

**BOARD OF ENGINEERS
MALAYSIA**

CIRCULAR NO. 3/2001

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

1.0 INTRODUCTION

- 1.1 This circular is intended to give some guidelines on the subject of checking/reviewing the work of one engineer by another vis-a-vis the question of statutory requirements; checkers'/reviewers' qualification, role, duty and responsibility; and intervention.
- 1.2 Although these guidelines are mainly for the area of civil engineering on matters of safety of buildings, they are of equal general application to other aspects as well as other disciplines of engineering.
- 1.3 With increasing complexity and magnitude of engineering works, more frequent calls for checking / reviewing can be anticipated not only from local authorities and authorities having jurisdiction to do so but also from owners themselves.
- 1.4 In as far as the question of safety and stability of a building in the course of construction is concerned, a 'review' by a second qualified person is already a statutory requirement 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.
- 1.5 Further requirements under the Street, Drainage and Building Act can be expected. There is also every likelihood of new regulations or directives from other authorities. The Board of Engineers itself is in the course of introducing an Accredited Checkers Regulation setting out the qualifications and duties of checkers.
- 1.6 Meanwhile the purpose of this circular is to give guidelines to what the Board considers good practice to be followed until superceded by statutory or other mandatory regulations.

2.0 RATIONALE FOR CHECKS / REVIEWS

- 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 an engineer's work 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 GENERAL CODE OF CONDUCT IN CHECKING/REVIEWING

- 3.1 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).
- 3.2 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 it has the prior knowledge of the first engineer, Regulation 31 is not deemed to be contravened.
- 3.3 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.
- 3.4 The exact line separating the responsibilities of the checker/reviewer vis-a-vis that of the engineer currently on the project (the 1st 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.
- 3.5 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 the checker's/reviewer's concepts, recommendations, designs, drawings or observations into the works and signs 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.
- 3.6 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:

A Professional Engineer 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 1st Engineer that the checking/review is to be carried out,
- (c) He discharges his professional responsibility with integrity and decorum,
- (d) He does not maliciously or recklessly injure or attempt to injure, whether directly or indirectly, the professional reputation, prospects or business of another engineer,
- (e) The subject and scope of the review are clearly specified in the terms of reference,
- (f) 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,
- (g) He shall take full responsibility for integrity and the thoroughness and competence of his report/review and its recommendations, and
- (h) 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.

4.0 DIFFERENCE BETWEEN CHECKING, REVIEWING & INSPECTING

4.1 For the purposes of these guidelines:

- (1) Checking is generally of 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 construction 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.

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 implementation, 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 As the Table is designed to give 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 There is consensus among the Ministry of Housing and Local government, The Institution of Engineers and The Association of Consulting Engineers that 'Checkers' should be 'accredited' and that the Board is the most appropriate authority to do this. While the Board is currently seeking to do this by introducing an Accredited Checkers Regulation under the Engineers Act, the following are tentative, guidelines on requisite qualifications of checker/reviewer/ inspector, namely that:

He is a professional engineer registered under the Engineer's Act in the civil, structural or geotechnical engineering discipline:

- (1) with practical experience in the design or construction of buildings in Malaysia at a professional level for a period of not less than 10 years after such registration as a professional engineer,
- (2) is deserving of such distinction, by virtue of his ability, standing in the professional or special knowledge or practical experience in civil, structural or geotechnical engineering.

5.6 **Issue (2) Designation**

5.6.1 The designations in the Table are tentative names until the Board's Accredited Checkers Regulation come into force, suitably amended if necessary to accommodate these designations.

5.6.2 The designation of 'Inspector' is introduced not only to reflect a duty and function different from that of a Checker or Reviewer, but also as an apt description of the nature of the function and duty at the operation stage of a project.

5.7 **Issue (3) Responsibilities of Accredited Checker, Reviewer, Inspector**

5.7.1 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 appointment as a Checker, Reviewer or Inspector.

5.8 **Issue (4) Proposed procedure for settlement of disagreement**

5.8.1 This section sets out guidelines for settlement of disagreement between the 1st 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.

5.9 **Issue (5) Restrictions on Checker / Reviewer**

ISSUE	DL. STAGE		CONSTR. STAGE		OPERATION STAGE	
	CHECK	REVIEW	CHECK	REVIEW	CHECK	REVIEW
(1) Qualification	Accredited Checkers of BEM (BEM is currently taking action to register Accredited Checkers. Until the BEM register is set up, it is recommended that Checker should have a minimum of ten (10) years experience after Professional Engineer registration in the relevant field of the work being checked.)	Any Professional Engineer of appropriate discipline, preferably an Accredited Checker or Professional Engineer possessing equivalent experience.	Accredited Checkers of BEM (BEM is currently taking action to register Accredited Checkers. Until the BEM register is set up, it is recommended that Checker should have a minimum of ten (10) years experience after Professional Engineer registration in the relevant field of the work being checked.)	Any Professional Engineer of appropriate discipline, preferably an Accredited Checker or Professional Engineer possessing equivalent experience.	Any Professional Engineer of appropriate discipline, preferably an Accredited Checker or Professional Engineer possessing equivalent experience.	Not applicable
(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 or reviewing 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 in writing by the contracting parties.</p> <p>(2) In his own interest the checking/reviewing 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 accepts the limit of the cover specified, limits it to the cover available or 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 provided an indemnity against claims above an agreed limit.</p>					

