

# Tendering and Contract Management

Jalayagnam marked a departure from the regular mode of contracting for irrigation projects in the State. All the works relating to the projects under this programme were awarded on turnkey basis through Engineering, Procurement and Construction (EPC) method. Tendering and contract management assume greater importance in this context, since the survey and investigation, design and execution of projects are entrusted on a fixed price basis. Audit review of the tendering and contracting processes revealed the following.

## 4.1 EPC system of contracting

EPC system of contracting is being followed world over based on “Federation Internationale des Ingenieurs – Conseils (FIDIC)” for time bound execution of projects and minimizing risks to the owners. In this system, the contractor is to design a project or work, procure all the necessary materials and construct it, either through own labour or by subcontracting part of the work and deliver it to the employer. The contractor carries the entire risk of the project for schedule, as well as budget, in return for a fixed price, and hence this mode of contracting is also called “Lump-sum Turnkey”. The employer would have to define, clearly, (i) scope and specifications of the project (ii) quality parameters (iii) project duration, and (iv) cost.

### 4.1.1 EPC system as adopted by Government of Andhra Pradesh

The EPC model as adopted by GoAP for the projects taken up under Jalayagnam programme is detailed below:

Responsibilities of the contractor	Responsibilities of Government
<p><b>Engineering:</b></p> <ul style="list-style-type: none"> <li>◆ carry out the related surveys of project site for construction of the head works, canals and distributory system etc.</li> <li>◆ identify the localized area to be irrigated</li> <li>◆ carry out exploration of sub-soil for designing of various structures, prepare hydraulic particulars of canals and designs for all structures</li> <li>◆ prepare land plan schedules for acquisition of requisite land and submit to the Department for further processing and making the land available for construction.</li> </ul>	<ul style="list-style-type: none"> <li>◆ approve designs and drawings submitted by the contractor</li> <li>◆ arrange land to the contractor</li> </ul>
<p><b>Procurement:</b></p> <ul style="list-style-type: none"> <li>◆ work out the requirement of machinery, material, manpower etc., and procure them.</li> </ul>	<ul style="list-style-type: none"> <li>◆ provide mobilization advance as per eligibility, where requested</li> </ul>

Responsibilities of the contractor	Responsibilities of Government
<p><b>Construction:</b></p> <ul style="list-style-type: none"> <li>◆ construction should be taken up and completed as per the milestones agreed to and as per the approved hydraulic particulars, designs and drawings for various components of the project</li> <li>◆ establish quality control lab, conduct various tests and maintain all the required records of the materials, test results, mark out, placement, consolidation and any other registers that are required for satisfying the Department as well as the third party quality assurance teams.</li> <li>◆ record the measurement of work done and produce to the Department for checking and arranging payments.</li> <li>◆ operate and maintain the project for a period of two years after its completion.</li> </ul>	<ul style="list-style-type: none"> <li>◆ monitor the quality of work and pace of progress, payments etc to ensure completion of project within the scheduled time</li> </ul>

i. In its foreword on the general conditions of contract for EPC, FIDIC stated that the contractual conditions recommended by it for EPC turnkey projects are not suitable under some circumstances, as detailed below:

- ◆ ***If there is insufficient time or information for tenderers to scrutinize and check the employer's requirements or to carry out their designs, risk assessment studies and estimating, EPC turnkey system is not suitable:*** The time required for bidding would depend on the size and complexity of the project. It is necessary to give adequate time for bidding, since the contractors have to carry out preliminary survey and investigation before offering their bids in the EPC system. Audit scrutiny revealed that the time limit prescribed for bidding ranged from 8 days (Telugu Ganga) to 300 days (Galeru Nagari). Out of the 180 packages test checked, in 37 packages, the bidding time was less than 30 days. When the time given for tender was less than 30 days, on an average, less than 2 bids were received. When the time given was between 30-60 days, the average number of bids received was 5. Thus, EPC system is suitable, only if the Government standardizes the bidding time, having regard to the size and complexity of the projects.

- ◆ ***If the construction involves substantial work underground or work in other areas which the tenderers cannot inspect:*** Some of the Jalayagnam works like SLBC Tunnel (51 km tunnel), Veligonda (18 km tunnel) and other spillway dam and head works like Polavaram involved substantial underground work.

ii. As per FIDIC contractual conditions, the employer should give the contractor access to the site within the time stated in the contract or with effect from the date of commencement. However, the Government could not provide clear land upfront to the contractors for execution of the projects in several cases.

iii. ***FIDIC model provides for contractual clauses to provide for variation to scope and specification of work:*** The contracts entered in to by the Government in the Jalayagnam projects did not provide for variation clauses.

iv. **In order to value variations to contracts, FIDIC model suggests that tenders should be accompanied by detailed price breakdowns, including quantities, unit rates and other pricing information:** The test checked projects did not contain the detailed price break-up with unit prices and quantities involved. Later, vide Government Order (GO) No. 50 dated March 2009, Government formally dispensed with the system of quoting for quantities.

## 4.2 Empanelment of contractor firms

In order to ensure that projects are completed within the envisaged timeframe, and eliminate the delays involved in going in for an elaborate tendering process for every work contract, the State Government decided to empanel the contractor firms which fulfilled the pre-qualification criteria.

### 4.2.1 Pre-qualification criteria

The following criteria were prescribed for empanelment of contractor firms for participation in prioritized projects.

