



BOARD OF ENGINEERS MALAYSIA

CIRCULAR NO. 010

**CHECKING / REVIEWING THE WORK OF
ANOTHER ENGINEER**

This Circular supersedes Circular No. 1/2003, Guidelines for Checking / Reviewing the Work of another Engineer (BEM/RD/PPC/07).

1.0 INTRODUCTION

- 1.1** In recognition of the need for checking and checkers for projects, the Board of Engineers Malaysia (BEM) has included the provision for registration of Accredited Checkers in the amended Registration of Engineers Act 1967 (Revised 2015); and this Circular covers the subject of checking/reviewing the work of one engineer by another vis-à-vis the question of statutory requirements; qualification, role, duty and responsibility of Checker / Reviewer.
- 1.2** In so far as the question of safety and stability of a building in the course of construction is concerned, a provision for 'review' by a second qualified person is already provided under Section 70B of the Street, Drainage and Building Act 1974, where the local authority reasonably suspects there is a defect, deformation or deterioration in the structure of a building under erection which may result in failure of the building, may issue to the owner of the building an order to review the safety and stability. (Refer APPENDIX I). For the purpose of this Circular the term 'review' in the act will mean checking.
- 1.3** Recent amendments to the Street, Drainage and Building Act 1974 includes notice of new building in Section 70 (2) which states that submission to the local authority or the relevant statutory authority a geotechnical report for the erection involving slope with a gradient more than twenty-five degrees and total vertical height more than ten meters which the report shall be verified by the Accredited Checker registered with the Board of Engineers under the Registration of Engineers Act 1967. (Refer APPENDIX I)
- 1.4** Although this Circular is intended mainly for the area of civil engineering on matters of safety of buildings and slopes, they are applicable, where appropriate, to other disciplines of engineering.
- 1.5** With increasing complexity and magnitude of engineering works, more frequent calls for checking/ reviewing can be anticipated not only from authorities having jurisdiction to do so but also from owners themselves.
- 1.6** The Checker/Reviewer is responsible for checking/reviewing the design deliverables submitted by the Engineer (hereinafter referred to as the First Engineer) for Permanent works only. However, the Client may extend the scope of responsibility and checking on the temporary works during construction. The Client may require the Checker/Reviewer to provide supervision during construction.

2.0 RATIONALE FOR CHECKS / REVIEW

2.1 While the current requirements under the Street, Drainage and Building Act relate mainly to the question of safety and stability and future statutory requirements are likely to do the same, there is a wide range of other aspects of the work of the First Engineer that the employer may want to be checked or reviewed. There can be no reason why a Client should not be able to seek a "second opinion" on any of these other matters related to project as the independent check/review is value added for a small additional cost by increasing the confidence factor of the design process and reducing the risk of failure.

3.0 DIFFERENCE BETWEEN CHECKING, REVIEWING & INSPECTING

3.1 For the purpose of this Circular and to better cover likely circumstances calling for a second opinion:

- (1) Checking is for works at the design and/or construction stage of a project and called for by local authorities under powers vested in them.
- (2) Reviewing is generally at the design and/or constructions stage called for by the Client.
- (3) Inspection is generally of completed projects already in operation (or use) called for by the owner or ordered by local authorities.

3.2 Depending on structural details and complexity, there are different levels of checking which would be appropriate. At one end of the scale, the checking to be carried out would involve review of the drawings and other documents submitted, while on the other end of the scale, the checking would require independent analysis and design to ascertain that design compliance and adequacy are achieved, together with completeness and comprehensiveness of the First Engineer's design, drawings and specifications.

For better clarity of the Checker/Reviewer's scope of works, the following category of check/review can be used as basis of discussion and agreed upon between the Client and First Engineer as below:

Check/Review Category	A (Checker)	B (Reviewer)	C (Others)
Analysis	Carry out his own independent analysis separately using either the same or different methodology to complete the check on the technical suitability and safety.	No need for separate independent analysis but based on submitted analysis from First Engineer and review the submission.	No need for separate independent analysis.
Design	Need to carry out separate independent design to check on First Engineer's submission.	No need to carry out separate independent design but to verify on submitted analysis from First Engineer and review the submission.	No need to carry out a separate independent design check nor check First Designer's design submission.
Deliverables (Drawings and specifications)	Check on all drawings and specifications submitted by First Engineer	Check/Review on all drawings and specifications submitted by First Engineer.	Review on all drawings and specifications submitted by First Engineer.

