Chapter 11
Construction programme and manpower and plant planning

11.1 Construction programme

The construction work of Inchampalli – Pulichintala link project is proposed to be completed in 10 years. It is proposed to complete all the preliminary works such as additional surveys, design studies, laboratory tests, and construction of approach roads etc. in the first 3 years. The process of land acquisition, afforestation in lieu of submergence of forest at headworks, procurement of machinery and T&P are proposed to be taken-up from the first year itself and can be completed by the end of third year. Construction of colonies and approach roads for the same and laying of electric lines shall also be completed by the end of third year. The construction of headworks, power block, powerhouse and head regulator are to start with excavation from the second year and would be completed by the end of tenth year. The excavation of canals and tunnel is to commence from third and fourth year respectively and proposed to be completed by the end of ninth year. Construction of the cross drainage and cross masonry (CD and CM) works are proposed to be commenced in fourth year and completed by the end of ninth year. The lining work of the entire length of main canal, branch canals, and tunnel will be started in fourth year and the same will be completed by the end of tenth year. The distributary system as well as drainage including command area development are programmed to be taken-up in the sixth year and can be completed by tenth year. Constructions of pump houses and installation of pumping system on link canal and will be taken up in sixth year and will be completed by tenth year. The unit wise construction programme is given in the following paras:

Unit I - Head works

All the preliminary works are proposed to commence in the first year and to be completed by the end of third year including designs and field tests. The construction of headworks, power block, powerhouse and head regulator shall be taken-up from second year and completed by the end of tenth year. The afforestation programme in lieu of submergence at headworks are proposed to be completed by third year, other miscellaneous works are also slated to be taken-up and completed simultaneously.

Unit II – Conveyance System including lifting arrangements

The preliminary works shall be started from first year and to be finished by the third year including land acquisition. Construction of camp colonies is also proposed to be started in the first year itself and completed by the end of third year. The excavation for main canal, branch canals is to be started from third year and completed by the end of ninth year. The construction works of CD&CM structures is to be taken up in fourth year and completed by ninth year. The procurement of special tools and plants is to be taken-up from the first year itself and can be completed by the end of third year. Construction of distributaries, minors and water courses are to be started in the fifth year and completed by tenth year. Plantation can be taken-up in the seventh year and to be completed by eighth year.

Unit III – Powerhouse

The preliminary works such as design of various components of powerhouse and laboratory tests shall be started in the first year and completed by the end of third year. Procurement of tools and plants is to be completed by the end of third year. All the civil and electrical works of power plant at reservoir shall be started in the seventh year and completed by tenth year. The canal power house near Pulichintala shall be started in seventh year and completed in tenth year.

Unit IV- Lifting arrangements

The preliminary works i.e. design of various components of pump house shall be started in the first year and completed by the end of third year. Procurement of tools and plants, Construction of pump houses, sump, and cistern for the lifting arrangements on canal will be taken up in sixth year and completed by tenth year.

11.2 Material planning

The works broadly comprise of the following items

(i) Construction of headworks
(ii) Construction of power block and head regulator
(iii) Construction of powerhouse at Inchampalli and on canal near Pulichintala
(iv) Construction of 12.50 km long tunnel at RD 186.60 km

(v) Construction of link canal, branch canals, distributaries, field channels and allied works.
(vi) Construction of CD & CM works.
(vii) Construction of pump houses and installation of pumping system.

All the construction materials like soil for embankments, sand and coarse aggregates are available within a maximum lead of about 25 km from the proposed alignment of the link canal. Nearest stone and sand quarries have been identified during the surveys and investigations, throughout the length of the link canal. Cement and steel required could be procured from places identified for the purpose, which are well connected by roads and railways. These aspects are already dealt in detail in Chapter on Surveys and Investigations.

11.3 Plant and machinery planning

The special tools and plants required for construction of the link project are shown in Table 11.1.

Table 11.1
Requirement of special tools and plants for construction of link canal

Sl. No.	Item	No.
I.	**"Q" Special tools and plants (Machinery)**	
1	Hydraulic Excavator 3.8 m^3	14
2	Hydraulic Excavator 2.84 m^3	2
3	Rear dumper 35 T	87
4	Wagon drills	8
5	Air compressors 40 cft	8
6	Concrete mixer 1077 cft	4
7	Concrete mixer 1 m^3 with weight batcher	8
8	Dozer 320 HP	3
9	Water tanker 7500 Lts.	13
10	Water pump 10 HP	6
11	Vibrator rollers	3
12	Trucks 8 – 10T	26
13	Motorised water tanker 7500 Lts.	40
14	Trailors 25 T	2
15	Trailors 40 T	2
16	Pneumatic tractor 50 HP	24
17	Trailors 7.5 T	24

18	Crane 10 T	2
19	Generator 75 kVA	3
20	Water pump	8
21	Workshop equipment	71
22	Dewatering equipment	8
23	Explosive van	2
II	Inspection and transportation vehicles	
24	Jeeps	99
25	Cars	6
26	Ambulances	2
27	Buses	2
28	Station wagons	24
29	Jeep trailers	16

11.4 Manpower planning

It is proposed to have, in all, four Circle offices including a Designs Circle under one Chief Engineer's office to be located at Khammam. All the three construction circles in turn will have four Divisions located at various places along the canal alignment for effective execution of works. In addition to these, three Circle offices will have one Mechanical Division each. It is also proposed to have two Pay and Accounts Offices to facilitate the fiscal transactions in respect of the works and other payments like Salaries, T.A & D.A etc. to the personnel working in the project offices. Two Special Deputy Collector's offices are proposed to be set up for the land acquisition and other related works. Suitable places along the link alignment for locating all these offices have been tentatively identified to facilitate effective monitoring and control over the execution of various works.

11.5 Programme of year-wise expenditure

The total cost of the Godavari (Inchampalli) – Krishna (Pulichintala) link project is estimated to be Rs. 5046 crore at 2003-04 price level. Table 11.2 shows the tentative distribution of the year-wise expenditure for construction of the link project, so as to complete the same within the proposed period of construction of 10 years.

Table 11.2

Year-wise expenditure for the construction of the link canal

Expenditure (Rs in lakh)						
	Unit -I	**Unit II**	**Unit III**	**Unit IV**	**Unit V**	**Total**
1st	6592	14165	41	286	-	21084
2nd	8495	15559	48	318	-	24420
3rd	3411	25158	48	318	-	28935
4th	1726	54516	-	-	-	56242
5th	1726	57407	-	-	426	59559
6th	1726	60008	-	7994	426	70154
7th	1726	60008	1299	7994	426	71453
8th	1726	60008	1300	7994	426	71454
9th	1726	60048	1300	7994	426	71494
10th	1786	18302	1300	7998	427	29813
Total	**30640**	**425179**	**5336**	**40896**	**2557**	**504608**

If financial allocations are made in accordance with the above proposed year-wise distribution, duly increasing the same in relation to the possible inflation and planning of men and material is properly done, the construction of the project can be completed within the proposed period of 10 years.