	Category-I	Category-II
	<b>For Major packages of prioritized projects</b> (where the value of contract was above ₹100 crore)	<b>For Medium sized packages of prioritized projects</b> (where the value of contract was between ₹50 - 100 crore)
(i)	Firm/Company registered with GoAP with valid registration under special class with specialization in (i) earth work and canal lining (ii) construction of bridges and other structures or special class civil works	Same as for major irrigation projects
(ii)	Annual turnover of not less than ₹400 crore in at least two years in a block period of five financial years	Annual turnover of not less than ₹50 crore in at least two years in a block period of five financial years
(iii)	Satisfactory completion of not less than 90% of contract value as a prime contractor of at least <b>one</b> similar work* of magnitude not less than ₹100 crore in the block period of preceding five financial years	Satisfactory completion of not less than 90% of contract value as a prime contractor of at least <b>one</b> similar work* of magnitude not less than ₹20 crore in the block period of preceding five financial years
(iv)	Net worth of ₹100 crore	Net worth of ₹5 crore
(v)	Net profit before tax for last three years	Net profit before tax for last three years
(vi)	In case of a Joint Venture, the number of partners should not be more than three	In case of a Joint Venture, the number of partners should not be more than two

\*Similar works means works of dams / barrages / canal system including CM & CD works and hydraulic tunnels / lift irrigation canal schemes / hydro electric projects.

Government empanelled 19 firms under Category – I and 65 firms under Category – II. Audit observations in this regard are given below.

i. **Experience criteria:** EPC contracts under Jalayagnam required the contacting firm to carry out survey, soil investigation and design of the project, apart from execution of works of diverse nature like construction of reservoirs, dams, pump

houses, pumps and motors for lifts, excavation of canals, laying pipelines etc. Considering that the contractor firm was awarded works for all or many of these components along with the associated survey, investigation and design aspects, it is imperative that the contractor firms had the requisite minimum experience in all the components of the packages. However, the Government prescribed satisfactory completion of any “one” similar work. This was a significant deviation from its earlier orders<sup>1</sup>. Further, the qualification criteria did not prescribe previous experience in execution of EPC turnkey contracts, by all or any of the joint venture firms.

The Department replied (July 2012) that completion of similar works criteria made sure that completion was of paramount importance rather than mere execution of minimum quantities. The reply is not acceptable, since mere completion without technical competence in the concerned domain will not ensure a quality product.

*ii. Equipment & personnel:* As per the standard contracting procedure of GoAP, the bidders should ensure availability of (i) key and critical equipment (ii) key personnel with adequate experience. However, Government ignored these aspects while prescribing the qualification criteria for empanelment.

The Department replied (July 2012) that the bidders were required to furnish these particulars and were **expected** to meet these criteria by virtue of their earlier work experience. The reply is not acceptable, as these aspects should be specified and considered while awarding huge projects, instead of **expecting** the contractor firms to comply with automatically.

*iii. Bid capacity:* Prior to empanelment of firms for Jalayagnam, GoAP had followed a standardized procedure for assessing the available bid capacity of the contractors through a formula of “2AN-B”<sup>2</sup>.

However, Government neither applied the already existing procedure at the time of empanelment nor specified any other alternative procedure for assessing the available bid capacity while evaluating tenders in Jalayagnam.

In its reply (July 2012), the Department stated that Government decided to empanel agencies with rich experience and financial capability to execute the works within time, and therefore, did not consider it necessary to carry out a technical evaluation of each bid every time. The reply is not acceptable, since none of the works were completed on time, albeit, for various reasons. It is also not true that tendering procedures were completed in a short span of time due to non-evaluation of technical bids every time, since the amount of time taken for evaluation ranged up to 303 days (Devadula).

<sup>1</sup> GO Ms. No. 23, dated 5 March 1999 and G.O.Ms.No.94, dated 1 July 2003 which state that the contractors should have executed minimum quantities of (i) cement concrete (ii) earthwork (iii) relevant principle items usually @ 50% of expected peak quantities.

<sup>2</sup> ‘A’ stood for maximum value of civil engineering works executed in any one year during the last five years, ‘B’ indicated the value of existing commitments and ongoing works, while ‘N’ is the number of years prescribed for completion of works. Under this procedure, the bidders had to demonstrate that their bid capacity was more than the estimated value of the work for which tenders were called for

The Department further stated that, it had issued instructions to award a maximum of only three packages to the empanelled firms, and that, it had awarded all the subsequent packages under open category only so as to assess the financial capability of the participating firms, in line with GO No.94.

The reply of the Department is not correct, as can be seen from the details given in *Appendix- 4.1*, which shows that 8 empanelled contractor firms under Category I and 15 firms under Category II have been entrusted with more than 3 packages.

*iv. Foreign firms:* The experience certificates furnished by the foreign agencies pertain to their respective countries or elsewhere and not in India. As such, the experience certificates were not susceptible for verification by GoAP. Further, foreign partners of two Joint Venture firms<sup>3</sup> executing Spill way and ECRF packages of Polavaram project were not actually involved in execution of work. This clearly indicates that the foreign firms were roped in only to qualify the experience criteria for empanelment.

