CHAPTER V

ANALYSIS OF RESULTS

Rate of Strength Gain.

Resulting from the SERIES I of tests, the rate of compressive strength gain was presented in Fig. 40 through Fig. 44, each of individual mix. Similarly, those of splitting tensile strength and modulus of rupture were also presented in Fig. 45 through Fig. 54. All of them showed the same trend that the rate of strength gain of the vacuum-dewatered concrete was faster than those of the conventionally non-treated concrete.

1. Water-cement Ratio.

The rate of compressive strength gain of the vacuum-dewatered concrete, having the same cement content and different initial water-cement ratios, were presented in Fig. 61, compared with those of the corresponding non-treated mixes. The more the initial water-cement ratio, the more the water was extracted and leaded to the more earlier rate of compressive strength gain. The same trend was shown in Fig. 63 and Fig. 65 for those of splitting tensile strength and modulus of rupture respectively.

2. Cement content.

The rate of compressive strength gain of the vacuum-dewatered concrete, having the same initial water-cement ratio and different cement content, were presented in Fig. 62, compared with those of the corresponding non-treated mixes. The more the cement content, the more the water was extracted eventhough the initial water-cement ratios were the same. Thus the same trend was shown as in the case of varying initial water-cement ratio. This also still persisted for those of splitting tensile strength and modulus of rupture, shown in Fig. 64 and Fig. 66 respectively.

Concrete Properties.

Resulting from the SERIES II of tests, the mechanical properties of the vacuum-dewatered concrete were presented in Fig. 69 through Fig. 76, each of individual kind and variable. All of them showed the same trend that the mechanical properties of the vacuum-dewatered concrete were better than those of the conventionally non-treated mixes.

1. Ultimate Compressive Strength.

As shown in Fig. 69 and Fig. 70, the vacuum-dewatered concrete was still governed by the so-called "Water-cement Ratio" law. Its ultimate compressive strength increased as the water-cement ratio

decreased after vacuum dewatering. The higher the cement content had somewhat affected the ultimate compressive strength due to its higher workability.

2. Ultimate Splitting Tensile Strength.

The ultimate splitting tensile strength of the vacuum-dewatered concrete, shown in Fig. 71 and Fig. 72, in percentage of its ultimate compressive strength was less than that of the conventionally non-treated mix. The more thr water extracted, the higher this percentage was.

3. Modulus of Rupture.

The modulus of rupture of the vacuum-dewatered concrete, shown in Fig. 73 and Fig. 74, in percentage of its ultimate compressive strength was less than that of the conventionally non-treated mix. The more the water extracted, the higher this percentage is.

4. Modulus of Elasticity.

Related to the ultimate compressive strength, the modulus of elasticity increased as the water-cement ratio decreased after vacuum dewatering. The higher cement content had somewhat affected the modulus of elasticity due to its higher workability, shown in Fig. 75 and Fig. 76, respectively.