Alkali-aggregate reaction and structural damage to concrete : engineering assessment, repair, and management

Blight, Geoffrey E., author

Abstrak

Contents: Since AAR was first identified in 1940, it has been a subject dominated by studies of the mineralogy of AAR-susceptible aggregates, the chemistry of the AAR and related reactions and laboratory tests used to diagnose AAR and predict potential future swelling. Civil and structural engineers have found the literature bewildering and difficult to apply to their immediate requirements of assessing the present and future effects of AAR on the strength, safety and serviceability of plain and reinforced concrete structures. There is a need to discuss methods that can be used for in situ non-destructive testing to assess the effects of AAR, and in-service measurements and load-testing to assess the present and future safety of reinforced concrete structures. Methods of repair and rehabilitation and their long-term success also need to be discussed, as do methods of halting or slowing the progress of AAR. At the same time, the fundamentals of AAR need to be explained in terms intelligible to the civil and structural engineer who is primarily trained in structural mechanics and design, but also needs to have a basic understanding of the AAR process and its effects on concrete.