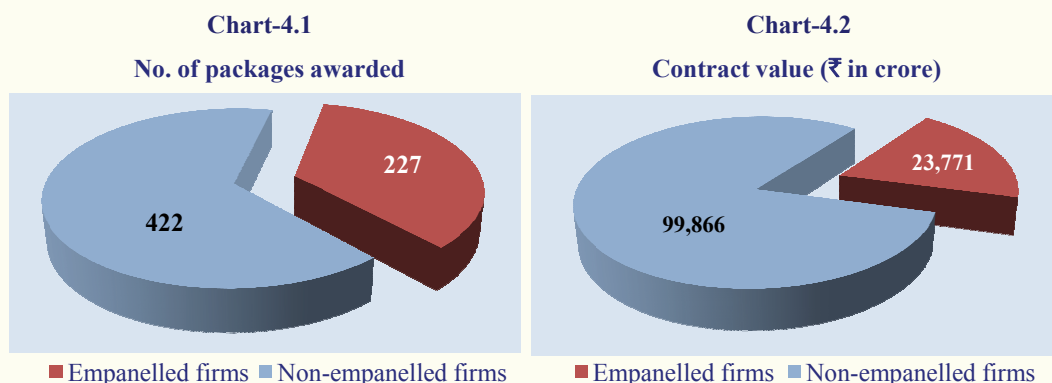
During the Exit Conference (July 2012), the Department accepted that this issue was yet to be addressed.

*v. Time limit for validity of empanelment:* During the seven years since the last empanelment was done (January 2005), Government has neither reviewed the list of empanelled firms nor made any attempt to empanel more number of firms which might have gained eligibility during this intervening period.

During the Exit Conference (July 2012), the Department accepted that this issue was yet to be addressed.

#### 4.2.2 Award of works

Out of 649 packages<sup>4</sup> worth ₹1,23,636 crore, only 227 packages<sup>5</sup> (35 per cent) valuing ₹23,771 crore (19.27 per cent), were entrusted to the empanelled firms, while the remaining 422 packages worth ₹99,866 crore were awarded to firms under 'open category' as can be seen from the charts below.



Source: Compiled from information furnished by I&CAD Department

<sup>3</sup> CR18G of CR18G-BSCPL, Hyderabad and Sino-hydro of Madhucon-Sino-Hydro, Hyderabad (JV)

<sup>4</sup> Including modernization and flood banks

<sup>5</sup> Category I (Major packages) 69 packages worth ₹ 14549.24 crore and Category II (Medium packages) 158 packages worth ₹ 9221.38 crore

In fact, immediately after empanelment (January 2005), in March 2005, works pertaining to Kalwakurthy, Bheema and Polavaram projects amounting to ₹1903.70 crore were awarded under open category. 84 firms empanelled under Categories – I & II on the strength of their JVs obtained contracts worth ₹23,771 crore, and the partners in these firms bagged contracts worth ₹7,296 crore on their own under ‘open category’ (23 cases).

The Department replied (July 2012) that at the time of empanelment, only 26 projects were envisaged for completion within 2-5 years, and that, the number was later increased to 46, then to 64, 74 and finally to 86. It was further stated that since the number of packages increased and a majority of the empanelled agencies were already awarded 3 packages, it was felt prudent to award all the subsequent packages under **open category**, so as to assess the financial capability of such participating firms.

Audit agrees that tendering under open category is a more transparent method of awarding contracts for huge projects. However, Government needs to review and update the empanelled list, since it is over seven years since it was prepared, and many new firms could have qualified during the intervening period.

### 4.2.3 Joint Ventures

The empanelled joint venture (JV) firms changed their partners several times during 2004-12 to form new JV firms to bag works in ‘open category’. For instance, in **Pranahita Chevella project**, four firms were involved in 15 contracts worth **₹21,843 crore** by forming JVs in 15 different combinations as shown below.

**Table-4.1**  
**Pranahita Chevella**

MEIL			Maytas		
Package No.	Contractor Firm	Contract amount (₹ in crore)	Package No.	Contractor Firm	Contract amount (₹ in crore)
3	HCC – SEW – <b>MEIL</b>	639.57	2	<b>MAYTAS</b> – NCC HYD JV	215.47
5	<b>MEIL</b> – MAYTAS – ABB – ANDRITZ	3626.11	4	SUSHEE HITECH – PRASAD–NCC– <b>MAYTAS</b>	1675.25
7	MAYTAS – <b>MEIL</b> – ABB – AAG	2118.59	5	MEIL – <b>MAYTAS</b> – ABB – ANDRITZ	3626.11
8	<b>MEIL</b> – SEW- MAYTAS – BHEL	3271.09	7	MEIL – <b>MAYTAS</b> – ABB – AAG JV	2118.59
10	HCC – <b>MEIL</b> – BHEL	1928.00	8	MEIL – SEW – <b>MAYTAS</b> – BHEL	3271.09
11	SEW – <b>MEIL</b> - BHEL	2500.53	14	AMR – <b>MAYTAS</b> – KBL – WEG	659.27
12	<b>MEIL</b> – SEW – ABB – AAG	1954.59	17	ITD CEMENTATION (INDIA) LTD., - <b>MAYTAS</b>	663.24
28	<b>MEIL</b> – ZVS – PVSRSN – ITT	486.68			
<b>Total</b>		<b>16525.16</b>	<b>Total</b>		<b>12229.02</b>

**SEW**

Package No.	Contractor Agency	Contract amount (₹ in crore)
3	HCC – SEW – MEIL	639.57
8	MEIL – SEW – MAYTAS – BHEL	3271.09
11	SEW – MEIL – BHEL	2500.53
12	MEIL – SEW – ABB – AAG	1954.59
15	SPML – SEW – AMR	585.98
16	PLR – GVPR – SEW	1082.98
19	GAMMON – SEW	435.89
	<b>Total</b>	<b>10470.63</b>

