or 51, or the furnishing of such particulars shall not relieve the Contractor of any duty or responsibility under the Contract.

Roles of Different Parties

- ICE
 - examine Contractor's detailed design & method statements for TW **erection, use & removal**
 - using all reasonable skill and care
 - issue **design certificate**
 - check construction of TW **before loading**
 - issue **as-built certificate**
- Contractor
 - submit detailed design & method statements, w/ **design certificate**
 - ensure TW erected, used & removed **according to certified** design & method statements
 - submit **as-built certificate** to the Engineer
 - **liability** not absolved

SCC 26 (Cont'd)

- The Engineer

- examine detailed design & method statements, **design certificate** for **no obvious deficiency**
- ensure **ICE carried out duties**
- issue **consent** for work to commence
- warn/dismiss ICE if dissatisfied with **performance**

- Client

- prepare contract provisions
- list out critical TW in **SCT/PS**
- reflect contractor's **performance** in RCP

**APPENDIX 5.11 PARTICULAR SPECIFICATION FOR INDEPENDENT
CHECKING OF THE DESIGN, ERECTION, USE AND
REMOVAL OF TEMPORARY WORKS**
(Subsumed from WBTC No. 3/97)

Particular Specification

- (1) Pursuant to SCC Clause _____, the design of the following Temporary Works shall be certified by the independent checking engineer -
 - (a)
 - (b)
 - (c)
- (2) In addition, method statements certified by the independent checking engineer shall be provided for the erection, use and removal of the following Temporary Works -
 - (a)
 - (b)
 - (c)
- (3) Any Temporary Works erected in close proximity to traffic shall be protected against impact from vehicles by suitably designed protective measures. The Contractor shall design such protective measures with regard to the conditions prevailing on the Site and the effect of any such impact. Such protective measures are to be designed as part of the Temporary Works and included in any requirement for independent checking.

Section G**Remarks by Reporting Review Committee (RRC)**

The Chairman of the Reporting Review Committee should entirely satisfy himself/herself that there is adequate documented evidence to prove that an Adverse report is warranted before endorsement/amendment.

PART D **GUIDANCE NOTES FOR PART II - INDIVIDUAL ASPECTS OF PERFORMANCE**

The RO should note that for certain types of work, not all items of the performance report may be applicable. Where any items are clearly inapplicable, the RO should note "N.A." in the relevant item of the report.

Section 1 - Workmanship

An overall "*Very Poor*" rating in this section will result in an "Adverse" report.

Item 1.1 **Standard of temporary works**

- are all materials and components used for the works generally of good quality, free from significant corrosion and damage or excessive deterioration?
- where welds are present, have they been carried out in accordance with the Contract?
- if timber is used, is there evidence of physical damage, signs of attack by decay, rot or insect attack or the development of shakes or spits?
- is bamboo used for scaffolding relatively new and free from splits along its entire length? Are joints securely tied and the whole scaffold anchored to the workface?
- are temporary faces of excavations properly supported and maintained in a stable condition as required by the Contract prior to reinstatement?
- are earthworks final surfaces protected from damage due to water or other causes and from exposure to conditions which may adversely affect the surface prior to installation of permanent works in accordance with the Contract?
- are dewatering operations causing instability or settlement of adjacent land or structures?
- are temporary drainage facilities adequate for preventing flooding and surface erosion as required by the Contract?

Where details of temporary works have been requested by the RO to be submitted in accordance with GCC Clause 16(1),

- are the temporary works carried out in accordance with that submitted by the contractor?
- are the safety margins adequate against the risk of failure?
- does the contractor's design meet the contract requirements?

RCP Item 1.1 – Standard of TW

- are all **materials** and components used for the works generally of good quality, free from significant corrosion and damage or excessive deterioration?
- is bamboo used for scaffolding relatively new and free from splits along its entire length? Are **joints** securely tied and the whole scaffold anchored to the workface?
- are the temporary works **carried out in accordance with that submitted** by the contractor?
- are the **safety margins adequate** against the risk of failure?

