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Concrete slabs and control joints

AS A RESULT OF THE CANTERBURY EARTHQUAKES, THERE HAVE BEEN CHANGES TO THE REQUIREMENTS FOR CONCRETE FLOOR SLABS. ARE YOU UP TO DATE?

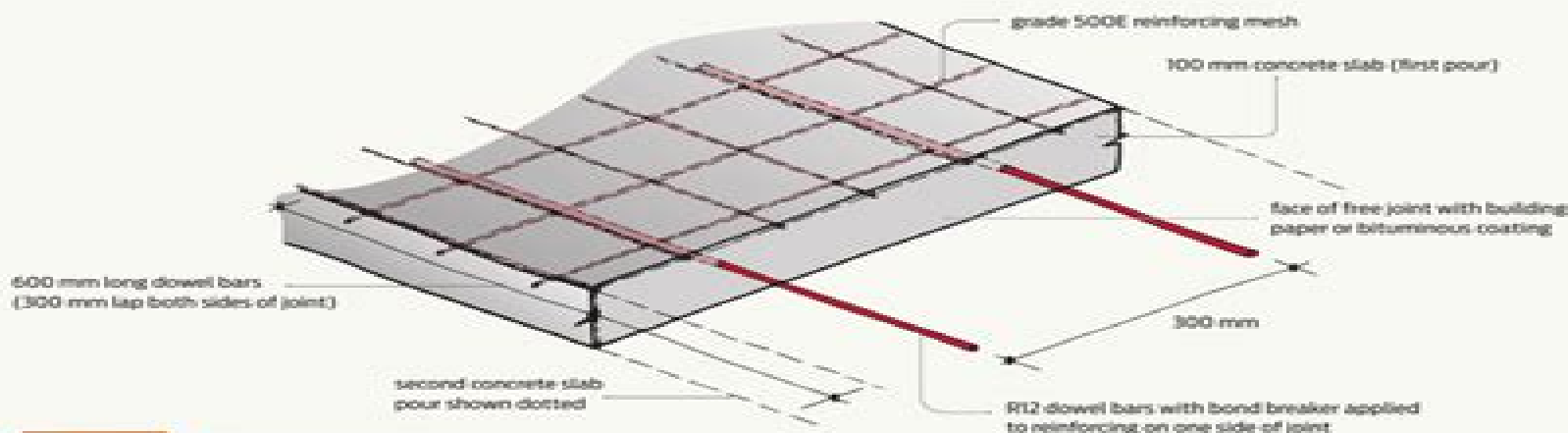


Figure 1 Reinforcing a free joint.

BEFORE THE CANTERBURY EARTHQUAKES, concrete floor slabs for single-storey dwellings could be unreinforced or reinforced with polypropylene fibres.

Due to the poor performance of concrete slabs in the earthquakes, the New Zealand Building Code compliance document B1 Structure was amended to require concrete slab-on-ground floors to be reinforced with grade 500E ductile reinforcing mesh in accordance with AS/NZS 4671:2001.

Reinforcing mesh

Although the requirement for reinforcing all concrete floor slabs initially only applied to the

Canterbury region, since 1 February 2012, it has been mandatory for concrete slabs on ground throughout the country.

The 500E reinforcing must be a minimum 2.27 kg/m^2 (or 1.15 kg/m^2 in each direction) welded mesh sheets. The reinforcing mesh sheets must be lapped at sheet joints by the greater of a minimum 225 mm lap or in accordance with the manufacturer's specifications. It must extend to within 75 mm of the outside edge of the floor slab (including foundation wall) and be tied to foundation wall reinforcing according to NZS 3604:2011 Figures 7.13, 7.14, 7.15 and 7.16 with R10 starters

at 600 mm centres and lapped with the slab mesh.

When are free joints needed?

In NZS 3604:2011 paragraph 7.5.1, the size of a reinforced concrete slab on ground is limited to a maximum of 24 m in any direction. Where concrete floor slab dimensions exceed 24 m in one or both directions, a free joint must be installed.

If a slab exceeds the 24 m maximum dimension without the inclusion of free joints, it must be specifically designed.

A free joint is defined as a construction joint 'where no reinforcing mesh passes through the

Concrete Floor Slab Design Guide

Frank R. Neal



Concrete Floor Slab Design Guide:

Single Pour Industrial Floor Slabs John Knapton, 1999 Offering a comprehensive guide for all those involved with industrial floors this book deals with the design construction and behaviour of single pour industrial floors such as those constructed by laser guided screeding machines *Guide for Concrete Floor and Slab Construction* American Concrete Institute. Committee 302, ACI Committee 302, 2004 Design of Slabs-on-ground ACI Committee 360, American Concrete Institute, 2006

