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To: All Accredited Checkers

Dear Sir

ACCREDITED CHECKER'S EVALUATION REPORT

I refer to the briefing and feedback session to all accredited checkers (ACs) held on 12 Mar 2003.

2 We would like to thank all the ACs for their invaluable feedback and suggestions. The revised AC's Checklist, Form BEV/A3, is enclosed, and the checklist can also be downloaded from BCA's website at http://www.bca.gov.sg.

3 We wish to inform you that with effect from **1 May 2003**, all ACs will be required to submit a copy of the AC's Checklist together with the AC evaluation report. We hope that the AC's Checklist will serve as a useful tool for you to carry out your duties and responsibilities as an AC more effectively. .

Yours faithfully

ANDRIS LEONG (MDM)
MANAGER
BUILDING ENGINEERING DIVISION
for COMMISSIONER OF BUILDING CONTROL

AC's CHECKLIST IN DESIGN EVALUATION REPORT

Project Title _____

_____

Project Reference No: _____ ST _____

Name of AC: _____

PART A:- OVERALL DESIGN REVIEW TASKS

For the design check on the building or structures in this submission, I confirm that I have evaluated, analyzed and reviewed the foundation and structural design with a view to determining their structural adequacy. Besides other tasks, I have specifically performed the following tasks and has found that the building or structures designed are structurally adequate and safe:-

(I) Codes Of Practice

-used appropriate codes for the design check

(II) Design Loadings

-checked that loadings used in design are appropriate and adequate

-used appropriate load combinations to check the design

(III) Structural Analysis

-used appropriate engineering information and models in the analysis

-ascertained the design assumptions and limitations of the computer programs used

(IV) Stability & Robustness

-determined the stability and robustness of the structural system, including considerations for lateral loads, lateral ties, bracings and lateral transfer of loads

(V) All Key Structural Elements

-analysed and checked the design of all key structural elements and the foundation system

(VI) Structural Drawings

-checked that the detailings in drawings of all key structural elements are adequate and consistent with the intentions in design calculations

(VII) Other Aspects in Design

-determined the adequacy of other aspects of design which are peculiar to the building to be constructed or affected by the building works and which are essential to the structural integrity of the building

Part B: - FOUNDATION & STRUCTURAL ELEMENTS

For the following foundation and structural elements or structures, besides other engineering considerations made by me, I have specifically carried out all the tasks as described in the table below and confirmed that their designs are structurally adequate and safe: -

(note * : delete the item that is not applicable)

(I) Foundation

Foundation *	Specific Design Tasks Carried Out *
Foundation loads	• Appropriate values of dead, live ,wind and notional loads have been used
	• Column loads have been appropriately computed
	• Effects of wind and notional loads on the building or structure have been checked

Piles	• Piles have been designed for skin friction and end bearing capacities
	• Piles have been designed for lateral loads and bending moment
	• Pile joints have been designed for
	• Piles have been designed for uplift
	• Socketings have been designed for piles with short penetration depths
	• Piles have been designed for negative skin friction
Raft	• Appropriate allowable bearing capacity of soil has been assumed in design
	• Appropriate modulus of sub-grade reaction of the soil has been assumed in design
	• Appropriate model used for structural analysis of the raft
	• The raft has been designed to resist punching shear from columns
	• The building or structure has been designed to cater for probable differential and total settlement.

(II) Specific Structural Elements

Structural Elements *	**Specific Design tasks carried out**	**Locations in Building** (specify the storey levels or reference grids)
Slender Columns	• Effective height has been computed according to code	
	• Bending moment about minor axis has been designed for	
	• Additional bending moment due to slenderness has been designed for	
	• Biaxial bending moment has been designed for	

Columns supporting transfer beams	• Designed for bending moment due to frame action	
Columns supporting long span beams	• Designed for bending moment due to frame action	
Columns supporting cantilever beams	• Designed for bending moment due to frame action	
Columns in a two column frame system	• Designed for horizontal load and moment acting on columns due to arched or pitched roof • Designed for bending moment at the column base • Designed for bending moment due to frame action	
Cantilever beams	• Cantilever support has been designed to resist bending moment and shear • Designed for lateral stability of beam • Designed to meet allowable span depth ratio	
Long span beams	• Torsional rigidity of beam has been checked. • Designed for lateral restraint of beams • Designed for support and member connections • Designed to meet allowable span depth ratio	
Transfer beams	• Designed for torsional capacity • Designed for shear capacity • Designed for all relevant upper floor loads on the beam • Designed for lateral restraint of beam	

Flat slabs/plates	• Appropriate model used for analysis	
	• Span/depth ratio of slab has been checked	
	• Adequacy of top and bottom reinforcement throughout slab panel have been checked	
	• Designed to resist punching shear from columns	
	• Openings in slabs, especially near columns, have been designed for	
	• Torsional rigidity at slab edges has been checked	
	• Effects of construction loads have been checked	
Cantilevered structures with tie-backs	• Designed tie-back anchorage to resist pull-out	
	• Designed for lateral stability of the structure	
	• Designed for the durability of the tie-backs	
	• Designed for redundancy to resist total collapse	

(III) Earth Retaining Structures

Earth retaining structures	• Structure has been designed to resist overturning , sliding and bearing capacity failure
	• Structure has been designed to resist slip circle failure
	• Structure has been designed for water pressure acting on it
	• Adequate surcharge load has been taken into account in design
	• Embedment into ground for stability has been designed for in cantilevered structures

(IV) Building / Structural Types

Building types / Structures *	Specific Design Tasks Carried Out
Building of 30 storeys or higher	• Designed for wind loads
	• Designed for notional loads
	• Designed corewalls and columns to resist lateral loads due to wind and notional loads in both directions
	• Provided adequate internal and peripheral ties at floor levels
	• Designed for capacities to resist base overturning moment and base shear
	• Designed for building sway (p-delta effect)
	• Designed to limit overall lateral deflection of building
	• Designed to limit inter-storey drift of building
	• Columns and walls have been checked for resistance to dynamic effects due to wind on the building
Buildings with structural steel elements	• Designed for bolted and welded connections of supports and joints
	• Designed for bracings and longitudinal ties for overall stability
	• Designed for wind load on the building/structure
	• Designed for lateral stability and torsional rigidity of structural elements and trusses
	• Support conditions assumed in design have been checked against details provided
Buildings with precast concrete elements	• All joint connections between precast members and precast to in-situ concrete members have been designed for
	• Loading conditions on precast members during erection or construction stage have been considered
	• Sufficient rigidity in the structural frame has been provided for to resist lateral loads
	• Adequate internal & peripheral ties have been provided in floors
	• All interface shear stresses have been checked
	• Detailing of precast elements and structural joints have been checked

Buildings with prestressed concrete structures	• Maximum prestress force and prestress losses for prestressed elements have been computed according to code requirements
	• Stresses for elements have been checked at transfer and service stages
	• Shear capacity has been designed for in prestressed elements
	• For transfer beams and long span beams, consideration of stage stressing has been made in design
	• End block design has been checked
	• Details of prestressed elements, tendon profile, etc. have been checked

Part C: - OTHER COMMENTS BY AC

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Signature & stamp of AC: _____ Date: _____