Where the temporary works are of such importance that these have been specified to be **independently checked**,

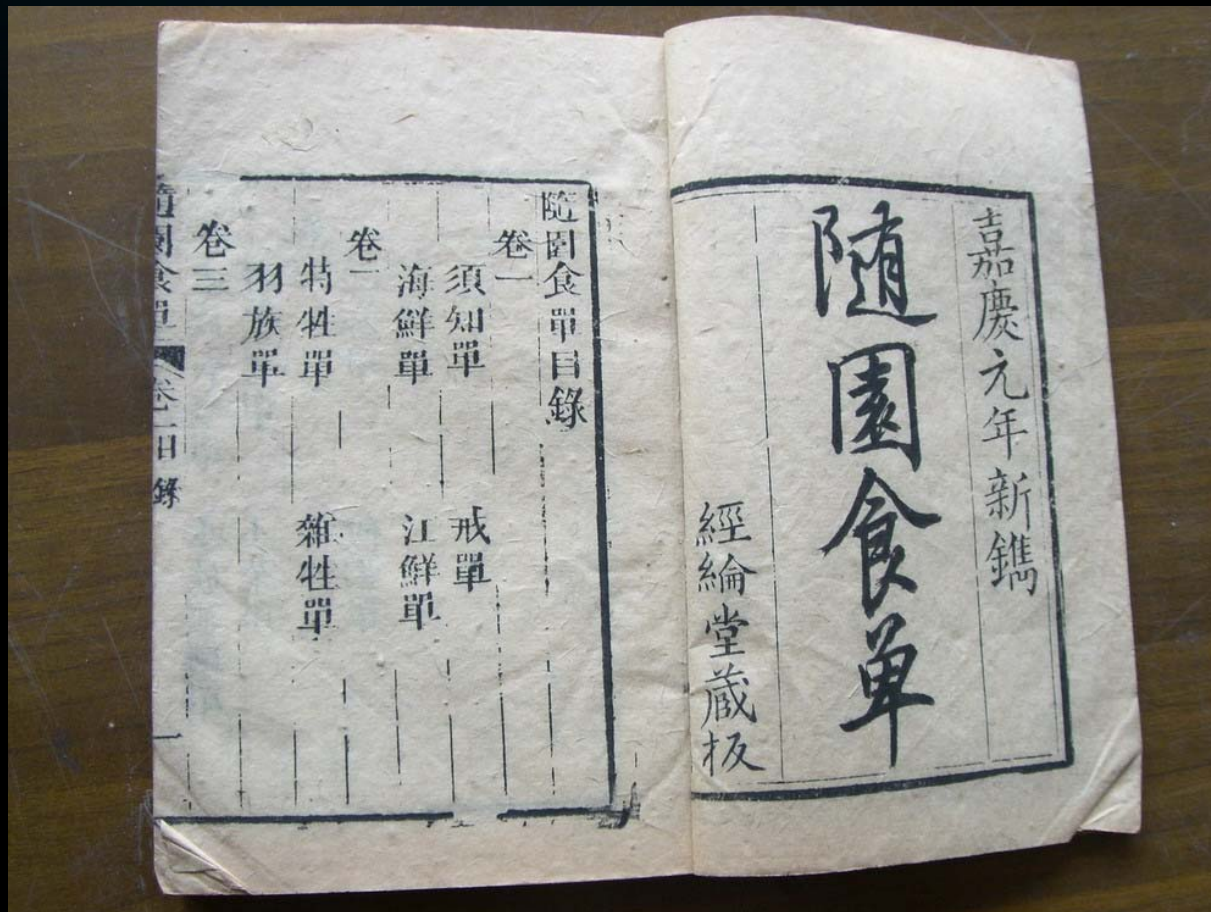
- are the works **constructed according to the certified design**?

Way Forward

- **DEVB** continues to review the system
- **WDs/project designers** to identify critical TW in design stage & prepare SCT/SCC/PS accordingly
- Enhance **Consultants' role** in examining TW submissions & site supervision
 - **Regulating action(s) if serious default/non-performance?**
- **Contractor's** responsibility/**ICE** to exercise due diligence
- Independency of **Safety Officer**
 - **Addition to RSS requirements?**

【隨園食單】 袁枚

把烹調美食看成一個系統工程，需要各方面的條件。
將中國傳統的道德觀融入其飲食理論中，特設戒單。



【戒單】－ 戒苟且

火齊未到而姑且下咽，則明日之菜必更加生；
真味已失而啞忍不言，則下次之羹必加草率。

廚者偷安，吃者隨便，皆飲食之大弊。

審問、慎思、明辨，為學之方也。

工食宜優，不可苛刻，一也；

算帳宜寬，不可剋扣，二也；

實物宜多，不可吝嗇，三也。

然後嚴其賞罰，專其責成，乃可享口腹之奉也。

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THANK YOU