

BOARD OF ENGINEERS MALAYSIA-----
CIRCULAR NO. 1/2003
-----**GUIDELINE FOR
CHECKING / REVIEWING THE WORK OF
ANOTHER ENGINEER****1.0 INTRODUCTION**

- 1.1 The need for checking and checkers have long been recognised; and the Board has been directed by the Government to "menggariskan semula butiran mengenai jenis bangunan atau struktur untuk diperiksa semula, kelayakan, pendaftaran dan tanggungjawab Juruperunding Bebas dan kawalannya."
- 1.2 In pursuant of this directive the Board has now added provisions for registration of Accredited Checkers in the amended Registration of Engineers Act of 2002; and this Circular gives some guidelines on 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; and intervention.
- 1.3 The issues addressed in this circular were presented at a meeting with representatives of the Ministry of Housing and Local Government, Local Authorities, the Institution of Engineers, the Association of Consulting Engineers, the Department of Safety and Health and the Fire Department. The guidelines herein represent the consensus reached and accepted in principle by all present at the meeting as good practice to be followed until superseded by statutory or other mandatory regulations.
- 1.4 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 (see Appendix I), 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. Modifications to Section 70B to cover checking/reviewing at design and other stages of a project can be expected in the near future.
- 1.5 Although these guidelines are intended mainly for the area of civil engineering on matters of safety of buildings, they are applicable, where appropriate, to other disciplines of engineering.
- 1.6 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.

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 an engineer (hereinafter referred to as the First Engineer) that the employer may want to be checked or reviewed. There can be no reason why an employer should not be able to seek a "second opinion" on any of these other matters as well. Nor should there be any reason why the employer should not be able later to follow the recommendations/observations of the checker/reviewer to the extent of having him working with the First Engineer, or having him (or even someone else for that matter) replacing the First Engineer if the employer so desires.

3.0 DIFFERENCE BETWEEN CHECKING, REVIEWING & INSPECTING

3.1 For the purposes of these guidelines 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 of works at the design and/or constructions stage called for by the owner.
- (3) Inspection is generally of completed projects already in operation (or use) called for by the owner or ordered by local authorities.

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 (attached as Appendix II).

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

4.3 Since the area and scope of checks/reviews are wide and extensive, the matters to be checked/reviewed should be carefully specified in the terms of reference of the assignment.

4.4 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.

4.5 In the event that the employer wishes to implement the recommendations/observations of the checker/reviewer, and whether or not the checker/reviewer (or someone else) is engaged to work with or replace the First Engineer, the guiding principles regarding responsibility should also be quite obvious. He who incorporates and endorses the checker's/reviewer's concepts, recommendations, designs, drawings or observations into the works and submits them for approval must be deemed to have satisfied himself of their soundness, and hence bear full responsibility for them. And he who supervises the construction must bear the responsibility of ensuring that the works are properly carried out according to approved plans and specifications. How the professional engineers and the employer work it out among themselves is a matter for them to arrange so long as there is no intervention on the part of the second engineer (who may not necessarily be the checker/reviewer) within the meaning of Regulation 31 of the Registration of Engineers Regulations.

4.6 With all the foregoing in mind, 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, 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 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 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;
- (h) He shall take full responsibility for integrity and the thoroughness and competence of his report/review and its recommendations; and
- (i) Whether or not he is subsequently engaged to work with, or replace the First Engineer, whoever incorporates the observations, concepts, recommendations, designs or drawings in the report/review into the works, and signs and submits them for approval, and/or supervises their construction shall bear the entire responsibility for so doing.

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 should be carried out by Accredited Checkers registered by the Board only.

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

5.6 **Issue (2) Designation**

The designations of 'Reviewer' and 'Inspector' are introduced to reflect duties and functions different from those of a Checker.

5.7 **Issue (3) 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.

5.8 **Issue (4) Restrictions on Checker / Reviewer**

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

5.9 **Issue (5) Party to appoint Checker/Review/Inspector and to pay relevant fees**

The guidelines in this section on appointment are self explanatory.

5.10 **Issue (6) Type of project to be covered**

See 5.13 below

5.11 **Issue (7) 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 of 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.

5.12 **Issue (8) Minimum scope of checking/reviewing/inspecting**

See 5.13 below

5.13 **Issues (6), (7) and (8)** are consensus in principle arrived at by the Ministry of Housing and Local Government, the Institution of Engineers, the Association of Consulting Engineers and the Board 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.

