

# **Chapter 11**

## **Construction Programme and Manpower & Plant Planning**

### **11.1 Construction Programme**

Construction works of Inchampalli - Nagarjunasagar link canal project are proposed to be completed within 10 years. It is proposed to complete all the preliminary works such as pre-construction surveys, design studies, laboratory tests, and construction of approach roads etc. in the first 3 years. The process of land acquisition and thereafter rehabilitation and resettlement, procurement of machinery and T&P and invitation of tenders for various civil & electrical works are proposed to 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 commenced from first year onwards. Execution of head works of Inchampalli project is to start with excavation from the third year and would be completed by the end of tenth year. Excavation of main canal is to commence from third year and completed by 9<sup>th</sup> year. Construction of the cross drainage and cross masonry (CD and CM) works are also proposed to taken up from fourth year and to be completed by the end of ninth year. Execution of tunnel is programmed to start from fourth year and would be completed in the ninth year. Excavation of Lead Canal is planned for three years from sixth to eighth year. Execution of pump houses on main and lead canals are to commence from fourth year and will be completed by the end of tenth year. The construction of canal powerhouse is planned to start from seventh year and would be completed in the tenth year. Lining work of the main canal will be started in fourth year and the same will be completed by the end of tenth year. The lining of lead canal is planned in the eighth and ninth years. The proposed diversion to Nagarjunasagar reservoir will be started by the end of tenth year. The unit-wise construction programme is given in the following paras:

#### **Unit I - Head Works**

All the preliminary works such as pre-construction survey and investigations are proposed to commence in the first year itself. The construction works related to the head works of Inchampalli project including Dam Toe-Powerhouse shall be taken-up from third year and completed by the end of tenth year. Other miscellaneous works are also slated to be taken-up and completed simultaneously.

## **Unit II - Conveyance System**

The preliminary works shall be started from first year and finished by third year including land acquisition, rehabilitation and resettlements. 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 is to be started from third year and completed by the end of ninth year. The procurement of special tools & plants is to be taken-up and completed within two-year time i.e. in the second and third years. Construction of regulators, CD/CM works on main and lead canal inclusive of lining of main canal are also to be started simultaneously in the fourth year. Plantation can be taken-up in the tenth year.

## **Unit III - Powerhouse**

The preliminary works such as pre-construction investigations and laboratory tests etc., and design of various components of powerhouse and its appurtenant works shall be started in the first year and completed by the end of third year. Procurement of tools & plants is to be done in the second and third years. All the civil as well as electrical works of power plant at reservoir shall be started in the seventh year and completed by tenth year.

## **Unit IV- Pumphouses (Lifting Arrangements)**

The preliminary works such as field investigations and design of various components of pumphouse shall be started in the first year and completed by the end of third year. Procurement of tools & plants is to be done in the second and third year. All the civil and electrical works pertaining to the pumphouses shall be started in the sixth year and completed by tenth year.

## **11.2 Material Planning**

The works broadly comprise of the following items:

- (i) Construction of head works of Inchampalli joint project
- (ii) Construction of main canal of length 290.106 km, lead canal of length 21.85 km and their allied works
- (iii) Construction of powerhouse at RD 202.150 km (Musi reservoir)
- (iv) Construction of 9.15 km long tunnel from RD 86.350 to 95.500 km

- (v) Construction of pump houses and their allied works on main canal and lead canal

All the construction materials like soil (for embankments), sand and coarse aggregates are available within a maximum lead of about 20 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 as required can be procured from places identified for the purpose which are well connected by roads and railways. These aspects are 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.
<b>I.</b>	<b>"Q" Special tools and plants (Machinery)</b>	
1	Hydraulic Excavator 3.8 m <sup>3</sup>	27
2	Hydraulic Excavator 2.84 m <sup>3</sup>	5
3	Rear dumper 35T	165
4	Wagon drill	15
5	Air compressor 40 cft	15
6	Concrete mixture 1077 cft	8
7	Concrete mixture 1 m <sup>3</sup> with weight batcher	15
8	Dozer 320 HP	6
9	Water tanker 7500 Lts.	26
10	Water pump 10 HP	11
11	Vibrator rollers	6
12	Truck 8-10T	50
13	Motorised water tanker 7500 Lts.	75
14	Trailor 25T	3
15	Trailor 40T	3
16	Pneumatic tractor 50 HP	45
17	Trailor 7.5T	45
18	Crane 10 T	2

19	Generator 75 kVA	6
20	Water pump	15
21	Workshop equipment	135
22	Dewatering equipment	15
23	Explosive van	3
<b>II.</b>	<b>Inspection and transportation vehicles</b>	
24	Jeeps	190
25	Cars	12
26	Ambulances	3
27	Buses	3
28	Station wagons	45
29	Jeep trailers	30

#### 11.4 Manpower Planning

It is proposed to have one General Manager's office at Hyderabad under which two Chief Engineer (Civil)'s offices and one Chief Engineer (Electrical) office are proposed at Warangal. One Chief Engineer (Civil) office deals with dam, powerhouses & pump houses and the other Chief Engineer (Civil) office deals with canals. The Chief Engineer (Electrical) office deals with all electrical works connected with powerhouses and pump houses. Under the Chief Engineer (Dam, power houses & pump houses) three circles including a planning circle are proposed at Warangal. Under the Chief Engineer (Canals) five circles including a planning circle are proposed at suitable locations to facilitate effective monitoring and control of works. Under the Chief Engineer (Electrical) two circles are proposed, one dealing with power houses and the other dealing with pump houses. Twenty-seven civil and four electrical divisions are proposed at appropriate locations for effective execution of works. In addition to them seven mechanical divisions and one quality control division are proposed under different circle offices at suitable locations. 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 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 from time to time.

## 11.5 Programme of Year-wise Expenditure

The total cost of the Inchampalli - Nagarjunasagar link canal project is estimated to be Rs 2628877 lakh at 2003-04 price level. Table 11.2 shows the tentative distribution of the year-wise expenditure for construction of the link project in order 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**

Year	Expenditure (Rs. in lakh)				
	Unit I	Unit II	Unit III	Unit IV	Total
1 <sup>st</sup>	29737	39838	2473	2086	74134
2 <sup>nd</sup>	26822	32249	8727	2125	69923
3 <sup>rd</sup>	8775	131240	28197	2974	171186
4 <sup>th</sup>	5943	144890	27990	5673	184496
5 <sup>th</sup>	5948	145153	41158	114902	307161
6 <sup>th</sup>	5948	201678	41306	113504	362436
7 <sup>th</sup>	5969	202089	38060	113104	359222
8 <sup>th</sup>	6305	215089	38675	113243	373312
9 <sup>th</sup>	8970	215979	29091	150825	404865
10 <sup>th</sup>	7609	135359	28473	150701	322142
<b>Total</b>	<b>112026</b>	<b>1463564</b>	<b>284150</b>	<b>769137</b>	<b>2628877</b>

If financial allocations are made in accordance with the above proposed year-wise distribution and duly considering possible inflation the construction of the project can be completed within the proposed period of 10 years.