**NCC**

Package No.	Contractor Agency	Contract amount (₹ in crore)
2	MAYTAS – NCC HYD JV	215.47
4	SUSHEE HITECH – PRASAD – NCC – MAYTAS	1675.25
	<b>Total</b>	<b>1890.72</b>

Source : Compiled from records of I & CAD Department

Similar is the case with other projects like Dummugudem NS Tail Pond, where three firms viz. MEIL, Maytas and AAG together bagged contracts worth ₹11630.89 crore, by forming JVs, while these firms had other JV partners in other projects. The details of firms which were involved in contracts worth more than ₹10,000 crore, either under empanelled category or under open category, and by entering in to several JVs, are listed below:

**Table-4.2**

Sl. No.	Name of the Agency	Number of packages	Value of contracts in which the firm is involved (₹ in crore)	Number of firms with which JVs were formed
1	MEIL	28	36,916	23
2	SEW	51	25,369	20
3	MAYTAS	28	23,186	17
4	ZVS	11	13,989	17
5	AAG	8	12,981	8
6	BHEL	5	12,619	8
7	ABB	7	11,335	8
8	IVRCL	30	10,725	11

Source: Compiled from records of I & CAD Department

Firms mentioned at serial numbers 1, 5, 6 and 7 were not in the original empanelled list but have teamed up with partners of several empanelled firms to obtain contracts under open category.

The Department stated (July 2012) that the amounts mentioned against each of the above firms were total value of works and not their individual stakes in those packages. It was further stated that there was no restriction in forming JVs as long as they fulfilled the conditions of the bid, and that, every JV has its own legal entity and identity and is different from its original mother company, as far as performance in that JV is concerned.

While Audit agrees that the amounts were total value of works and not individual stakes, the stake of individual firms could not be analyzed, since the Department did not provide the details relating to their incorporation as JVs and the extent (percentage) of their interest in the particular contract in question, despite a specific request to this effect.

### 4.3 Estimation of costs

Before taking up Jalayagnam, the GoAP has been following the ‘Unit Price Contract’ system in all the works relating to irrigation projects. Under this conventional system, payments are made to contractors with reference to the quantities of work actually executed by them duly considering the tender percentage quoted by them. This system is still being followed by all other departments and also by the Irrigation Department in respect of minor irrigation projects and maintenance works.

The EPC agreements under Jalayagnam were composite contracts, under which, the contractors are required to conduct detailed survey and investigation, design the project and execute the works on turnkey basis. The contractors are required to quote a fixed lumpsum price at the time of tendering. For the purpose of cost estimation, the Department prepared internal bench mark (IBM) estimates, to compare with the price bids of the contractors. While evaluating the bids, the Department continued to follow the existing procedure of rejecting the bids in excess of 105 *per cent* of the IBM estimate values.

Government did not frame any guidelines for preparing the estimates with regard to EPC contracts. The task of preparing the estimates was initially left to the concerned project Chief Engineers/Engineers-in-chief. In May 2006, a committee was constituted for finalizing the IBM estimates. However, there was no uniformity in preparation of estimates for various projects. In the test checked projects, IBM estimates were worked out at increased amounts on five fronts viz., (i) higher estimation of quantities / quantum of work (₹368.88 crore) (ii) higher estimation of costs of components (₹1649.98 crore) (iii) inclusion of duties / taxes which do not cover irrigation projects like Service tax (₹684.15 crore) or already exempt for irrigation projects through various notifications of Government of India, like Central Excise duty (₹265.23 crore) (iv) inclusion of un-authorized amounts towards price variations (₹108.42 crore) and (v) inclusion of higher amounts towards insurance (₹52.85 crore). The total impact of these components in increasing the IBM values in the test checked cases was ₹3,129.51 crore.

These issues are discussed in brief in the succeeding paragraphs.

#### 4.3.1 Abnormal increase in project cost

- i. In May 2007, administrative approval for Dummugudem NS Tail Pond was accorded for ₹8,930 crore. Within less than two years, this was revised upwards to ₹19,521 crore (February 2009). The items on which there was an increase and the stated reasons for the increase are tabulated below.

**Table-4.3**

(₹ in crore)

Sl. No	Description	Initial cost	As Revised	Increase	Reason stated by Department
1	Tunnel	990	3776	2786	Increase in tunnel length by 3.20 Km and adoption of twin tunnel instead of a single tunnel
2	Earthwork & Lining	1128	3906	2778	(i) Change in alignment (ii) Change in soil classification (iii) Increase in number of feeder channels (iv) Increase of lining from 125mm to 150mm



Sl. No	Description	Initial cost	As Revised	Increase	Reason stated by Department
3	Electro Mechanical works	3819	5846	2027	Increase in the number of pump houses from 4 to 6 and change in rates.
4	Cross Drainage works	730	2016	1286	Provision made based on detailed investigation
5	Taxes and other provisions	78	2200	2122	As per Government orders
<b>Cost increase</b>				<b>10999</b>	

Source: Project records

The reasons stated by the Department are not acceptable due to the following.

- The escalation in the cost of the project due to change in the scope and design of works, indicates inadequate scoping of work *ab initio*;
- The reasons stated for revision in cost upwards could have been factored in initially itself, if the works were tendered after approval of DPR. Even if the initial cost estimates were not based on project scope as per DPR, at least the cost/scope revision could have been done after the approval of DPR. It is pertinent to note that while the revision in cost was approved in February 2009, the DPR was finalized almost a year later in October 2010. This would have brought about clarity in scope, design and specifications of the project.

