

CHAPTER VII -RESPONSIBILITIES DURING INVESTIGATION AND CONSTRUCTION OF IRRIGATION PROJECTS

Section 1.-General

7.001 Irrigation projects are divided in the following three categories viz major, medium and minor projects. The criterion of classification shall be as under:-

- (1) All projects having a C.C.A. of more than 10,000 hectares are classified as major projects.
- (2) All projects having a C.C.A. of more than 2,000 hectares and up to 10,000 hectares are classified as medium projects.
- (3) All projects having a C.C.A. of 2,000 hectares or less are classified as minor projects.

Irrigation projects include storage dams, diversion-weirs, barrages, lift irrigation schemes and tube wells.

Section 2.-Investigation Preliminary Investigation

7.002 The reconnaissance report for a major project shall be initiated by the S.E. The reconnaissance report in respect of medium and minor projects shall be initiated by the E.E. and the S.D.O. respectively. On receipt of orders of the competent authority, the survey estimate for carrying out detailed investigations shall be prepared by the S.D.O. and submitted to the higher authorities for obtaining administrative approval.

Master plan of the basin shall be prepared by the C.E. in charge of the basin. Investigation of any project not included in master plan shall be taken up only after obtaining approval of the State Government.

Detailed Investigation

7.003 (a) After receipt of administrative approval for survey and investigation, technical sanction to the survey estimate shall be accorded by the officers competent to sanction it and detailed survey and investigation of the project will be started. Before starting the survey work, permanent bench marks will be established at suitable places.

The bench mark will be connected to the G.T.S. bench mark and the works B.M. with "R.L." Shall be conspicuously painted/engraved on the bench marks. The S.D.O. shall check permanent bench marks. Important levels will be checked by the E.E. The Sub-Engineers entrusted with the surveys shall be fully responsible for the correctness of surveys and levels. The extent of checking to be

exercised by the S.D.O. and E.E. is indicated in the responsibility chart-Appendix 7.02.

Field /Level Books

- 7.004 Printed field and level books having machine numbered pages shall only be used. Account of level books/field books shall be maintained as that of measurement books. The same importance as for measurement book is prescribed for level /field books. The date of first entry shall be intimated to the Sub-Division and Division by the actual user. The level/field books shall be returned to Division Office for record after plotting is done.

Reducing of Levels

- 7.005 The reducing of levels should be done in the field immediately after levelling. This will help in reducing likely errors that are many times discernable by naked eye and will also avoid confusion that will normally arise if this work is left pending to be completed after all the sights are taken.

Plotting

- 7.006 The levels taken on a day should be plotted the same day as far as possible or latest by the next day, when the operation carried out will be fresh in memory. Besides, while plotting, if an error is detected or suspected, the operation can be repeated. The persons who conduct survey and levelling should themselves plot the survey. The contouring can however be done by others. Before shifting of the survey camp, a certificate should be sent to the S.D.O. that all plotting work has been completed. Every sheet plotted shall contain certificates as follows:

“Certified that the Survey was conducted by me/us using field books and level books bearing numbers..... issued by..... Sub-Division. The B.Ms. are shown plotted in red ink and identifiable with the description shown. The levels are related to nearest G.T.S.Bench mark whose description is.....”.

Review of Level/Field book in Division Office

- 7.007 The technical section of Division Office will review the level books and issue review notes. The A.E./Draughtsman will record a certificate of review as under :

“ Certified that the pages from..... to..... are reviewed by me and review note issued vide memo. No..... dated.....”. General guidelines for checking are contained in the check list at Appendix 7.01.

Level book numbers will be picked up at random and called for review every month. The level books should not be retained for more than a month in the Division Office. Programme of review shall be so framed that all the books in use will be reviewed at least once annually.

Collection of Data

7.008. The following data are required to be collected from various sources for preparation of project reports:

- (1) Gauge and discharge data
- (2) Rainfall data
- (3) Meteorological data.
- (4) Agricultural statistics of villages under submergence and command.
- (5) Any other record, if considered necessary.

Collection of data shall be the responsibility of the Sub-Engineers entrusted with the work. Necessary guidance and assistance will be provided to them by the S.D.O.

Section 3. – Preparation of Project Report

7.009. Initial work in respect of preparation of the project report and stage-I estimate of any project will be done at Sub- Division level. Necessary technical guidance will be provided by the E.E. and S.E. The drafting of chapters of the project report will be the responsibility of the E.E. The project report shall be prepared in the format prescribed for the various categories of projects and shall be submitted to the Government or the competent authority in bound volumes.

