

# **Chapter 6**

## **Design Features**

### **6.1 General**

Krishna (Srisaillam) - Pennar link is proposed to transfer a part of additional water available at Srisaillam by partial exchange of the surplus waters of the Mahanadi and the Godavari rivers proposed to be brought to the river Krishna. As already mentioned, the diversion is proposed by utilising the existing Srisaillam reservoir and Srisaillam Right Main Canal (SRMC) system. The water will be drawn through Pothireddipadu head regulator into Srisaillam Right Main Canal and is proposed to be let off in to Nippulavagu through an existing Escape Channel from Banakacherla cross regulator. The water will reach the Pennar river through the natural streams viz. Nippulavagu, Galeru and Kunderu.

Carrying capacities of all the above mentioned structures of SRMC system have been computed to check the adequacy of these structures to pass on the additional quantity of water proposed through the link and it is found that SRMC system can safely pass the link discharge also. Carrying capacities of the natural streams have been computed and wherever necessary, embankments have been proposed to pass the link discharge safely.

### **6.2 Srisaillam Dam**

Srisaillam dam is high masonry dam of straight gravity type, with an overall length of 512 m (1680') at road level 275.54 m (EL 904') and a maximum height of 144 m (470') from the deepest foundation level. The dam has a storage capacity of 8723 Mm<sup>3</sup> (308 TMC) at full reservoir level 269.75 m (EL 885'). The spillway portion is 270.66 m (888') long having 12 bays of 18.3 m (60') clear span each and controlled by 18.3 m x 16.7 m (ht) (60' x 55') radial gates. It has a discharging capacity of 37384 cum/sec (1320000 cusec). Besides above, there are river sluices with a discharging capacity of 1014 cum/sec. The non overflow section is in two parts, one on either side of the spillway portion.

### **6.3 Head Regulator at Pothireddipadu**

The construction of the head regulator with 4 vents of size 10 m x 8.57 m (including one standby) is already completed. The discharging capacity of the regulator has been worked out based on I.S code and is found to

be 560 cumec when all the four vents are in operation. The details of the quantity to be drawn through the head regulator according to Andhra Pradesh State Government are given in Table 6.1.

**Table 6.1**  
**Discharge to be released through Pothireddipadu head regulator**  
Unit : Cumec

Sl. No.	Component	Discharge
(i)	Srisailam RBC	141.60
(ii)	Telugu Ganga Irrigation	131.65
(iii)	Chennai Water Supply	42.48
	<b>Total</b>	<b>315.73</b>

Source : SRMC Project report, 1978 prepared by Govt. of Andhra Pradesh

The total discharge to be drawn through head regulator as per the State Govt. of Andhra Pradesh is 315.73 cumec whereas the discharging capacity of the head regulator is computed as 560 cumec.

Hence Pothireddipadu head regulator can easily pass the additional quantity of 163 cumec proposed to be diverted through Krishna (Srisailam) - Pennar link.

#### **6.4 Srisailam Right Main Canal**

The length of the existing Srisailam Right Main Canal (SRMC) is 16.338 km from Pothireddipadu head regulator to Banakacherla cross regulator. Originally SRMC was planned to discharge 315.73 cumec with a bed width of 15.85 m. During the feasibility studies, it is found that the Govt. of Andhra Pradesh is contemplating to widen SRMC in the ultimate stage with a bed width of 32 m. Considering this scenario, the carrying capacity of the canal has been computed and is found to be 1295 cumec. The canal can easily accommodate the additional discharge of the proposed diversion.

#### **6.5 Cross Regulator at Banakacherla**

There are three cross regulators existing each having three vents of size 10 m x 8.5 m at the end of Srisailam Right Main Canal situated at Banakacherla village, one for Srisailam Right Branch Canal, one for Telugu Ganga Canal and one for emergency Escape Channel. The discharge capacity of central escape of cross regulator at Banakacherla has been worked out and is found to be 465.59 cumec. The central

regulator that is proposed for emergency escape is proposed to be utilised for passing the discharge of Krishna (Srisaillam) - Pennar link.

## **6.6 Link Canal Alignment**

### **6.6.1 Approach Channel**

The length of the existing approach channel is 3.4 km from Srisaillam reservoir to Pothireddipadu head regulator. Most of its length lies under submergence of Srisaillam reservoir.

### **6.6.2 Srisaillam Right Main Canal**

Srisaillam Right Main Canal takes off from Pothireddipadu head regulator and in this reach it runs predominantly in south-west direction. At RD 16.338 km Srisaillam Right Main Canal culminate into Banakacherla cross regulator.

### **6.6.3 Escape Channel**

The Escape Channel takes off from the central escape of the cross regulator at Banakacherla and runs for 3.56 km southwards before joining Nippuluvagu stream.

### **6.6.4 Nippulavagu Stream RD 0 to 14.41 km**

The water from the Escape Channel will be let off into Nippulavagu and is proposed to be carried through the natural streams of Nippulavagu, Galeru and Kunderu. The Nippulavagu runs in south and south-east direction before joining Galeru stream near Ayyavaripalli village.

### **6.6.5 Galeru Stream RD 14.41 to 38.50 km**

Galeru stream runs predominantly in southern direction. Santajatur anicut is located on Galeru at RD 22.375 km. Near Bhimavaram village the stream Galeru takes a turn towards west and joins Kunderu stream at RD 38.50 km.

### **6.6.6 Kunderu Stream RD 38.50 to 180.32 km**

In the initial reach, Kunderu stream runs in south-west direction. Thereafter, Kunderu runs predominantly in southern direction and near Koilkuntla town it takes a turn towards south east. Rajoli anicut is located on Kunderu at RD 126.767 km. Near Kanaguduru, the Kunderu

changes its direction towards south and continues to flow in the same direction till it joins the river Pennar at RD 180.32 km.

Cross-sections of these streams have been taken at 500 m intervals and using these cross-sections, the carrying capacities of the streams have been worked out. It is observed that for the entire stretch of Nippulavagu stream and some part of Galeru stream, embankments need to be provided to carry the designed discharge of 163 cumec, in addition to the self discharge of these streams. The remaining stretch of Galeru and the entire length of Kunderu can easily accommodate the quantity of water proposed for diversion through the link. The self discharge of the streams has been worked out on prorata basis using the maximum discharge observed at Alladupalli G&D site on Kunderu river.

The discharge of Nippulavagu works out to 13 cumec and the same for Galeru works out to 44 cumec. The embankments have been designed for accommodating the designed discharge of link canal and also the self discharge of the natural streams.

The existing anicuts at Santajatur and Rajoli on streams Galeru and Kunderu are low level submersible anicuts and there is no need for modification of these structures.

## **6.7 Mini Hydrel Schemes**

From the field survey of natural streams, natural falls, at which drops not less than 3 m are identified at four places on the streams Nippulavagu, Galeru and Kunderu. It is proposed to generate hydrel power at these locations. Design details of these four mini hydrel power houses are given in the Chapter on "Power".