CHAPTER 4  PROJECT DESIGN AND ESTIMATES

PARAGRAPH 1  GENERAL CONSIDERATIONS FOR DESIGN

(a) Para 1.3  Replace the fifth paragraph with the following:

With regard to safety in design, for new capital works projects (excluding Design & Build projects) with estimated construction cost equal to or exceeding $500M, the project engineer should follow the “Design for Safety” (DfS) process to avoid introducing a hazard to the workplace by eliminating it in the first place at the planning or early design stage. The project engineer should refer to “Guidance Notes of Design for Safety” and “Worked Examples of Design for Safety”, which have replaced the Construction Design and Management (CDM), on DEVB’s website via the following link:


For ongoing public works projects in which the CDM process has already been implemented, it is not necessary to make any change to the DfS process (Ref. DEVB’s memo ref. (02U5N-01-1) in DEVB(W) 517/17/01 dated 8.6.2016).

For public works projects where Systematic Risk Management (SRM) under ETWB TCW No. 6/2005 is adopted, the project engineer is recommended to expand the SRM to include DfS/CDM in order to achieve the best project outcomes more efficiently.

PARAGRAPH 3  DETAILED DESIGN AND ASSOCIATED ADMINISTRATION

(b) Para 3.5  Delete the reference “(Ref.: SETW’s memo ref. () in ETWB(PS) 105/118/ Pt. 3 dated 7.4.2004, Review of Project Implementation Issues of HATS Stage I – Implementation Plans on the Recommendations)” under the heading.
Replace the paragraph with the following:

3.5.1 General

This Section sets out the guidelines for carrying out independent checking on new works and associated modification of existing works designed in-house and by consultants or contractors employed by the Government. These guidelines do not modify the contractual or legal responsibilities of any party for the work carried out, including without limitation the Designer as defined in Section 3.5.2 and the Checking Engineer as defined in Section 3.5.3.

The objective of the independent checking is to ensure:

(a) compliance of the design with the project office’s requirements, relevant design standards and statutory requirements;

(b) validity of design concepts, methods and assumptions;

(c) applicability, accuracy and validity of the computer programs and models used in the design;

(d) accurate translation of the design into drawings and specifications; and

(e) practicality and adequacy of key details.

3.5.2 Designer

For projects designed in-house, the Designer is generally the project engineer. For projects designed by consultants or contractors employed by the Government, the Designer is the professional, the team of professionals, the company or the organization being responsible for the design.

3.5.3 Checking Engineer

For projects designed in-house, the Checking Engineer is generally the checking officer, separate from the project engineer, responsible for the independent check of the design. The Chief Engineer/Regional Office Head is responsible for appointing a suitable checking officer.
For projects designed by consultants or contractors employed by the Government, the Checking Engineer is the professional, the team of professionals, the company or the organization separate from the Designer and being responsible for the independent check of the design. The project office shall arrange with the Designer the checking of the works by a Checking Engineer. The Checking Engineer proposed to be appointed by the Designer shall be approved by the project office in advance. If the Checking Engineer is not in the same organization as the Designer, the Designer should submit to the project office documentary evidence on the engagement of the Checking Engineer, such as employment letter, for the checking by the project office. Should the project office be dissatisfied with the performance of the Checking Engineer at any time, the project office may, having given reasonable notice of dissatisfaction, order the dismissal and replacement of the Checking Engineer.

In all cases, the Checking Engineer should be a professional engineer suitably experienced in the type of Works being checked.

3.5.4 Design Checking Approach

The design should be checked as a whole using one of the following approaches corresponding to the risk and complexity of the Works:

(a) For simple and straightforward designs, the designs should be checked by a Checking Engineer, generally for correctness of assumptions and concepts, the method of working, practicality of construction and order of size, plus some detailed checking of critical members or sections. The Checking Engineer is given the design memorandum, design calculations and drawings of the Works as designed. The Checking Engineer need not be an officer from outside the design team, although it is always desirable to have a Checking Engineer who is not associated with the design.

(b) For complicated or unusual Works, or for Works, which could result in serious consequences if they fail, complete and thorough checking by a Checking Engineer independent of the design team should be
executed. Under this approach, the Checking Engineer is given drawings of the Works as designed, the design memorandum, other information on functional/performance requirements and applicable design standards of the Works, but without the design calculations. The Checking Engineer then verifies the design as shown on drawings by executing an independent set of calculations.

(c) For complicated Works or Works of a nature that there is limited local experience, such as a very long-span bridge, tunnelling works or major underground structures, the project office shall consider if a Checking Engineer from an independent organisation which is separate from that of the Designer should be employed to vet the structural or geotechnical design of the whole or part of the Works.