Report	Report on independent analysis and design carried out. Comment on completeness and comprehensiveness of the design report, design, drawings and specifications submitted by First Engineer.	Report findings on the First Engineer's submitted analysis and design. Comment on completeness and comprehensiveness of the design report, design, drawings and specifications submitted by First Engineer.	Comment on the completeness and comprehensiveness of the design report, drawings and specifications submitted by First Engineer.
Constructability	Comment on construction method in design report and drawings submitted by First Engineer based on past experiences and engineering judgement	Comment on construction method in design report and drawings submitted by First Engineer based on past experiences and engineering judgement.	Comment on construction method in drawings submitted by First Engineer based on past experiences and engineering judgement.
Outcome	Highlight weaknesses, error, omission, additional considerations, amendment and corrections required in design, drawings and documents submitted by First Engineer.	Highlight weaknesses, error, omission, additional considerations, amendment and corrections required in design, drawings and documents submitted by First Engineer.	Highlight errors, omissions and corrections required in the drawings and documents submitted by First Engineer.
<p><i>Note (Clause 1.6):</i> <i>The Checker/Reviewer is responsible for checking/reviewing the design deliverables submitted by the Engineer (hereinafter referred to as the First Engineer) for Permanent works only. However, the Client may extend the scope of responsibility and checking on the temporary works during construction. The Client may require the Checker/Reviewer to provide supervision during construction.</i></p>			

3.3 The Scope of works of Checker or Reviewer can be interchangeable and is specified in the Terms of Reference and the Appointment Letter. The Category of the checking/reviewing process as indicated in Section 3.2, should be agreed upon by all parties involved, to avoid disputes on the responsibilities of the Checker/Reviewer and clearly defined in the reporting and certification of the project by Checker/Reviewer.

4.0 GENERAL CODE OF CONDUCT IN CHECKING/REVIEWING

4.1 Checking/reviewing should not occasion a professional engineer intervening or taking over the work of another within the meaning of Regulation 31 of the Registration of Engineers Regulations 1990 (Revised 2015) (Refer APPENDIX II)

4.2 The Client's legitimate prerogative to call for checking/reviewing, if he so desires, must not be exploited to obtain a checking/reviewing assignment in the pretext of providing value engineering services. Provided that the check/review is undertaken at the invitation of the employer without any canvassing or touting by the Checker/Reviewer, and that such undertaking has the prior knowledge of the First Engineer, Regulation 31 is not deemed to be contravened.

4.3 The exact line separating the responsibilities of the checker/reviewer vis-à-vis that of the engineer currently on the project (the First Engineer) is difficult to draw. Nevertheless, the guiding principle is that the checker/reviewer must clearly be responsible for the professional integrity, thoroughness and competence of his work within the scope of his engagement.

4.4 The Client would need to evaluate and decide whether to implement the recommendations/ observations of the Checker/Reviewer, and the guiding principles regarding responsibility should also be obvious. The next course of action to be taken shall be done after discussion with all parties involved as follows:

4.4.1 In the event that the Client wishes to implement the Checker/Reviewer's recommendations with the agreement of the First Engineer, the First Engineer shall incorporate the Checker's/Reviewer's design and drawing amendments and submit for approval. The First Engineer is deemed to have satisfied himself of their design, and hence endorse and bear full responsibility. The First Engineer who supervises the construction shall be responsible to ensure that the works are properly carried out according to approved plans and specifications.

4.4.2 In the event that the Client insists on proceeding to implement the Checker/Reviewer's recommendations over the objections of the First Engineer and there are clauses in the First Engineer's Appointment Letter which allow the Client to omit a portion of the works from the Contract, then under these circumstances, the First Engineer needs to ensure that his rights are protected as follows:

- a) Obtain a letter from the Client to confirm the omission of that portion of the works to indemnify the First Engineer from any legally enforceable claims, losses or cost which may arise as a result of the omission and the performance of the omitted portion of the Works. All fees for work done on the omitted portion of the Works to be assessed and paid to the First Engineer.
- b) The Engineer taking over the Works shall follow, take over, submit and supervise the omitted portion of works in accordance of the procedures set out in BEM Circular No. 008. The Design and As-Built drawings and all relevant documents for submission would be signed and endorsed by the Engineer taking over the Works.
- c) In the case where the First Engineer finds that the Checker/Reviewer's recommendations are unacceptable and unsafe, he could withdraw himself from acting as the Submitting Engineer.

4.4.3 The Client has the option to disagree and reject the Checker/Reviewer's recommendations based on the First Engineer's objection and justification. However, this would impose higher responsibility and liability on the First Engineer on any failure or design defects pointed out by the Checker/Reviewer.