#### 4.3.2 Over-estimation of quantities/quantum of work

Cases of over-estimation of items/quantities pertaining to three projects test checked, involving an amount of ₹84.12 crore are summarized below:

**Table-4.4**

Sl. No.	Project	Package	Item	Quantity provided for in estimates	Actual quantity executed/ approved	Cost Difference (₹ in crore)
1	Nettempadu	108	Storage capacity of two reservoirs	2.6 TMC	2.0 TMC	17.17
2	Handri Neeva	Phase I Package 2	Pumps and Motors	42 MW	39.12 MW	6.62
3	Polavaram	67	Earthwork	16.62 lakh cum	6.47 lakh cum	3.84
4	-do-	-do-	Banking	6.59 lakh cum	1.62 lakh cum	2.67
5	-do-	-do-	Concrete	3.13 lakh cum	0.78 lakh cum	53.82
<b>Total</b>						<b>84.12</b>

Source: Project records

Further, there have been cases where the items specified in the contracts were not actually required or executed. The cost impact of such items with reference to the originally estimated cost was ₹284.76 crore as detailed below.

Table-4.5

Initial proposal	Actual execution	Amount involved (₹ in crore)	Government's reply	Audit remarks
<b>Polavaram (Canal packages)</b>				
CNS soil backing to lining	Not being executed	277.58	Original alignment was through black cotton soil. Hence CNS soil treatment below lining was provided to reduce effect of swelling and shrinkage of soils. After entrustment and detailed survey the contractor fixed a different alignment to safeguard the canal system.	The reply did not justify the circumstances under which the Department itself could not consider alternative alignment in view of safety of the canal in the initial stages instead of proposing canal to pass through black cotton soils and provide for CNS soil backing to the lining.
<b>Polavaram (63 &amp; 64)</b>				
900 mm thickness cement concrete lining	800 mm thickness CC lining in view of the hard rock strata	7.18	Recovery proposals for reduction of lining thickness have been submitted to Government as of July 2012.	Recovery yet to be effected.
<b>Total</b>		<b>284.76</b>		

Source: Project records

### 4.3.3 Adoption of varying rates for distributory network

Creation of distributory network in an irrigation project involves excavation of distributaries/majors, minors, sub-minors and field channels.

Audit analyzed the rates provided for distributory network in the estimates relating to 94 packages in the test checked projects, where excavation of distributory network was involved. The aggregate amount provided in these 94 packages for a distributory network of 40.02 lakh acres was ₹5,005.49 crore. In these estimates, the Department provided the cost of the distributory network at a lump-sum price per acre instead of assessing the costs based on the quantities of work to be executed. The rates across the projects ranged from ₹4,500 to ₹16,500 per acre as shown below.

Table-4.6

Year	Minimum rate per acre (in ₹)	Project	Maximum rate per acre (in ₹)	Project
2004-05	4,856	Vamsadhara Stage II Phase II, Venkatanagaram Pumping Scheme & Bhupathipalem Reservoir Project	12,000	Veligonda (Pkg.IV)
2005-06	4,700	Handri Neeva Phase-II	9,500	Rajiv Dummugudem LIS
2006-07	4,500 4,700	Galeru Nagari (Pkg.13) Handri Neeva Phase-II	12,000	Gandikota-CBR Lift Scheme
2007-08	10,500	SLBC Tunnel Scheme	16,500	Pranahita Chevella
2008-09	4,700	Handri Neeva Phase-II	16,500	Yellampally
2009-10	8,600	Thotapalli Barrage	16,500	Devadula (Phase-III)

Source: Project records

- i. In Indira Sagar Dummugudem, rates adopted for distributory network varied from one package to the other. While a lump-sum rate of ₹ 7500 per acre was adopted in packages 21 and 22, a higher rate of ₹ 9500 per acre was provided in packages 50 and 51 resulting in increase in the estimates by ₹36.20 crore in these two packages. Both these packages (50 and 51) were awarded to single bidders.
- ii. In Telugu Ganga project, Government accorded administrative approval in April 2007 for Siddapuram LIS for irrigating an ayacut of 21,300 acres. In the administrative approval, the cost of distributory network was provided at ₹7,000 per acre. However, in the IBM estimates approved just one month later in May 2007, the Department adopted a higher rate of ₹8,000 per acre. Further, the estimates provided for the cost of development of distributory network for the entire ayacut of 21,300 acres, even though the ayacut contemplated under the scheme included the already existing ayacut of 1,000 acres. The cost of the distributory network for the new ayacut of 20,300 acres at the rate of ₹7,000 per acre approved by Government works out to ₹14.21 crore. As against this, the Department provided an aggregate amount of ₹17.04 crore (@ ₹8,000 per acre for 21,300 acres). Thus, the estimates were inflated by ₹2.83 crore.
- iii. The rate provided in the above mentioned administrative approval accorded in April 2007 was ₹7,000 per acre. In the estimates for packages II and III of the same project (Telugu Ganga) in 2004-05, a higher rate of ₹9,300 per acre was provided. Thus, the cost of development of a total ayacut of 1,61,903 acres in the estimates of these two packages was higher by at least ₹37.24 crore.