The Chief Engineer/Regional Office Head should decide which checking approach is to be adopted for each individual project.

3.5.5 Design Checking Report

For projects designed by consultants or contractors employed by the Government, to which the design checking approach in Section 3.5.4(b) or (c) is applicable, the Checking Engineer should prepare a design checking report providing details of the design checking and submit directly to the project office, not via the Designer, for comments.

3.5.6 Design and Check Certificate

For projects designed in-house, the project engineer should certify the correct completion of the design process and the checking officer should certify the completion of the checking process in a standard certificate (Appendix 4.3) and tenders should not be invited without this certificate.

For projects designed by either consultants or contractors employed by the Government, when the design checking has been completed and all necessary amendments to the design calculations, specifications and drawings have been made and checked by the Checking Engineer, the Designer and the Checking Engineer shall
sign the “Design and Check Certificate” (Appendix 4.22), or other form as agreed with the Chief Engineer/Regional Office Head. The original copy of the “Design and Check Certificate” shall be submitted by the Checking Engineer directly to the project office, not via the Designer, for record purpose. The project office must exercise caution to examine the “Design and Check Certificates” submitted. Unless there are justifiable reasons acceptable to the project office, the Designer shall exercise every effort to ensure that no drawings shall be issued for tendering or construction until the “Design and Check Certificate” (Appendix 4.22) has been accepted by the project office.

3.5.7 Auditing of Geotechnical Aspects by GEO

The District Divisions of the GEO, CEDD exercise geotechnical control over public developments by auditing the geotechnical aspects of the designs of permanent works and, in the case of tunnel works, the associated temporary works, and the adequacy and standards of site supervision. Geotechnical submissions, as defined in paragraph 4.6.2, are required to be submitted to the GEO for auditing and design vetting (ETWB TCW Nos. 29/2002, 29/2002A, 4/2004 and 15/2005, and DEVB TCW No. 3/2018). For slopes and retaining walls, foundation works within the Scheduled Areas of the Northwest New Territories and Ma On Shan and the Designated Area of Northshore Lantau, tenders should not be invited for any part of the geotechnical works until the geotechnical design has been accepted by the GEO. For tunnel works, where the GEO raises major geotechnical concerns on the public safety aspects of the geotechnical design (or the related Particular Specification or the Employer’s Requirements (for Design and Build (D&B) contracts)), the project office must resolve such concerns with the GEO before tenders are invited. For projects that involve rock blasting, the project office should submit a Blasting Assessment as part of the geotechnical submissions to the GEO for comment and agreement. Tenders should not be invited for any part of the geotechnical works until the Blasting Assessment has been accepted by the GEO.
Para. 3.7

Add the following after “For projects employing consultants for planning and design,”:

“the consultants shall report in the monthly progress meetings the status of design checking to enable the project office to be informed of the progress of the design checking.

The”

Delete “the” before “consultants should be requested to submit the complete set of design calculations,”.

PARAGRAPH 6 REFERENCES

Delete the following reference:

SETW’s memo ref. () in ETWB(PS) 105/118/ Pt. 3 dated 07.04.2004

Add the following reference:

SDEV’s memo ref. (02U5N-01-1) in DEVB(W) 517/17/01 dated 8.6.2016

APPENDICES

Appendix 4.1

Add “or Appendix 4.22” after “Appendix 4.3” under “Activities” column to Item Nos. 8 and 12.

Replace “checking officer” with “Checking Engineer” under “Activities” column for Item No. 11 and under “Designation” column for Item Nos. 12 and 14 respectively.

Add the following new Notes 2 and 3 after Note 1.

2. For projects designed in-house, the Checking Engineer is generally the checking officer, separate from the project engineer, responsible for the independent check of the design.

3. For projects designed by consultants or contractors employed by the Government, the Checking Engineer is the professional, the team of
professionals, the company or the organization separate from the Designer and being responsible for the independent check of the design.

**Re-number** Notes 2 to 10 as Notes 4 to 12.

(f) Appendix 4.3

Replace “OFFICER” with “ENGINEER” in the heading.

Add the following after the “Contract Title: ________”.

Design Checking Approach:


Replace “Officer” with “Engineer” in Item (e).

(g) Appendix 4.22

Add the new appendix given in Annex A to this Amendment.

**CHAPTER 5**

**CONTRACT DOCUMENTS**

**PARAGRAPH 9**

**SPECIAL TOPICS**

(h) Para 9.15

Add the reference “SDEV’s memo ref. (02N5N-01-1) in DEVB(W) 517/17/01 dated 8.6.2016,” under the heading.