4.4.4 In the event the First Engineer disagrees and rejects the Checker/Reviewer's recommendations, the Client can engage another 2nd Checker (acceptable to both the First Engineer and the Checker/Reviewer) whose findings would be taken into account on deciding on the next course of action as per Section 4.4.1 to 4.4.3 above.

4.5 Some working principles on checking/reviewing the work of another engineer would include, but not necessarily be limited to the following:

An Accredited Checker or Professional Engineer with Practising Certificate, as the case may be, may undertake a commission to check/review the report, design and drawings of any engineering works of another engineer provided that:

- a) he is invited to carry out the check/review, and has in no way canvassed or touted for it;
- b) he has documentary evidence that the client has informed the First Engineer that the checking/review works is to be carried out by him;
- c) he confines his work to the area of his competence;
- d) he discharges his professional responsibility with integrity and decorum;

- e) he does not maliciously or recklessly injure or attempt to injure, whether directly or indirectly, the professional reputation, prospects or business of the First Engineer;
- f) the subject and scope of checking/review are clearly specified in the terms of reference;
- g) he may include in his review/report observations or suggestions for amendments and/or alternative solutions or designs consistent with his terms of reference and applicable standards, codes, and local by-laws and regulations; and
- h) he shall take full responsibility for integrity and the thoroughness and competence of his report/review and its recommendations.

4.6 Inspection may also refer to checking or reviewing of as-built structures or the surrounding as requested by the owner and recommending remedial design after the building has been occupied and in operation stage. Inspection can only be performed by Professional Engineer with Practising Certificate who has no professional nor financial nor conflict of interest in the building concerned.

The Engineer (Inspector) engaged by the owner is under no obligation to obtain the consent from the First Engineer. However, the Inspector may request information from the First Engineer and the First Engineer should not unreasonably withhold such information that is required to facilitate the study of defective works.

4.7 Apart from the Clients, financial and insurance organisations may require additional checking/reviewing works to safeguard their interest and investment in major infrastructure projects. Such additional checks may take the form of a due diligence check or more thorough independent design checking which would require different category of check for major projects.

5.0 TABULATION OF GUIDELINES - TABLE A

5.1 Issues pertaining to checking/reviewing/inspection are tabulated in Table A for ease of reference.

5.2 The Table separates a project into its three distinct stages of implementations, namely the DESIGN stage, the CONSTRUCTION stage and the OPERATING stage.

5.3 Each issue needing guidelines is itemised in the first column of the Table followed by other columns giving guidelines on it under checking, reviewing and inspection at each of the three different stages of a project.

5.4 Although the Table gives guidelines on each issue in the Table itself, the additional explanation below on each issue in the Table may be useful in amplification:

5.5 Issue (1) Qualification

5.5.1 Checking at Design Stage should be carried out by Accredited Checker or Professional Engineer with Practising Certificate possessing equivalent experience and of appropriate discipline, other than that stipulated under Act 133 (Street, Drainage and Building Act 1974).

5.5.2 For other Check, Review and Inspection, the recommendations in Table A are self-explanatory.

5.6 Issue (2) Responsibilities of Accredited Checker, Reviewer, Inspector

It is of paramount importance that an Engineer is aware that he is automatically assuming liabilities to the extent indicated in the Table when he takes on an appointment as a Checker, Reviewer or Inspector.

5.7 Issue (3) Restrictions on Checker / Reviewer

The guidelines in this section on the question of supplanting are self-explanatory

5.8 Issue (4) Party to appoint Checker/Review/Inspector and to pay relevant fees

The guidelines in this section on appointment are self-explanatory.

5.9 Issue (5) Type of projects to be covered

See 5.12 below

5.10 Issue (6) Scope of work

The scope of work for checking is restricted to those items given in Table A only. The Checker shall not suggest any alternative design.

The scope of work for review should be restricted to the assessment of the design by the First Engineer with respect to those items given in Table A. If, however, the owner specifies in the terms of reference for the Reviewer to suggest alternative, the Reviewer must justify the merits of his alternative design with detailed description of concept, system, analyses, etc. The First Engineer shall be given the opportunity to comment on the Reviewer's suggestion.