Section 4.- Land Aquisition

7.010. The F.R. L. contour, final dam alignment, spill channel alignment and canal alignments etc. will be transferred and marked on ground by the Sub-Engineers with the help of revenue staff of Water Resources Department. The Sub-Engineers and S.D.O. shall be primarily responsible for accuracy of this work. Preparation of Land Plans, computation of areas of land to be acquired, survey of properties to be acquired etc. will be done by the Sub-Engineers. The extent of checking to be exercised by the S.D.Os. and E.Es. is indicated in the responsibility chart (Appendix 7.02).

Section 5.- Inspection and Control during Construction

7.011 Instruction and guidelines for survey and construction of irrigation projects are contained in the 'Technical Circulars' and 'Specifications for Irrigation Projects'. These shall be up-dated by the E.- in –C. as and when considered necessary. The technical circulars and specifications in force shall be followed for execution, control and inspection of works.

Excavation

7.012. (a) Before starting any excavation for construction of Irrigation Projects, such as excavation of puddle trench, cut-off trench, spill- channel, canals etc. or excavation for foundation of dams, spillways, sluices, canal masonry works etc. pre-commencement levels should be taken and recorded in M.B./Graph M.B. by the Sub-Engineer and shall be checked by the S.D.O.

- (b) After approval to final excavation/foundation levels, by the competent authority, final levels will be recorded by the Sub-Engineer in M.B./Graph .B. d shall be checked by the S.D.O. The extent of checking to be exercised by the E.E. is specified in Appendix 7.02.
- (c) In case of work awarded on contract, signature of the contractor shall be obtained on the M.B./Graph M.B. in token of his acceptance of the pre-commencement levels and final excavation/foundation levels. Graph Measurement Books shall be maintained for all important works and cross sections of original ground profiles and final excavated sections shall be clearly and accurately plotted in ink thereon at specified distances as directed by the Engineer-in-Charge. The E.E. shall be responsible for the classification of strata in excavation.

Earth Work (Embankment)

- 7.013. (a) Before starting earth work of any dam or canal, pre-commencement levels should be recorded in M.B./ Graph M.B. by the Sub-Engineer and shall be checked by the S.D.O. After completion of work, final levels shall be recorded in M.B./Graph M.B. by the Sub-Engineer and shall be checked by the S.D.O. The extent of checking to be exercised by the E.E. is specified in Appendix 7.02.
- (b) In case of works awarded on contract, signature of contractor shall be obtained on the M.B./Graph M.B. in token of his acceptance of the pre-commencement levels and completion levels. The cross-sections of original ground profiles and completed sections of dam or canal embankments as actually executed shall be clearly and accurately plotted in ink on the graph measurement book.

Masonry and Concrete Work

- 7.014. The procedure indicated in Para. 7.013 above will be applicable in case of masonry and concrete dams/structures also. The duties and responsibility of various officers in respect of ensuring the quality of construction materials, checking of leads, checking of steel reinforcement in R.C.C. work etc. are specified in Appendix 7.02.

River/Stream Closure

- 7.015. This is the most important work in an Irrigation project. The Executive Engineer in charge shall frame a detailed programme for river/stream closure work and obtain approval of the competent authority before commencement of the closure work.
- 7.016. He shall ensure the following before taking up the closure work:-
- (i) Acquisition of land and property in the sub-mergence area.
 - (ii) Rehabilitation of displaced persons from the submergence area.
 - (iii) Construction of surplussing arrangements.

- (iv) Completion of head sluice, approach channel and down stream channel upto the escape in case of earthen dams.
- (v) Completion of the other portions of the dam/saddle dam in all respects.
- (vi) Completion of the puddle or cut-off trench in the nalla bed in case of earthen dams.

7.017. A fortnightly progress report on every River/Stream closure shall be submitted by the S.D.O. in charge of the work to the E.E. in the format given below

- (1) name of river/stream and location of work
- (2) Item of work
- (3) Serial number of the item in sanctioned estimate.
- (4) Estimated quantity of work in nala portion
- (5) Quantity done up to the fortnight
- (6) Quantity done during the fortnight
- (7) Total quantity done up to the end of fortnight
- (8) Balance quantity
- (9) Bottlenecks with suggestions for remedial measures.
- (10) Remarks.

7.018. The closure works of Irrigation projects shall be inspected by the C.E., S.E. and E.E. as frequently as possible.

Section 6.- First Filling of Reservoirs

7.019. New tanks/reservoirs shall not be allowed to be filled up , as far as possible, up to F.T.L./F.R.L. in the first year after construction. Attempt should be made to fill up $\frac{1}{2}$ to $\frac{2}{3}$ in the first year, $\frac{2}{3}$ to $\frac{3}{4}$ in second year and full height above river bed in the third year.
