

ABSTRAK

FAUZAN HAMDI, Degradasi Fisik dan Mekanik Beton Akibat Intrusi Air Laut.

(dibimbing oleh: Hanafi Ashad dan Iskandar BP)

Permasalahan yang terjadi pada bangunan beton dilingkungan pantai yaitu terjadinya kerusakan beton akibat terintrusi air laut sehingga menyebabkan degradasi beton. Kerusakan beton akibat air laut terdiri dari 3 (tiga) bagian yaitu: bagian beton yang terendam air laut (sub-meged), bagian beton yang terkena pasang surut air laut dan bagian beton yang terkena percikan air laut. Kerusakan beton yang dibahas dalam penelitian ini yaitu penelitian laboratorium mengenai degradasi fisik dan mekanik beton akibat intrusi air laut pada bagian yang terendam air laut. Kerusakan dapat terjadi pada beton akibat reaksi antara air laut yang agresif yang terintrusi ke dalam beton dengan senyawa-senyawa di dalam beton yang mengakibatkan beton kehilangan sebagian berat volume, kehilangan kekuatan dan kekakuannya serta mempercepat proses pelapukan. Hasil penelitian ini menunjukkan bahwa beton mutu normal $f'_c = 25$ MPa mengalami degradasi fisik akibat intrusi air laut, dalam hal ini berat volume sebesar 0.3806 % pada saat direndam selama 28 hari dan 1.2794 % pada saat direndam selama 90 hari dan degradasi mekanik akibat intrusi air laut, dalam hal ini kuat tekan beton sebesar 12.063 % pada saat direndam 28 hari dan 16.809 % pada saat direndam 90 hari. Kuat tekan beton akibat intrusi air laut cenderung menunjukkan grafik yang bersifat logaritmik. Persamaan yang didapatkan pada grafik logaritmik tersebut, dapat diprediksi kuat tekan beton normal $f'_c = 25$ MPa yang direndam air laut akan mengalami degradasi mekanik sebesar 50% jika direndam selama 19.031 hari (sekitar 52 tahun 8 bulan)

Kata Kunci: Beton Normal, Sifat Fisik dan Mekanik Beton, Air Laut

ABSTRACT

FAUZAN HAMDI, Physical and Mechanical Degradation of Concrete As The Effect of Sewater Intrusion. (guided by: Hanafi Ashad dan Iskandar BP)

The problem happened to a building in the seaside area was about destruction as the effect of concrete degradation from the seawater intrusion. The destruction was consisted three parts: concrete that was sub-merged, was hitted by ebb flow of seawater and was struck by splash of seawater. The destruction discussed in this experiment was about physic and mechanic degradation of concrete as the effect of seawater intrusion to sub-merged concrete. The destruction of the sub-merged concrete as the effect of reaction among aggressive seawater that intruded into the concrete with cemical compound of the concrete that causes lost of mass partially of the concrete, lost it strength and stiffness whichfasten decaying process. It causes concrete loss of mass partially, loss of strength and stiffness which hasten decaying process. The result of this experiment showed that concrete normal quality $f'c = 25$ MPa have physicy degraded as effect of seawater intrusion, that is mass volume 0,3806 % when immersed for 28 days and 1,279 % when immersed for 90 days and mechanical degradation as effect of seawater intrusion, that is pressure strength of the concrete 12,063 % when immersed 28 days and 16,809 % when immersed 90 days. The pressure strength of concrete as effect of seawater intrusion, tend to showed logarithmic graphic. The equation of the legarithmic graphic, we can predicted that the normal pressure strength of the concrete $f'c = 25$ MPa that immersed at seawater will have mechanical degradation for about 50 % when immersed at seawater for 19.031 days (about 52 days and 8 months)

Keywords: Normal Concrete, Physical and Mechanical Character of Concrete, Seawater