5.11 Issue (7) Minimum scope of checking/reviewing/inspecting

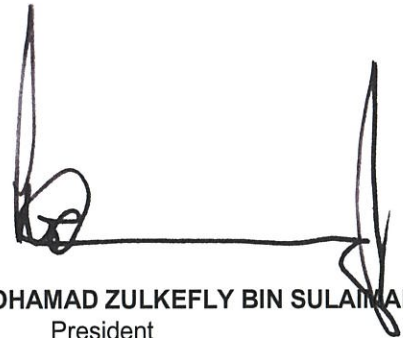
See 5.12 below

5.12 Issues (5), (6) and (7) are consensus in principle arrived at by the Ministry of Housing and Local Government, the Institution of Engineers Malaysia, the Association of Consulting Engineers Malaysia and the Board of Engineers Malaysia as good practice to be followed until superseded by statutory or other mandatory regulations. As a follow-up to the consensus, appropriate amendments to the Street, Drainage and Building Act can be expected.

6.0 Further Circulars/Guidelines

Further Circulars/Guidelines will be issued by the Board when appropriate.

(345th Board Meeting / 1st April 2021)



DATO' Ir. HAJI MOHAMAD ZULKEFLY BIN SULAIMAN
President
Board of Engineers, Malaysia

ATTACHMENTS

- APPENDIX I - DRAINAGE AND STREET BUILDING ACT 1974
Section 70B (2), (3) & (4)
- APPENDIX II - REGISTRATION OF ENGINEERS REGULATIONS 1990
Regulation 31

APPENDIX 1

STREET, DRAINAGE AND BUILDING ACT 1974 (ACT 133)

- 70 Notice of new buildings.
- (2) Any person who intends to erect any building shall cause to be submitted by PSP or SP-
- (c) to the local authority or the relevant statutory authority, a geotechnical report for the erection involving slope with a gradient more than twenty-five degrees and total vertical height more than ten meters which the report shall be verified by the Accredited Checker registered with the Board of Engineers under the Registration of Engineers Act 1967 (Act 138).
- 70B Order to review safety and stability in the course of erection of building.
- (1) Where there are changes to the topography, features to the land or the surrounding area brought about by the erection of building or natural causes which are not in conformity with any approved plan in relation thereto, the local authority may carry out a visual inspection
- (2) Where the local authority reasonably suspects there is a defect, deformation or deterioration in the structure of the building under erection which may likely result in the failure of the building, the local authority may issue to the owner of the building an order to review the safety and stability of -
- (a) the building;
- (b) the foundation of the building; and
- (c) the surroundings on which the erection of building is in progress.
- (3) The review shall be undertaken by a qualified person other than qualified person who prepared and certified the plans, calculations, particulars, documents or reports submitted to the local authority before the commencement of erection of building.
- (4) The report of the review shall be submitted to the local authority within the period specified by the local authority.

REGISTRATION OF ENGINEERS REGULATIONS 1990

31. A registered Engineer or an Engineering consultancy practice shall not directly or indirectly -
- (a) supplant or attempt to supplant another registered Engineer or an Engineering consultancy practice;
 - (b) intervene or attempt to intervene in or in connection with engineering work of any kind which to his knowledge has already been entrusted to another registered Engineer or an Engineering consultancy practice; or
 - (c) take over any work of that other registered Engineer an Engineering consultancy practice acting for the same client unless he has –
 - (i) obtained the consent of that other registered Engineer or an Engineering consultancy practice; or
 - (ii) been formally notified by the client that the services of that other registered Engineer or an Engineering consultancy practice have been terminated in accordance with the provisions of any contract for professional engineering services entered into between that other registered Engineer or an Engineering consultancy practice and the client, provided always that in the case of dispute over non-payment of fees or quantum of any outstanding fees under the contract, the client may request the Board to be the stakeholder.

