

**ASEC 2008
ABSTRACT**

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| Title of abstract: | A review of Australian design and construction practices concerning anchorage and lap splicing of reinforcing bars, with particular emphasis on slabs and walls |
| Author's Name and job title: | Mark Patrick, Director, MP Engineers Pty Limited |
| Co – author names, job title and organisation: | Mark Turner, Executive Manager IPWEA (NSW) Winston Marsden, OneSteel Reinforcing Pty Limited John Keith, Executive Director, Steel Reinforcement Institute of Australia |
| Abstract: | <p>The origin and in-depth use of the long-standing, simple and effective design rules in Section 13 of AS 3600, for calculating the tensile lap length of straight, deformed reinforcing bars are explained. Some important improvements to the rules are described, including accounting for the effects of high-strength concrete based on the results of Australian research.</p> <p>A fundamentally important concept on which the design rules in AS 3600 are based is that tensile development length and tensile lap length are synonymous. This is explained, as bars being anchored or spliced near a free surface exhibit the same types of failure modes involving longitudinal splitting of the concrete cover. The extensive experimental data supporting this design concept are reviewed. Interesting new Australian bond test data is also presented.</p> <p>Anchorage and lap splicing design rules are of fundamental importance when detailing reinforcing bars in concrete structures. These rules determine the amount of additional steel that is required to maintain the effectiveness of reinforcing bars in critical regions. Therefore, they significantly affect the economy of this form of construction, especially in slabs and walls, where it is estimated that by length, approximately eighty percent of all reinforcing steel is laid, which comprises N12 and N16 bars.</p> <p>The accuracy of different formulae, available from overseas design Standards or other sources, for calculating anchorage and lap splice lengths, are examined with regard to slabs and walls incorporating small diameter bars in contact or non-contact splices. Consideration is given to the order layers of bars are laid and ultimate transverse bending pressure, staggering, and other factors. As a result, important recommendations are made about the correct interpretation of the proposed improved design rules for AS 3600 in these cases.</p> |