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CONCRETE LINING OF THE GANG (BIKANER) CANAL

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The "Gang" canal is being constructed from Ferozepure weir to irrigate an area of 755,000 acres of Bikaner State land, and would be concrete lined throughout its whole 84 miles length. It would be the biggest lined irrigation canal and the first of its kind in India. Its authorized full supply discharge is 2,144 cs. It has been designed with Kutters "N" of 0.013, and a bed slope of 0.13 ft per thousand feet resulting in mean velocity of 4.51 ft/sec. The designed bed width and depth are 32 ft. and 8.0 ft respectively with a side slope of 1:1. The quantity of concrete lining along the whole length has been estimated as 33.5 million square feet. Prevention of seepage and water logging was the main reason to adopt concrete lining. An estimated saving of about 400 cs has made the project economically feasible.

The possible ingredients of concrete included Darbari kankar, cement, lime and surkhie. Keeping in view the haulage, manufacture cost and quality of materials it was decided to use Darbari kankar or nodular lime-stone as the chief source for fine and coarse materials for concrete. Preliminary investigations were carried out on samples of Darbari kankar to determine the percentage voids in the kankar ballast and grit, the thickness of concrete for a watertight and cheaper lining, the density of concerete and the proportions of different ingredients. As a result of the investigations a 6-inch thick concrete lining composed of 1:1:6 mixture of lime, "grit" and ballast was adoped. Lime was prefered over cement because the latter was considered to be expensive and also the capability of the factories in the area to produce cement in the required quantity was doubtful.