The Department replied (July 2012) that the cost of the distributory network would depend on the quantities involved in it, apart from the topography of the area, nature of the basin, soil strata met with, CM&CD<sup>6</sup> works involved, whether the canals are lined or not etc., which would vary from project to project, and, therefore, it would not be possible to adopt a uniform rate.

The reply of the Department is not acceptable due to the following reasons:

- In all the estimates test checked by audit, the costs for distributory network were not based on the project and package specific issues like topography, soil classification of the area etc.
- A uniform rate of ₹16,500 per acre was adopted (2007-08) in all the packages of Pranahita Chevella where the proposed ayacut spanned across six districts viz. Adilabad, Karimnagar, Medak, Nalgonda, Nizamabad and Ranga Reddy. The same rate was adopted in Yellampally (2008-09) and Devadula Ph III (2009-10), although the ayacut is located in Karimnagar and Warangal districts.
- The rate adopted in Handri Neeva Ph II (packages 29, 30, 64 and 65) for the ayacut located in Chittoor district was ₹4,700 per acre. However, a higher rate of ₹9,000 was adopted in Galeru Nagari (packages 12 and 14) for ayacut in the same district, in the estimates prepared in the same year (2009-10).

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<sup>6</sup> Cross masonry and cross drainage

- IBM committees were suggesting adoption of rates of other projects as in the case of Devadula Phase III works, wherein it was instructed to adopt the costs as per Pranahita Chevella scheme, and also in the case of Siddapuram lift irrigation scheme, which was based on Gandikota lift irrigation scheme.

#### 4.3.4 Higher estimation of cost of items

In the following cases, the IBM estimates of cost of items were not worked out correctly. The effect of such incorrect estimation with reference to the rates provided for the other projects, was ₹1573.71 crore.

Table-4.7

Sl. No.	Project	Package	Item	Cost provided for	Estimated cost in other projects	Reference	Cost Difference (₹ in crore)
1	Dummugudem Tail pond	Packages 1, 4, 5 & 6	Electro-Mechanical equipment for 1135.50MW	₹2.46 crore per MW	₹2.40 crore per MW	Pranahita-Chevella estimates	68.13
2		Packages 1, 4, 5 & 6	Auxiliary equipment to EM equipment to six lifts	₹136 crore per lift*	₹4.25 crore per lift	-do-	790.50
3		Packages 1, 4, 5 & 6	Surge protection equipment for 8 pumps per lift for 4 lifts (1, 2, 3 & 6)	₹16 crore <sup>7</sup> per pump*	₹2.50 crore per pump	-do-	432.00
4		5/2008	M15 grade lining for 21.25 lakh sqm	₹709 per sqm	₹612 per sqm	Standard data	20.61
5		1	85 M wide Head regulator	₹21 crore (2007-08 rates)	₹12.19crore (2009-10 rates)	DPR	8.81
6		All packages	Approach roads & avenue plantation	₹146.52 crore#	₹19.9 crore (2009-10 rates)	DPR	126.62
7	Handri Neeva	Phase I works	Distributary network for 1.98 lakh acres	₹9000 per acre	₹4700 per acre	Phase II	85.14
8		6, 15 & 16	Excavation of tunnels (5.572 lakh cubic meters)	₹1833 per cum	₹1081per cum	Base rate of SLBC increased by 10 per cent per year	41.90 <sup>8</sup>
<b>Total</b>							<b>1573.71</b>

Source: Project records

\*Lumpsum amounts were provided in the estimates without break-up

#Percentage provision was made without assessing quantum of work

In IBM of Nettempadu project, there were errors in carrying forward figures from one page to another in the estimates of Stage-I package and in totaling in Stage-II

<sup>7</sup> ₹128 crore / 8 pumps per each lift

<sup>8</sup> Package-6: ₹ 12.12 crore; Package-15: ₹ 11.58 crore; Package-16: ₹ 18.20 crore

package, which pushed up the estimates by ₹13.60 crore and ₹10.20 crore respectively. The impact of such errors is that the bids will be compared with higher costs and contracts would be awarded for a higher amount than is necessary.

#### 4.3.5 Inclusion of exempted taxes/duties in estimates

Audit scrutiny of estimates revealed that provision was made for service tax, central excise duty and turnover tax in the estimates, which do not apply to irrigation projects. Details are given below.

##### 4.3.5.1 Service Tax

As per Chapter – V of Finance Act, 1994 and the rules made there under, service tax is not applicable to irrigation projects and construction services not meant for furtherance of commerce and industry. However, huge amounts were included in the IBM estimates towards this component in the following test checked packages:

Table-4.8

Sl. No.	Project	Package	Cost included in estimates (₹ in crore)
1	Pranahita Chevella	3	0.36
2		4	59.61
3		5	50.13
4		6	93.26
5		7	29.15
6		8	92.10
7		9	17.94
8		10	51.30
9		11	67.31
10		12	51.39
11		13	18.80
12		20	15.47
13		21	30.00
14		22	45.28
15	Yellampally	Spillway gates	6.81
16	Devadula	Phase III Package I	37.26
17		Phase III Package II	2.49
18		Phase III Package III	15.49
<b>Total</b>			<b>684.15</b>

Source: Project records

##### 4.3.5.2 Provision of Turnover tax despite providing for Sales tax

Apart from providing for sales tax @ 4 per cent in the IBM estimates, in Nettempadu project, ₹11.80 crore was provided in the IBM estimates towards Turnover tax, which was not applicable in cases where sales tax is applicable.

