

# Irish Building Control Institute

## Conference 2011

### The Role of the Engineer in Building Control, Registration and Certification



B. Mulligan BE. MSc. CEng. FIEI. MIStructE.



# Overview of Presentation

1. Building Control Legislation
2. Engineers Interaction with Building Control
3. Compliance with Building Regulations
4. Chartered Engineer - Registration
5. Opinions on Compliance

# Disclaimer

- This Presentation has been prepared by Brendan Mulligan
- It does not represent or purport to represent in any way the policy or positions of TOBIN nor any other body of which I am a member

# Legislation

- Building Control Act 1990
- Building Control Regulations 199(1)7 - 2009
- **Building Regulations 199(2)7- 2010**
- Building Control Act 2007
- Multi-Unit Development (MUD) Act 2011

# Building Regulations

- Regulations are Short Statements
- State Broad Requirements (Generally)
- This Presentation will focus on one
  - Regulation A – Structure
- Standard of Requirements
  - Substantially, Reasonably...?
  - Fitness for Purpose?!

# Part A Structure

## Loading

A1 (1) A building shall be **designed** and **constructed**, with due regard to the theory and practice of structural engineering, so as **to ensure** that the combined dead, imposed and wind loads are sustained and transmitted to the ground -

(a) safely, and

(b) without causing such deflection or deformation of any part of the building, or such movement of the ground, **as will** impair the stability of any part of another building.

# Part A - Structure

(2) In assessing whether a building complies with sub-paragraph (1), regard shall be had to the imposed loads and wind loads to which it is **likely** to be subjected in the ordinary course of its use *for the purpose for which it is intended.*

# Part A - Structure

## Ground movement

A2 A building shall be ***designed*** and ***constructed***, with due regard to the theory and practice of structural engineering, so as **to ensure** that movements of the subsoil caused by subsidence, swelling, shrinkage or freezing **will not** impair the stability of any part of the building.



# Part A - Structure

## Disproportionate Collapse

A3 (1) A multi-storey building shall be ***designed*** and ***constructed***, with due regard to the theory and practice of structural engineering, so as **to ensure** that in the event of an accident the structure **will not** be damaged to an extent disproportionate to the cause of the damage.

# Part A - Structure

(2) For the purposes of sub-paragraph (1), where a building is rendered structurally discontinuous by a vertical joint, the building on each side of the joint may be treated as a separate building whether or not such joint passes through the substructure.

# Compliance with Regulations

- “Simple” Statements
- Other “Indications” of Compliance
- Technical Guidance Documents
- British/Irish Standards
  - Structural BS and IS withdrawn in March 2010
- Eurocodes - 10 Codes (58 Parts)
  - IS EN 1990 to IS EN 1999
  - Include National Annexes

# Part H – Drainage & Wastewater Disposal

- H2: A wastewater treatment system shall be so ***designed, sited and constructed*** that:— (a) it is not prejudicial to the health of any person, (b) it does not cause a risk to public health or the environment, (c) it prevents unauthorised access but allows adequate means of access for emptying and maintenance, (d) it will function to a sufficient standard for the protection of health in the event of a system failure, (e) it has adequate capacity, (f) it is impermeable to liquids, and (g) it is adequately ventilated.

# Technical Guidance Documents

- *The materials, methods of construction, standards and other specifications (including technical specifications) which are referred to in this document are those which are likely to be suitable for the purposes of the Regulations.*
- *Where works are carried out in accordance with the guidance in this Document, this will, prima facie, indicate compliance with ...the Building Regulations.*

# Multi-Unit Development Act 2011

- 3.1(c)...a certificate from a suitably qualified person that the relevant parts of the multi-unit development have been constructed in compliance with the fire safety certificate concerned issued pursuant to the Building Control Acts 1990 and 2007 has been furnished
- Schedule 3
  - Confirmation that the development has been completed...in accordance with the Building Control Acts 1990 and 2007 (inter alia)

# Multi-Unit Development Act 2011

- 3.8 ...“***suitably qualified person***” means a person who is a member of a class or classes of persons prescribed by the Minister for the purposes of this section...
- 3.9 ...the Minister under this section may prescribe a class or classes of persons who...are ***suitably qualified***.

# Engineer's Input to Construction

- Engineering Design – Civil, Structural, Mechanical, Electrical,...
- Parts A, B, C, D,.....M
- Site Visits – Monitoring
- Housing – Very Limited:
  - Foundations, Special Structures (Outside TGD)
- Municipal/Commercial/Industrial - Significant
  - Foundations , Water/Waste/Surface, Structures, Heating, Ventilation, Sanitary, Electrical, Lifts...



# Scope of Control

- **Plan – Design – Implement – “*Certify?*”**
- Does Full Certification guarantee proper design and implementation?
- Traditional View – “*What Can Go Wrong?*”
- Traditional Design – Robust (Materials etc.)
- Modern Designs – Innovative + Competitive
  - Less ‘Tolerance’ for Poor Control
- New Pressures – e.g. Safety Focus

# Powers of the Engineer

- Limitations of brief/scope/payment
- Specialists within Design
  - Performance Design/Specification
  - Manufactured/Proprietary/Licensed Products
  - Specialist (or Proprietary) Knowledge
  - Lack of Visibility – Where Test/Inspection Not Feasible
  - Dependence on Product Certification
- Supervision – Power to Instruct/Intervene?
- Monitoring – Periodic Visual Inspections
- Devil is in the Detail!