5.14 **Issue (9) Recommended procedure for settlement of disagreement**

This section sets out guidelines for settlement of disagreement between the First Engineer and Checker/Reviewer which, in the nature of things, may well arise, although it is most likely that the views of the latter would be accepted as his recommendations would generally be towards greater safety. This section, however, does not preclude any other procedures mutually agreed among the parties concerned.

6.0 Further Guidelines

Further guidelines will be issued by the Board when appropriate.

Made the 12th April 2003

SGD

Dato' Ir. Ng Chong Yuen
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)

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 Professional Engineer in private practice shall not directly or indirectly -
- (a) supplant or attempt to supplant another Professional Engineer in private 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 Professional Engineer in private practice; or
 - (c) take over any work of that other Professional Engineer in private practice acting for the same client unless he has -
 - (i) obtained the consent of that other Engineer; or
 - (ii) been formally notified by the client that the services of that other Engineer have been terminated in accordance with the provisions of any contract entered into between that other Engineer and the client.

ISSUE	DESIGN STAGE		CONSTRUCTION STAGE		OPERATION STAGE	
	CHECK	REVIEW	CHECK	REVIEW	CHECK	INSPECT
(1) Qualifications	Accredited Checkers of BEM only (BEM is currently taking action to register Accredited Checkers.)	Any Professional Engineer of appropriate discipline, preferably an Accredited Checker or Professional Engineer possessing equivalent experience.	Accredited Checkers of BEM only (BEM is currently taking action to register Accredited Checkers.)	Any Professional Engineer of appropriate discipline, preferably an Accredited Checker or Professional Engineer possessing equivalent experience.	Not Applicable	Any Professional Engineer of appropriate discipline, preferably an Accredited Checker or Professional Engineer possessing equivalent experience.
(2) Designation	Accredited Checker	Reviewer	Accredited Checker	Reviewer	Inspector	Not applicable
(3) 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) In his own interest the checking/reviewing/inspecting engineer should have adequate professional indemnity insurance cover on a project or on an on-going basis. The engineer, 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>					
(4) Restrictions on Checker/Reviewer	A Checker shall not be permitted to take over a project of which he is the Checker or any part thereof unless with the written consent of the 1 st 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	Not applicable
(5) 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	Not applicable	Owner of project or his agent

TABLE A - TABLE OF GUIDELINES

ISSUE	DESIGN STAGE		CONSTRUCTION STAGE		OPERATION STAGE	
	CHECK	REVIEW	CHECK	REVIEW	CHECK	INSPECT
<p>(6) 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, 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>Not applicable</p>	<p>As required by the Local Authority</p>

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

<p>(7) Scope of work</p>	<p>Shall include, but not necessarily limited to, the following, where applicable:-</p> <ol 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 :- <ol 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 following :-</p> <ol style="list-style-type: none"> (a) engineering design; (b) engineering system; (c) choice of materials; (d) method of construction; (e) cost optimisation; (f) safety check; (g) stability check; 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>	<p>Not Applicable</p>
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ISSUE	DESIGN STAGE		CONSTRUCTION STAGE		OPERATION STAGE	
	CHECK	REVIEW	CHECK	REVIEW	CHECK	INSPECT
(8) 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 review 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.	Not Applicable	As required by the Local Authority

TABLE A - TABLE OF GUIDELINES

ISSUE	DESIGN STAGE		CONSTRUCTION STAGE		OPERATION STAGE	
	CHECK	REVIEW	CHECK	REVIEW	CHECK	INSPECT
(9) Recommended procedure for settlement of disagreement	<p><u>In Checking :</u></p> <p>(a) If the 1st Engineer accepts the comments of the Checker, he shall make necessary amendments and take responsibility.</p> <p>(b) If the 1st Engineer disagrees and rejects the comments of the Checker, the owner shall engage a 2nd Checker (acceptable to both the 1st Engineer and the Checker) whose opinion shall be final. If the 1st Engineer accepts the decision of the 2nd Checker, he shall make necessary amendments and take responsibility. Otherwise, he shall resign as consultant to the owner.</p> <p>Responsibilities of Checker and 2nd Checker shall always remain as in (3)</p> <p><u>In Reviewing :</u></p> <p>(i) If the 1st Engineer accept the comments of the Reviewer, he shall make necessary amendments and take responsibility.</p> <p>(ii) If the 1st Engineer disagrees and rejects the comments of the Reviewer, the owner shall decide whether to go along with or dismiss the 1st Engineer. The owner may get a 2nd Engineer to take over as consultant provided the restrictions as in (4) are observed.</p> <p>Responsibilities of Reviewer and any 2nd Reviewer shall always remain as in (3)</p>				Not Applicable	Not Applicable