##### 4.3.5.3 Central Excise

Government of India, in January 2004, issued a notification fully exempting all items of machinery, equipment, pipes, etc., required for setting up water supply schemes intended for agricultural or industrial use, from payment of Central Excise Duty (CED). Estimates in respect of the following works were loaded with ₹149.70 crore towards CED.

**Table-4.9**

Sl. No.	Project	Package	Amount of CED included (₹ in crore)
1	Nettempadu	Lift I	31.98
2		Lift II	24.85
3	Devadula	Phase I Stage I	54.27
4		Phase II Package	38.60
<b>Total</b>			<b>149.70</b>

Source: Project records

- Package 5 of Veligonda project involved procurement of equipment like TBM, electro mechanical items etc., which are exempted (January 2004) from CED, when procured for water supply purposes. However, CED component of ₹115.53 crore was included (February 2007) in the IBM estimate (₹715.95 crore).

The Department stated that its officers were not aware that customs and central excise exemptions were available. The reply is not acceptable due to the following reasons.

- It is over three years since this exemption was given by the GoI, and the Department should keep itself abreast of all the relevant provisions/orders with regard to preparation of estimates;
- The contractor was aware of the exemption, as is evident from the affidavit filed by him before the Hon'ble High Court of Andhra Pradesh, stating that his bid had taken in to account the available exemptions.
- Inclusion of exempted duties in the IBM value results in improper evaluation of bids. Notwithstanding Government's instructions to reject tenders exceeding 5 per cent ceiling, such inclusion of exempted duties would hike the IBM, resulting in accepting bids not falling within the criteria.

This provision is applicable to all the other projects under Jalayagnam and Government needs to look in to all the cases in this regard.

#### **4.3.6 Insurance**

Rates in IBM were inflated in several projects due to provision of higher amounts towards insurance premium on the works as a percentage of the value of the work. The notice inviting tenders as well as the conditions of the contracts stipulate that the contractor has to provide insurance cover for all the envisaged risks for the total work for the entire period of contract.

Audit observations in this regard are as follows:

- The Department did not obtain quotations from various reputed firms before including insurance component in the IBM estimates resulting in a huge mismatch between what was provided in the IBMs and the value or premium which the contractor firms paid towards insurance. In some projects, the percentage provided for insurance was worked out on the cost of the work on annual basis (based on the period of insurance), while in other cases, percentages were adopted irrespective of the insurance period. Test check revealed the following.

Table-4.10

(₹ in crore)

Sl. No.	Project	Package	GoAP estimate	Actual premium paid by contractors	Cost Difference
1	Dummugudem NS Tail Pond	10 packages	72.86	36.49	36.37
2	Indirasagar Dummugudem	6 packages	8.54	1.99	6.55
3	Yellampally	7 packages	8.13	1.34	6.79
4	Rajiv Dummugudem	1/1	3.12	0.82	2.30
5	Komaram Bheem	Single package	1.74	0.90	0.84
				<b>Total</b>	<b>52.85</b>

Source: Project records

- ii. There was no uniformity in computing and providing insurance cost component in the estimates across different projects/works. In the tunnel package of SLBC Tunnel, a provision was made at the rate of 0.028 *per cent* of the value of the work for a total insurance period of seven<sup>9</sup> years (i.e., an average rate of 0.004 *per cent* per annum), whereas in the two lift packages of Nettempadu, 2.4 *per cent* was provided for a total insurance period of six years (i.e. an average rate of 0.4 *per cent* per annum). In the same scheme, for packages 99 to 109, insurance coverage was provided at 0.345 *per cent* for the construction period of two years and maintenance period of another two years.
- iii. In Pranahita Chevella, insurance was provided in the IBMs at the rate of 0.525 *per cent* in 26 packages and at 0.37 *per cent* in two packages. However, the payment schedules agreed to with the contractors have varying percentages of insurance ranging from 0.08 to 0.5 *per cent*. The overall cost difference between the IBMs and payment schedules was ₹93.40 crore.
- iv. Government could not take advantage of insurance cover in the case of Yellampally project, where a scour has occurred in one of the works in September 2010 due to heavy flood. The portion of work, in which the scour has occurred, was withdrawn (19 January 2011) from the contractor due to stoppage of work from July 2010, and entrusted to another contractor. With the expiry of insurance cover on 31 January 2011, the Department could not claim the cost of damages estimated at ₹2.67 crore. As of July 2012, neither the scour was filled up nor was the insurance claim received.

The Department stated (July 2012) that it had lodged claim with the insurance company, and that, the work relating to filling of scour was in progress.

#### 4.3.7 Inclusion of amounts towards price variation/escalation

IBM estimates included amounts towards 'price escalation' in the following test-checked packages.

<sup>9</sup>Agreement period of five years and maintenance period of two years

Table-4.11

Project	Package No.	Amount included in estimates towards price escalation (₹ in crore)
Galeru Nagari	1	14.83
	2	13.78
	GKL-1	33.79
	47	10.30
	48	5.34
	49	5.15
Pulivendula Branch Canal	92	1.99
	93	3.57
Telugu Ganga Project	Pkg II	7.62
	Pkg III	8.78
	50	3.27
Total		108.42

Source: Project records

No reasons were recorded for making a provision in the IBMs for 'price escalation'. Audit could not find any specific instructions from Government allowing such loading of additional amounts in the estimates. Further, no such provision was made in the estimates in the other test checked projects. Therefore, the reason for making such a provision in these projects in Rayalaseema region is inexplicable.