ISSUE	D. STAGE		CONSTRUCTION STAGE		OPERATION STAGE	
	CHECK	REVIEW	CHECK	REVIEW	CHECK	REVIEW

<p>(4) Proposed procedure for settlement of disagreement</p>	<p>In Checking :</p> <p>(a) If 1st Engineer accepts comments of Checker, he shall make necessary amendments and take responsibility.</p> <p>(b) If 1st Engineer disagrees and rejects comments of Checker, the owner shall engage a 2nd Checker (acceptable to both 1st Engineer and Checker) whose opinion shall be final. If 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>In Reviewing :</p> <p>(i) If 1st Engineer accepts comments of Reviewer, he shall make necessary amendments and take responsibility.</p> <p>(ii) If 1st Engineer disagrees and rejects comments of 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 (5) are observed.</p> <p>Responsibilities of Reviewer and any 2nd Reviewer shall always remain as in (3)</p>					
<p>(5) Restrictions on Checkers/Reviewer</p>	<p>Checker shall not be permitted to take over project 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, the dispute over which can be referred to BEM for resolution.</p>					

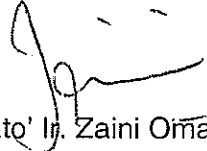
ISSUE	DESIGN STAGE		CONSTRUCTION STAGE		OPERATION STAGE	
	CHECK	REVIEW	CHECK	REVIEW	CHECK	REVIEW
(6) Scope of checking/reviewing	Shall include, but not necessarily limited to, the following :- (1) stability of structure of building in carrying intended and predicted loads; (2) suitability and adequacy of foundation system in carrying the design loads; (3) stability of soil and/or rock mass due to :- (a) changes made to the ground topography by earth/rock 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.	To be specified by the project owner. Can be any or all of the following :- (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.	As specified by the relevant authority or the owner.	As specified by the owner.	Not Applicable	Not Applicable
(7) Proposed type of project to be covered (Scheduled Projects)	(1) all buildings > 5 storeys; (2) all buildings on hill slope with gradient > 27° and height > 15 meter (3) retaining walls or basements > 4 meters in height; (4) Factories or manufacturing plants for explosives or highly inflammable materials; (5) any project which, in the opinion of the approving authority, requires safety check. (Building shall mean any building intended for human habitation or occasional occupation.)	As required by the owner on his own accord.	The present provisions in Clause 70B of the Street, Drainage and Building Act 1974 seem adequate. They cover any building under suspicion.	As required by the owner on his own accord.	As required by the local authority	Not applicable

TABLE A – TABLE OF GUIDELINES

ISSUE	DESIGN STAGE		CONSTRUCTION STAGE		OPERATION STAGE	
	CHECK	REVIEW	CHECK	REVIEW	CHECK	REVIEW
(8) Minimum scope of checking/reviewing	(a) design concept; theory and code of practice adopted; (b) adequacy of key elements in terms of load carrying capacity, load transfer system and design drawing details; (c) factor of safety of geotechnical aspects with respect to the project itself and its surrounding properties; (d) influence of surrounding structure/engineering features on the safety of the project; (e) any safety features specific to the project; (f) prepare independent check calculation on key elements; and (g) prepare and submit review report giving comments and calculation, recommendations, etc.	To be agreed between project owner and review engineer, and incorporated in agreement.	As specified by the relevant authority or the owner.	As specified by the owner.	Not Applicable	Not Applicable
(9) Professional fee for Checker/Reviewer/Inspector	Either Alternative I : on time basis; or Alternative II : 30% of first consultant' fee for the relevant stage.	Either Alternative I : on time basis; or Alternative II : on agreed percentage of first engineer's fee.	Either Alternative I : On time basis; or Alternative II : On time basis converted to lump sum	Either Alternative I : On time basis; or Alternative II : On time basis converted to lump sum	Either Alternative I : On time basis; or Alternative II : On time basis converted to lump sum	Not applicable.

- 5.9.1 The guidelines in this section on the question of supplanting is self explanatory.
- 5.10 **Issue (6) Scope of checking/reviewing**
- 5.11 **Issue (7) Proposed type of project to be covered (Scheduled Projects)**
- 5.12 **Issue (8) Minimum details of checking/reviewing**
- 5.13 Issues (6), (7) and (8) are currently of immediate concern to the Ministry of Housing and Local Government, the Institution of Engineers, the Association of Consulting Engineers and the Board itself. While a consensus is in the process of being sought, the guidelines in the Table are what the Board considers good practice to be followed until superceded by statutory or other mandatory regulations.
- 5.14 **Issue (9) Proposed fee for Checker/Reviewer/Inspector**
- 5.14.1 The guidelines in this section on fees is self explanatory.

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President
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ATTACHMENTS

- APPENDIX I - STREET DRAINAGE AND 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.

APPENDIX II

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.