Design Guide for Voided Concrete Slabs Mike Mota, 2014 This design guide presents state of the art practices in voided slab construction The concept centers on removing concrete mass from the areas of the slab where it is structurally inefficient thus reducing the dead load by as much as 35% This floors system allows for large clear spans of efficient overall slab thickness Innovative structural slab construction practices have taken the efficiency of traditional slab systems to new heights

Guide for Concrete Slabs That Receive Moisture-Sensitive Flooring Materials ACI Committee 302, American Concrete Institute, 2006

Reinforced Concrete Slabs Robert Park, William L. Gamble, 1999-12-28 Comprehensive up to date coverage of reinforced concrete slabs from leading authorities in the field Offering an essential background for a thorough understanding of building code requirements and design procedures for slabs Reinforced Concrete Slabs Second Edition provides a full treatment of today's approaches to reinforced concrete slab analysis and design Now brought up to date with a wealth of new material on computer optimization the equivalent frame method lateral load analysis and other current topics the new edition of this classic text begins with a general discussion of slab analysis and design followed by an exploration of key methods equivalent frame direct design and strip methods and theories elastic lower bound and yield line theories Later chapters discuss other important issues including shear strength serviceability membrane action and fire resistance Comprehensive and accessible Reinforced Concrete Slabs Second Edition appeals to a broad range of readers from senior and graduate students in civil and architectural engineering to practicing structural engineers architects contractors construction engineers and consultants Design and Construction of Concrete Slabs on Grade, 1986

Design and Construction of Concrete Floors George Garber, 2006-06-30 Design and Construction of Concrete Floors outlines the key principles needed for the production of a good floor which can be relied on to not only support and restrain other parts of the building but also to meet the needs of the user The book covers Uses of concrete floors Structural design Concrete used specifically for floors Cracks and joints Floor surface properties This book is ideal for structural engineers and others in the building and design industry that want to use a balanced approach and look beyond structural strength in the design of a good floor The book draws on both European and American experience citing both British and US standards all of which have been amended and updated since the last edition

Design and Construction of Concrete Floors George Garber, 1991-02-18 This guide to the construction and design of concrete floors covers both British and American standards In a logical sequence the author considers classification of floors by usage before

dealing with design construction and floor finishes Useful as an ideal first book for designers working on floor projects the text also stresses the need to design floors according to the owner s specific requirements A comprehensive glossary and detailed appendices are also included Concrete Design Handbook Canadian Portland Cement Association,1985 **Strip Method Design Handbook** A. Hillerborg,2012-08-06 The Strip Method Design Handbook is a thorough guide to the use of the strip method developed by Arne Hillerborg for design of reinforced concrete slabs The strip method of design is relevant to many types of slabs including rectangular slabs with all sides supported and regular flat slabs with cantilevering parts The author discusses unevenly **Concrete Industrial Ground Floors** Frank R. Neal,2002-07-15 The quality of floor surfaces in industrial and commercial premises can be vitally important to effective business operations Increasingly rigorous specifications for industrial floors have resulted in considerable changes in the methods used for their construction

Design of Concrete Structures George Winter,Arthur H. Nilson,1986 Designed for courses in the design of concrete structures or reinforced concrete design this text aims to help readers gain a firm understanding of the behaviour of reinforced concrete and a proficiency in the methods used in current design practice Guide for Construction of Concrete Floors on Grade American Concrete Institute. Committee 332,1962 Design Applications of Raft Foundations J. A. Hemsley,2000 This book examines alternative design procedures for plain and piled raft foundations It explores the assumptions that are made in the analysis of soil structure interaction together with the associated calculation methods The book gives many examples of project applications covering a wide range of structural forms and ground conditions

Building Structural Design Handbook Richard White,Charles G. Salmon,1987-05-08 This book provides insight into the design analysis and construction of a variety of building types **ACI Manual of Concrete Practice** American Concrete Institute,2004 **Reinforced Concrete Structures: Analysis and Design** David D. E. E. Fanella,2010-12-06 A PRACTICAL GUIDE TO REINFORCED CONCRETE STRUCTURE ANALYSIS AND DESIGN Reinforced Concrete Structures explains the underlying principles of reinforced concrete design and covers the analysis design and detailing requirements in the 2008 American Concrete Institute ACI Building Code Requirements for Structural Concrete and Commentary and the 2009 International Code Council ICC International Building Code IBC This authoritative resource discusses reinforced concrete members and provides techniques for sizing the cross section calculating the required amount of reinforcement and detailing the reinforcement Design procedures and flowcharts guide you through code requirements and worked out examples demonstrate the proper application of the design provisions COVERAGE INCLUDES Mechanics of reinforced concrete Material properties of concrete and reinforcing steel Considerations for analysis and design of reinforced concrete structures Requirements for strength and serviceability Principles of the strength design method Design and detailing requirements for beams one way slabs two way slabs columns walls and foundations *Manual* ,1921 Real Estate Record and Builders' Guide ,1908

Embracing the Melody of Term: An Emotional Symphony within **Concrete Floor Slab Design Guide**

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