

CONTENTS

1. GENERAL CONCEPTS

General

1.1 Scope of Applications

1.2 Fundamental Concept

1.2.1 Structural performance

1.2.2 Structural analysis

1.2.3 Proper design and construction

1.3 Definitions

2. LOADS AND LOAD COMBINATIONS

2.1 Loads

2.2 Basic Load Values

2.3 Load Combinations and Load Factors

2.3.1 Basis of load combinations

2.3.2 Load combination for Limit State Design (LSD) format

2.3.3 Load combination for allowable stress design and ultimate strength design

3 DEAD LOADS

3.1 Dead Loads

4 LIVE LOADS

4.1 General

4.1.1 Definition

4.2 Estimation of Live Loads

4.2.1 Basic value of live loads

4.2.2 Basic live load intensity

4.2.3 Conversion factor for equivalent uniformly distributed load

4.2.4 Area reduction factor

4.2.5 Multi-story reduction factor

4.3 Live Loads Considering Concentration, Deflections or Cracks

4.4 Dynamic Effects of Live Loads

5 SNOW LOADS

5.1 Scope and Procedure

5.2 Snow Load on the Ground

5.2.1 Equations for snow load on the ground

5.2.2 Basic snow depth on the ground

5.2.3 Equivalent unit weight for ground snow

5.2.4 Environmental coefficient

5.3 Ground Snow Load with Accumulation for n Days

5.3.1 Equation for ground snow load with accumulation for n days

5.3.2 Basic snow depth with accumulation for n days

5.3.3 Equivalent unit weight for ground snow with roof snow control

5.4 Snow Load on the Roof

5.4.1 Equation for snow load on the roof

5.4.2 Shape coefficient

5.5 Snow Load on the Roof with Snow Control

5.5.1 Equation for snow load on the roof

5.5.2 Controlled snow load

5.6 Partial Snow Load on the Roof

5.7 Other Snow Loads

6 WIND LOADS

Outline

6.1 General

6.1.1 Scope of application

6.1.2 Estimation principle

6.1.3 Buildings for which particular wind load or wind induced vibration is taken into account

6.2 Horizontal Wind Loads on Structural Frames

6.2.1 Scope of application

6.2.2 Procedure for estimating wind loads

6.3 Roof Wind Load in Structural Frames

6.3.1 Scope of application

6.3.2 Procedure for estimating wind loads

6.4 Wind Loads on Components/Cladding

6.4.1 Scope of application

6.4.2 Procedure for estimating wind loads

A6.1 Wind Speed and Velocity Pressure

A6.1.1 Velocity pressure

A6.1.2 Design wind speed

A6.1.3 Basic wind speed

A6.1.4 Wind directionality factor

A6.1.5 Wind speed profile factor

A6.1.6 Turbulence intensity and turbulence scale

A6.1.7 Return period conversion factor

A6.2 Wind Force Coefficients and Wind Pressure Coefficients

A6.2.1 Procedure for estimating wind force coefficients

A6.2.2 External wind pressure coefficient for structural frames

A6.2.3 Internal pressure coefficients for structural frames

A6.2.4 Wind force coefficients for design of structural frames

A6.2.5 Peak external wind pressure coefficients for components/cladding

A6.2.6 Factor for effect of fluctuating internal pressures

A6.2.7 Peak wind force coefficients for components/cladding

A6.3 Gust Effect Factors

A6.3.1 Gust effect factor for along-wind loads on structural frames

A6.3.2 Gust effect factor for roof wind loads on structural frames

A6.4 Across-wind Vibration and Resulting Wind Load

A6.4.1 Scope of application

A6.4.2 Procedure

A6.5 Torsional Vibration and Resulting Wind Load

A6.5.1 Scope of application

A6.5.2 Estimation equation

A6.6 Horizontal Wind Loads on Lattice Structural Frames

A6.6.1 Scope of application

A6.6.2 Procedure for estimating wind loads

A6.6.3 Gust effect factor

A6.7 Vortex Induced Vibration

A6.7.1 Scope of application

A6.7.2 Vortex induced vibration and resulting wind load on buildings with circular sections

A6.7.3 Vortex induced vibration and resulting wind load on building components with circular sections

A6.8 Combination of Wind Loads

A6.8.1 Scope of application

A6.8.2 Combination of horizontal wind loads on buildings not satisfying the conditions of Eq.(6.1)

A6.8.3 Combination of horizontal wind loads on buildings satisfying the conditions of Eq.(6.1)

A6.8.4 Combination of horizontal wind loads and roof wind loads

- A6.9 Mode Shape Correction Factor
 - A6.9.1 Scope of application
 - A6.9.2 Procedure
- A6.10 Response Acceleration
 - A6.10.1 Scope of applications
 - A6.10.2 Maximum response acceleration in along-wind direction
 - A6.10.3 Maximum response acceleration in across-wind response acceleration
 - A6.10.4 Maximum torsional response acceleration
- A6.11 Simplified Procedure
 - A6.11.1 Scope of application
 - A.6.11.2 Procedure
- A6.12 Effects of Neighboring Tall Buildings
- A6.13 1-Year-Recurrence Wind Speed
- Appendix 6.6 Dispersion of Wind Load
- References

7 SEISMIC LOADS

- 7.1 Estimation of Seismic Loads
 - 7.1.1 Seismic load and design earthquake motion
 - 7.1.2 Idealization of building and location of input ground motion
- 7.2 Calculation of Seismic Loads
 - 7.2.1 Methods for calculating seismic load
 - 7.2.2 Acceleration response spectrum
 - 7.2.3 Reduction factor related to ductility and response deformation
 - 7.2.4 Amplification factor due to structural irregularities of the building
- 7.3 Design Earthquake Motions
 - 7.3.1 Fundamental concept for generating design earthquake motions
 - 7.3.2 Design earthquake motions compatible with the design response spectrum
 - 7.3.3 Design earthquake motions based on the scenario earthquakes
- References

8. THERMAL LOADS

- 8.1 Scope of applications
 - 8.1.1 Change of temperature
 - 8.1.2 Consideration of thermal load
- 8.2 Thermal load
 - 8.2.1 Outdoor air temperature
 - 8.2.2 Solar radiation
 - 8.2.3 Underground temperature
 - 8.2.4 Indoor temperature
 - 8.2.5 Other temperature

9. EARTH PRESSURE AND HYDRAULIC PRESSURE

- 9.1 Overview
- 9.2 Earth pressure and hydraulic pressure that act on exterior basement walls
- 9.3 Soil pressure that permanently acts on retaining walls
- 9.4 Earth pressure during earthquakes that acts on retaining walls
- 9.5 Groundwater level for design
- 9.6 Uncertainties of earth pressure and the geotechnical parameters for design

10. OTHER LOADS

- 10.1 Other Loads