# Illustrative Areas of Concern

- Pyrites: Understanding - Control – Testing
- Soft Ground: Understanding – Investigation
- Stability/Robustness: Analysis – Integration
- Climate Change – This Winter! Next Snow Load?
- Flooding – Irish ‘Tsunami’ (Inland/Coastal)
- Effluent Treatment – Site Suitability/Maintenance
- Fire Resistance – Is Design Fully Implemented?
- New Engineer/‘Client’ Relationships
- Completing “Problem” Developments

# Compliance v. Certification

- Strict Negligence – Whose Responsibility?
- Exercise Reasonable Skill and Care
- Can an Engineer give 100% Guarantee
- “Fitness for Purpose”! – (i) Design (ii) Construction
- “Certify” – Statement of Absolute Accuracy
- “Unqualified” - Solemn Declaration (Witnessed)
- Do I Know it to be True?
- Others will Depend on it being True
- Obligation Not to Mislead

# Opinion & Compliance

- What can be provided?
- An Opinion based on knowledge (reasonable), accepted practice (standards), skill and care (reasonable)
- Tolerance and Judgement
- Focus on Compliance Objective?
  - Design
  - Construction

# Design Compliance Objective

- Fire Safety Certificate:  
*...if constructed in accordance with the plans, calculations, specifications and particulars submitted, would comply...*
- Model for Compliance “Certification”?
- Issued by Building Control Authority
- Planning Authorities used to issue “Certificates of Compliance” with Planning Permission

# Chartered Engineer Legislation

- Original Charter 1877
  - Institution of Civil Engineers of Ireland
- 1969 (Charter Amendment Act)
- “Institution of Engineers of Ireland”
- Chartered Members of IEI – (C.Eng. MIEI)
- Persons Designated on Standard “Opinions of Compliance” (ACEI/IEI)

# “Registered Professional”

- Building Control Act 2007 used to define “Architect”; “Building Surveyor”; “Quantity Surveyor” (Registration Bodies: RIAI & SCS)
- Not connected to Building Control
  - *“For the avoidance of doubt, the definition of “registered professional” in subsection (1) does not have the effect of requiring any class of person falling within that definition to be the subject of any designation or other specification in regulations under the Act of 1990 of a person or a class of person for any purpose of those regulations”*



# “Registered Professional”

- Minister for EHLG:
  - “would not prejudice the definition of a competent person for the purposes of obtaining a certification of compliance in the context of any future regulations made under the 1990 Act”

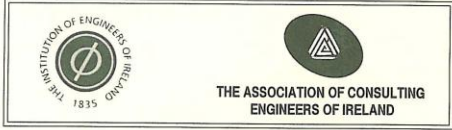
# Opinions on Compliance

- ACEI/Engineers Ireland Forms
- Agreed with The Law Society
- BR SE 9101 – Structural
- BR ME 2000 – Mechanical & Electrical
- Design Compliance Opinions

# Opinions on Compliance

- Original Form now with hologram
- Agreed with the Law Society
- Systematic/Structured
- Scope Defined

June 2005 Form: BR: ME Opinion on Compliance



**BUILDING SERVICES CHARTERED ENGINEER'S OPINION ON COMPLIANCE  
WITH THE BUILDING REGULATIONS**

*(Form for use where a Chartered Engineer is appointed under the Conditions of Engagement published by the Institution of Engineers of Ireland and the Association of Consulting Engineers of Ireland for engineering services and associated equipment for buildings and other structures. This Form has been agreed with the Law Society)*

To 1: .....

Project 2: .....

Date of commencement of Construction of the Works (approx.): .....

Date of completion of Construction of the Works (approx.): .....

Client 3: .....

Architect 3: .....

Main Contractor 3: .....

Sub Contractor/s 3: .....

**1. DESCRIPTION OF THE PROJECT 4**

.....

.....

**2. PROFESSIONAL SERVICES PROVIDED**

**2.1** The professional services provided by us have been provided in accordance with the "Conditions of Engagement of Consulting Engineers, published by the Institution of Engineers of Ireland and the Association of Consulting Engineers of Ireland 5,....., for the Appointment of Consulting Engineers for engineering services and associated equipment for buildings and other structures", hereinafter referred to as the Agreement, subject to any variations described in clauses 2.2 below.

**2.2** We provided the following services:

The services as defined in clause 2 of the Agreement 6

.....

.....

# Elements of Opinion

- Scope of Opinion – Engineer’s Brief
- Project Description
- Services Provided – Normal or Specified
- Specialist Designers Identified
- Proprietary Products – Designer Responsible
- Construction – Monitoring/Inspections
- Integration/Coordination of Specialist Designers
- Evidence for Title Purposes
- Chartered Engineer (C.Eng. Registration No.)

# Opinions on Compliance

- Limited to Design Brief and Scope of Inspection
- Competence of Designer
- Experience Appropriate to the Works
- Construction Requires Separate Compliance
- Is Self-Inspection of Construction Working?
- HomeBond for Residential Developments
- Scope for an Equivalent for Non-Residential?

# Summary

- Are Compliance and Certification the same?
- Can Inspection ensure Compliance?
- Are Responsibilities Clearly Defined?
- Are Responsibilities Based on Control?
- Are Responsibilities Based on Competence?
- Dependence on Responsible Professionals
- Dependence on Responsible Contractors
- Self-“Certification” by All Responsible Parties
- Mandatory “ Certification