

GUIDELINES ON STRUCTURAL SUBMISSIONS THROUGH ELECTRONIC SUBMISSION SYSTEM

Version - Feb 2003

1 INTRODUCTION

1.1 Purpose of this Document

This document outlines the requirements for acceptance of **structural submissions** through the CORENET e-Submission System (e-SS). These guidelines will assist the Qualified Person (QP) and the Accredited Checker (AC) in their submissions electronically to Building & Construction Authority (BCA) for approval.

2 GENERAL REQUIREMENTS

2.1 CORENET Electronic Submission Guidelines

Any person who intends to send structural submissions through the e-SS must first be a registered user of the system. He shall comply with the CORENET Electronic Submission Guidelines in his electronic submissions to BCA. A copy of the guidelines can be downloaded from the website at <http://www.corenet.gov.sg>.

2.2 Digital Signature

All electronic records of application forms, structural plans, design calculations and certificates submitted shall be authenticated by digital signature if the Regulations expressly require the endorsement of the QP or the AC. Only a digital signature supported by a recognised certificate issued by Netrust Pte Ltd is acceptable. Each file in the submission must be separately signed by the QP and/or the AC, whichever is applicable.

2.3 Submission Forms

The QP shall use the appropriate electronic forms provided by the e-SS system for submission of applications. The endorsement by the QP or the AC on structural plans and design calculations as stipulated in Regulation 9(3) shall also be provided on e-SS's standard endorsement forms (form BE-ENSPQP or BE-ENSPAC).

2.4 Manner of Delivery of Electronic Records

The QP can choose to submit the electronic files of structural plans and calculations in CD-Rs at the BCA counter instead of electronically through the e-SS. However, the application forms and standard endorsement forms must

be submitted through the e-SS. The CD-Rs shall be provided with a label indicating the Project Reference Number of the project, the name and signature of the QP and/or the AC, whichever is applicable, and the date of submission. The standard format for labelling the CD-Rs is in *Schedule 1 of Annex A*. Currently, it is not mandatory for structural design calculations to be submitted electronically, they can be submitted in hard copies as usual.

2.5 Programme Codes

Electronic calculations shall not contain computer instructions, such as computer viruses, macros and scripts or fields with values that may change depending on the time when the electronic files are opened.

3 STRUCTURAL PLANS

3.1 Requirements

3.1.1 Every sheet of the structural plans shall bear the name and professional engineer registration number of the qualified person, and the name and AC or AC Organisation registration number of the Accredited Checker, if applicable. The drawings shall be digitally signed by the qualified person and the AC, if applicable.

3.1.2 The first and last page of the structural plans shall bear standard certifications of the QP for structural works and the AC (if applicable) as stipulated in the Building Control Regulations (BCR).

3.1.3 At the top right hand corner of every sheet of the plans shall bear the standard approval stamp and project reference number as in *Schedule 2 of Annex A*.

3.1.4 The submission must be accompanied by a set of building plans.

3.1.5 The submission for piling works must be accompanied by a set of the structural floor layout plans. Every sheet of the floor layout plans shall bear the stamp: "For Reference Only". However these plans submitted for reference need not be digitally signed.

3.1.6 Light coloured lines should not be used for structural drawings, as they cannot be captured clearly and legibly in microfilms.

3.1.7 For any building works consisting of repairs, alterations or additions to an existing building, the QP shall provide the endorsement in accordance with Regulation 5(1)(a) on e-SS's standard endorsement form (BE-ENSPPE). The certification shall also be provided on the first and last sheet of the structural plans.

3.1.8 The QP shall print out a set of the approved plans to be kept at the site in accordance with Regulation 22 (d). Every sheet of the approved plans kept at site shall bear the QP's stamp and signature.

3.2 Preparing CAD Files for Submission

3.2.1 The following formats for electronic records of CAD drawings are acceptable to BCA:

- (i) Autocad Cad Format (.dwg),
- (ii) Microstation Cad Format (.dgn), and
- (iii) Adobe Portable Document Format (pdf) (

All plans in whatever format shall be legible or capable of being displayed in a clear and intelligible manner on a computer screen or in printed hard copies).

3.2.2 A listing of structural drawings submitted for approval and for information shall be provided for each submission. The listing shall include a brief description of the types of structural elements in each drawing. An example of the details to be shown in the drawing list document is shown below:

Project Title: XXX

BP No: Axxx-xxx-2003-STxx

Drawing List

S/No	Drawing Title	File Name	Remarks
1	GENERAL NOTES - (1)	RWVRC_S---NT--B-01L.pdf	For approval
2	PLAN & DETAILS OF PILING & PILECAP	RWVRC_S-PL01----01S.pdf	For approval
3	1ST & 2ND STOREY PLANS	RWVRC_S-FP01--A-01S.pdf	For approval
4	1ST STOREY BEAM DETAILS - (1)	RWVRC_S-BM01----01S.pdf	For approval
5	UNDERPASS PLAN	RWVRC_S-FPB1--A-01H.pdf	For approval
6	ARCHITECTURAL PLAN	RWVRC_S-MSDT--A-01S.pdf	For reference

Note: For filename, do not use curve brackets: (), use square brackets : [], otherwise you may encounter errors in submission.

