

LINING OF IRRIGATION CANALS AND ECONOMICS OF LINING, THE REVIEW AND SELECTION OF LINING

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ABSTRACT

Irrigation canals should be aligned and laid out, so that the velocity flow is uniform under all conditions, and the water reaches the irrigated area at an elevation sufficient to ensure desired distribution. Generally, two types of channel sections are adopted, triangular channel section for smaller discharges and trapezoids channel section for larger discharge. Selection of a particular type of lining, keeping in consideration the general requirements, as well as site specific requirements including structural stability, economy, availability of construction materials, machinery and equipment, skilled and unskilled labor, subsequent reparability, ability to prevent weed growth, resistance against burrowing animals, structural stability during and after construction. The existing irrigation canals in west Ben- gal have very little scope for redesigning. These canals have some amount of seepage loss. Based on soil type and soil characteristics at various locations, the districts of irrigation projects have been classified in four zones. The selection of stretches for lining should be judicious and based on appropriate and adequate justification. The water resources department at Odisha, Bhubaneswar recommends the guidelines for lining of irrigation canals in accordance with IS 10430:2000. It also recommends expansive soil criteria for fixing maximum thickness of Cohesive Non-swelling Soils (CNS) layer. The U.S. Department of interior Bureau of reclamation, a technical memorandum Of research, prioritizes of enhancement of canal infrastructures sustainability. The canals infrastructures draft road map laid down by them, provides the comprehensive description of research need, including the adverse outcome currently used in irrigation practices. The Amendment no. 1 August 2005 to IS 10430:2000, amendment no. 1 September

2000 to IS 3873:1993 and amendment no. 1 September 2000 IS 9451:1994, Recommends guidelines for selection of type of lining, laying of cement concrete stones slab lining on canals and guidelines for lining of canals in expansive soil. This study reviews prevailing guidelines, IS codes, design manuals and recommends selection process for appropriate canal Lining.

KEYWORDS: *Stability, Hydraulic Efficiency, Canal Lining, Soil Erosion, Expansive Soil, Shrinkage*