Add the following paragraphs after the eighth paragraph:

Capital works project with estimated construction cost equal to or exceeding $500M, excluding Design & Build projects, should follow the Design for Safety process as stipulated in the “Guidance Notes of Design for Safety” which can be downloaded from DEVB website:


In particular, “Pre-tender Health and Safety Plan” should be issued to the tenderer, tenderer should submit “Outline Health and Safety Plan” with his tender submission and “Health and Safety File” should be kept.
PARAGRAPH 12  REFERENCES

(m) Add the following reference:

SDEV’s memo ref. Design for Safety (DfS)
(02U5N-01-1) in
DEVB(W) 517/17/01
dated 8.6.2016

CHAPTER 7  CONTRACT MANAGEMENT

PARAGRAPHS 7 SITE SAFETY

(i) Para 11.1 Add the following after the first paragraph:

With reference to SDEV’s memo ref (02U5N-01-1) in DEBV(W) 517/17/01 dated 8 June 2016, capital works projects with estimated construction cost equal to or exceeding $500M, excluding Design & Build projects, should follow the Design for Safety process with immediate effect. The project teams are reminded to refer to “Guidance Notes of Design for Safety” and “Worked Examples of Design for Safety” for their safety responsibilities during contract management. The documents can be downloaded from DEVB’s website at: http://www.devb.gov.hk/en/publications_and_press_releases/publications/index.html

PARAGRAPH 22  REFERENCES

(j) Add the following reference:

SDEV’s memo ref. Design for Safety (DfS)
(02U5N-01-1) in
DEVB(W) 517/17/01
dated 8.6.2016

APPENDICES

(k) Appendix 7.40 Add the following item after Item 15.

Design Checking Report

16. In accordance with PAH Chapter 4 Section 3.5.5, for consultancy agreements involving design by consultants or contractors employed by the Government, to which the design checking approach in PAH Chapter 4 Section 3.5.4(b) or (c) is applicable, the
Checking Engineer should prepare a design checking report providing details of the design checking and submit directly to DR, not via the Designer.

Re-number Items 16 to 30 as Items 17 to 31.

Quality Management & Standards Unit
Civil Engineering and Development Department
29 April 2020
APPENDIX 4.22 DESIGN AND CHECK CERTIFICATE

Agreement No.: ___________________________ (if appropriate)

Project Title: ________________________________________________

Project Office: ________________________________________________

Design Checking Approach:
___________________________________________________________________________

1. This Design and Check Certificate refers to submission No.
which comprise
   (a) Works covered by this Certificate
       (nature and description of the submission)

       _______________________________________________________________________
       _______________________________________________________________________
       ____________________________
       in respect of:
       (description of the works to which the submission refers)

       _______________________________________________________________________
       _______________________________________________________________________
       _______________________________________________________________________
       ____________________________________________
   (b) Contents of this submission are listed in Schedule A below.

2. Designer’s certification

I/ We certify that

(a) the design of the works, as illustrated and described in the documents listed in
    Schedule A below, complies with the standards set out in the Agreement or
    ____________________________ (any form of agreement as appropriate) and with
    amendments agreed to by the Director’s Representative or ________________________
    (any relevant authorities as appropriate);

(b) all reasonable and professional skill, care and diligence have been exercised in
designing the works, as illustrated and described in the documents listed in Schedule
A below; and

(c) a self-check has been undertaken and completed to confirm the completeness,
    adequacy and validity of the design of the works as illustrated and described in
documents listed in Schedule A below.

Signed: _______________________________________________  (Name)

__________________________________________  (Position)
3. Checking Engineer’s certification

(a) I/ We certify that the design has been independently checked in accordance with the agreed design criteria using all reasonable skill and care and that I/we am/are satisfied that the design checked complies in all respects with the agreed design criteria.

(b) I/ We further certify that I/ We am/are satisfied that the checking of the above design is completed.

Signed:
__________________________________________
(Name)
__________________________________________
(Position)
__________________________________________
(Organization)
__________________________________________
(Date)

Schedule A

Submission No.________________________ comprises the followings:

Documents: (Title, reference number and revision)
__________________________________________
__________________________________________
__________________________________________
__________________________________________
__________________________________________

Drawings: (Title, reference number and revision)
__________________________________________
__________________________________________
__________________________________________
__________________________________________
__________________________________________

Others: (Please Specify)
__________________________________________
__________________________________________
__________________________________________
__________________________________________