4 DESIGN CALCULATIONS

4.1 Requirements for the Qualified Person

4.1.1 The qualified person must digitally sign every file of the design calculations.

4.1.2 The first and last page of the design calculations shall bear standard certifications of the qualified person as stipulated in the BCR.

4.1.3 The design calculation shall contain: -

- (a) an Index Sheet;
- (b) a Design Information Sheet;
- (c) a Structural Summary Sheet;
- (d) a Sheet on Grouping of Structural Elements;
- (e) a sheet on Structural Analysis and Design of Structural Elements;
- (f) an index file of calculation files submitted for approval.

4.1.4 The design calculation sheets shall be numbered serially in each file. The first page shall be numbered as 1 of n and the last page n of n.

4.1.5 Where applicable, the design calculation shall be accompanied by a copy of the soil investigation report. This report may be in the form of scanned images or other document files in acceptable format and it shall be digitally signed.

4.2 Requirements for the Accredited Checker

4.2.1 The first and last pages of the design calculations prepared by the Qualified Person for Structural Works shall bear the name and AC or AC Organisation registration number and standard certification of the Accredited Checker and digitally signed by him.

4.2.2 The AC's Evaluation Report shall be included in the AC's design calculations and digitally signed.

4.3 Preparing Electronic Documents for Submission

4.3.1 The following formats for electronic records of design calculations are acceptable to BCA:

- (i) Plain Text (.txt) files,
- (ii) Microsoft Rich Text Format(.rtf) files,
- (iii) Microsoft Word Format (doc), and
- (iv) Adobe Portable Document Format (.pdf).

Design calculations produced manually and scanned into electronic records shall be in Adobe Portable Document Format (.pdf).

4.3.2 A maximum of eight alphanumeric characters is allowed for the filename and the filename shall follow the following format:

Author	File ID	Version

- (i) Author - identifies whether the calculations are from accredited checker or professional engineer. Two characters, AC or PE are used for this field.
- (ii) File ID – to be in running order from 1. Maximum five numeric characters to be used for this field.

- (iii) Version - represents major revisions of the design calculations. One alphabet to be used for each revision.

4.3.3 Electronic calculations can be submitted in a single file or in multiple files. A content page is required for submission in a single file to facilitate examination of calculations. For submission in multiple files, an index of calculation files shall be provided in the first file or the index file. A summary table shall be included in the index file listing the types of structural elements contain in each file. An example for the summary table to be included in the index file is shown below:

Table 1: Index of Calculation Files

S/No	File Name	Description
1	PE00001.doc	Index File
2	PE00002.doc	Soil Report
3	PE00003.doc	Footing Design
4	PE00003a.doc	Amendment to Footing Design
5	PE00004.doc	Column/Wall Loading And Design
6	PE00005.doc	Roof Beam RB1

The first file or index file shall contain the project title, BP number, design information sheet, structural summary sheet, grouping of structural elements and AC's evaluation report, if applicable. Standard certifications by the QP on the first and last page of design calculations shall be provided in the first file or index file.

5 JOINT APPLICATION FOR PERMIT TO CARRY OUT BUILDING WORKS

5.1 The qualified person shall require all parties to sign the BCA-BE-PERMIT.doc (electronic version of form BEV/B1) forms manually. The QP would then scan the hardcopy and **digitally sign the electronic forms**. The digitally signed document is to be submitted through the e-SS as an attached file. The manually signed forms shall also be sent to BCA for verification purposes. The e-SS submission number shall be indicated on the cover letter of the submission for easy identification purpose.

5.2 The forms BCA-BE-PERMIT_A1.doc (BEV/B1_Appendix 1) and BCA-BE-PERMIT_A2.doc (BEV/B1_Appendix 2) shall be **digitally signed by the QP** and submitted through the e-SS as an attachment.

5.3 Permit applications shall be submitted separately using the online submission module instead of together with the plan approval.

5.4 The following formats for scanned copy of permit application forms are acceptable to BCA:

- (i) Tagged Image File Format (TIF),
- (ii) JPEG File Interchange Format (.JPG), and
- (iii) Adobe Portable Document Format (.pdf).

The size of scanned image shall be at least A4 size so that the application details are legible for registration of the permit application. Applicant shall refrain from scan two pages of the application form into a single A4 size image.

6 AS-BUILT SUBMISSIONS

6.1 If the builder does not have the Netrust Card, the e-form of the Builder Certificate, BE-BRCTBW shall be printed out and signed manually. The signed copy shall be scanned and submitted electronically through the e-SS together with the other C forms. The manually signed copy of Builder Certificate shall be sent to BCA for verification purposes. The e-SS submission number shall be indicated on the cover letter of the submission for easy identification purpose.

Note: For clarifications on these guidelines, please email to : thung_sek_kwang@bca.gov.sg

SCHEDULE 1

STANDARD FORMAT FOR LABEL OF CD-R