ISSUE	DESIGN STAGE		CONSTRUCTION STAGE		OPERATION STAGE
	CHECK	REVIEW	CHECK	REVIEW	INSPECT
(1) Qualifications	Accredited Checker or Professional Engineer with Practising Certificate possessing equivalent experience and of appropriate discipline, other than that stipulated under Act 133 (Street, Drainage and Building Act 1974).	Accredited Checker or Professional Engineer with Practising Certificate possessing equivalent experience and of appropriate discipline.	Accredited Checker or Professional Engineer with Practising Certificate possessing equivalent experience and of appropriate discipline.	Accredited Checker or Professional Engineer with Practising Certificate possessing equivalent experience and of appropriate discipline.	Accredited Checker or Professional Engineer with Practising Certificate possessing equivalent experience and of appropriate discipline.
(2) Responsibilities of Accredited Checker/Reviewer/ Inspector	<p>(1) When an engineer is engaged to undertake a checking, reviewing or inspecting role, liabilities are implied. These will be in contract to his client, who may in some cases be the submitting/design engineer (1st Engineer), and in tort to any employer of that client or other third party. It is, therefore, essential that the terms of engagement are clearly set down and agreed to in writing by the contacting parties.</p> <p>(2) For his own interest, the checker/reviewer/inspector should have adequate and reasonable professional indemnity insurance cover on a project or on an on-going basis. The checker/reviewer/inspector, however, may wish to advise his client that he (a) wishes to limit his professional indemnity insurance cover; (b) has limited cover; or (c) has no insurance cover, and that he will only undertake the work if the client (i) accepts the limit of the cover specified, (ii) limits it to the cover available or (iii) undertakes not to make any claim as the case may be. Any such declaration, however, would not afford protection against claims in tort unless the employer provides an indemnity against claims above an agreed limit.</p>				
(3) Restrictions on Checker/Reviewer	A Checker/Reviewer shall not be permitted to take over a project of which he is the Checker/Reviewer or any part thereof unless with the written consent of the First Engineer. Such consent shall not be unreasonably withheld except on the grounds of supplanting. Any dispute therefrom can be referred to BEM for resolution.				Not applicable
(4) Party to appoint Checker/Reviewer/ Inspector and to pay relevant fees	Owner of project or his agent	Owner of project or his agent	Owner of project or his agent	Owner of project or his agent	Owner of project or his agent

TABLE A - TABLE OF GUIDELINES

ISSUE	DESIGN STAGE		CONSTRUCTION STAGE		OPERATION STAGE
	CHECK	REVIEW	CHECK	REVIEW	INSPECT
<p>(5) Type of project to be covered (as proposed by BEM to Ministry of Housing & Local Government; awaiting latter's action to amend Street, Drainage & Building Act)</p>	<p>(1) any building > 5 storeys; (2) any building on/or near hill slope with gradient > 25° and/or height > 15 meters or twice the height of the building whichever is lower (3) retaining wall > 4 meters in height or depth (4) Factory or manufacturing plant for explosives or highly inflammable materials; (5) Any project which, in the opinion of the approving authority or the Owner, requires safety check.</p> <p>(Building shall mean any building intended for human habitation or occasional occupation.)</p>	<p>As required by the owner on his own accord.</p>	<p>The present provisions in Clause 70B of the Street, Drainage and Building Act 1974 cover any building under suspicion of defect.</p>	<p>As required by the owner on his own accord</p>	<p>As required by the Local Authority</p>

ISSUE	DESIGN STAGE		CONSTRUCTION STAGE		OPERATION STAGE
	CHECK	REVIEW	CHECK	REVIEW	INSPECT

<p>(6) Scope of work</p>	<p>Shall include, but not necessarily limited to, the following, where applicable: -</p> <ul style="list-style-type: none"> (1) stability of structure of building in carrying the design loads; (2) suitability and adequacy of foundation system in carrying the design loads; (3) stability of soil and/or rock mass due to: - <ul style="list-style-type: none"> (a) changes made to the ground topography by earthworks including cutting, filling and/or excavation; (b) changes in natural drainage system; and (c) changes in vegetation on site; (4) stability of artificially built soil/rock mass and its retaining system. 	<p>To be specified by the project owner. Can be any or all of the followings: -</p> <ul style="list-style-type: none"> (a) engineering design; (b) engineering system; (c) choice of materials; (d) method of construction; (e) cost optimization; (f) safety check/review; (g) stability check/review; and (h) any other aspect deemed necessary by the owner. 	<p>As specified by the relevant authority or the owner.</p>	<p>As specified by the owner.</p>	<p>Not Applicable</p>
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TABLE A - TABLE OF GUIDELINES

ISSUE	DESIGN STAGE		CONSTRUCTION STAGE		OPERATION STAGE
	CHECK	REVIEW	CHECK	REVIEW	INSPECT
(7) Minimum scope of checking/reviewing/inspecting	Shall include, but not necessarily limited to, the following, where applicable: - (a) design concept; (b) theory and code of practice adopted; (c) adequacy of key elements in terms of load carrying capacity, load transfer system and design, drawing details; (d) factor of safety of geotechnical aspects with respect to the project itself and its adjacent properties; (e) influence of surrounding structure/ engineering features on the safety of the project; (f) any safety features specific to the project; (g) preparation of independent check calculation on key elements; and (h) preparation and submission of check report giving comments and calculation, recommendations, etc.	To be agreed between project owner and review engineer, and incorporated in agreement. If alternative design is asked for by the owner, the Reviewer must justify the merits of his alternative design with detailed description of concept, system, analyses, etc.	As specified by the relevant authority or the owner.	As specified by the owner.	As required by the Local Authority

TABLE A - TABLE OF GUIDELINES