#### 4.3.8 Delays in finalizing IBMs

- i. There were enormous delays in finalizing the IBM estimates. This was especially so in respect of Veligonda, Package-6 (Eastern main canal). Tenders for this package were invited on 4 November 2008 and the scheduled date for price bid opening was 22 December 2008. However, the scheduled dates were postponed nearly six times up to 3 February 2009 due to non-finalization of IBM value by the committee. The IBM value was also changed several times by the committees.

The Department replied (July 2012) that package 6 is a very complex work where both Stage I and Stage II works are to be synchronized and hence the committee took time to finalize the IBM values. The reply only reinforces the Audit contention that it is important to finalise the IBM values carefully before calling for tenders.

- ii. So was the case with Telugu Ganga project. Here, while according administrative approval for lining packages of left and right canals pertaining to Sri Potuluri Veera Brahmendraswamy Reservoir (SPVBR), the Government had specifically stated (April 2008 and February 2009) that the IBMs shall have to be got vetted by the IBM committee before inviting tenders. However, tenders were invited (8 September 2009) for both the works without approval of the IBM Committee on the instructions of the Secretary, Projects, I&CAD Department (Rayalaseema Region) on 21 August 2009. The IBM values for these works were approved on 6 November 2009. Price bids were opened on 30 November 2009 and work was awarded to the contractor on 7 April 2010. Revised administrative approval was accorded on 30 March 2010 and the estimates were technically sanctioned on 7 April 2010.



The Department replied that in the EPC mode of procurement, finalization of the IBM is a critical activity and that the IBM was finalized during tender process. It was further stated that giving technical sanction after calling for tenders occurred because of huge number of works and the urgency pressed to complete the works.

The reply confirms Audit contention that, finalization of IBM should precede call of tenders.

## 4.4 Tendering process

### 4.4.1 Tendering without technical sanction

Government instructed<sup>10</sup> in February 2006 that “*where tenders were called for without technical sanction, Government ratifies the action in calling for tenders before according technical sanction for the proposals received*”. This indicates that technical sanction should be obtained prior to calling for tenders and Government ratification is required where there are exceptions / violations.

- i. Tenders were called before according technical sanction or finalizing the value of the work in 143 packages (out of 180 packages test checked) pertaining to 21 projects.
- ii. In 66 packages pertaining to 14 projects, technical sanction was accorded after opening the bids.

The Department replied that technical sanction is a pre-requisite for taking up the work on ground, i.e., before signing the agreement, and that, technical sanction was accorded before the date of agreement and commencement of work in respect of all the packages cited in audit. The reply is not borne out by facts, as in 18 packages pertaining to SLBC Tunnel (1), Handri Neeva (12), Devadula (3) and Yellampally (2), **technical sanctions were accorded after the conclusion of agreements.**

The Department further stated that technical sanction is a mere departmental formality in EPC system and is not significant, and that fixation of IBM value is important. The reply is not acceptable as the possibility of variations to quantities is huge, in the absence of approved estimates for each component of work. Further, even IBM estimates were not finalized on time, as brought out earlier.

### 4.4.2 Delays in opening/acceptance of bids

One of the stated objectives of the Government in following the EPC mode of contracting was to cut down the time taken in approvals. Audit review of the tendering process in the test checked projects revealed the following:

- i. In 63 packages pertaining to 16 projects<sup>11</sup>, the Department took more than 90 days for finalizing the bids from the last date of their submission.

<sup>10</sup> 5217/Reforms/06 dated 23.02.2006

<sup>11</sup> Nettempadu (11), Handri Neeva (10), Dummugudem Tail pond (6), Rajiv Dummugudem (5), Indirasagar Dummugudem (4), Devadula (4), Pulivendula (4), Yellampally (4), Telugu Ganga (4), SLBC tunnel (2), Galeru Nagari (2), Polavaram (2), Veligonda (2) and one package each in Bhupathipalem, Pranahita Chevella and Somasila

- ii. In 14 packages of 3 projects<sup>12</sup> the time taken for opening the bid was more than the time given for bidding. In Nettempadu, **52 days** were taken for opening the bids. On the other hand, the time given for bidding was only 35 days in 12 out of 14 packages.
- iii. In 66 packages of 12 projects<sup>13</sup>, the time taken for accepting the bid after opening was more than the time given for bidding.
- iv. There were delays of more than 6 months in acceptance of bids in the following cases:

Table-4.12

Project Name	Package No.	Last date for submission of bids	Date of acceptance of bid	Time taken from submission of bids to their acceptance (in days)
Galeru Nagari	31	29/09/2006	19/04/2007	202
Polavaram	ECRF	12/01/2006	14/07/2006	183
	OC-8	19/04/2005	31/12/2005	256
Devadula	Ashwaraopally tank	14/03/2006	11/01/2007	303
	II of Phase III	08/08/2008	13/02/2009	189
	RS Ghanpur tank	14/03/2006	11/01/2007	303
	Tapsapally tank	14/03/2006	11/01/2007	303
Nettempadu	99	15/02/2005	21/10/2005	248
	100	15/02/2005	21/10/2005	248
	101	15/02/2005	19/08/2005	185
	102	15/02/2005	19/08/2005	185
	103	15/02/2005	19/08/2005	185
	104	15/02/2005	21/10/2005	248
	106	15/02/2005	21/10/2005	248
	107	15/02/2005	21/10/2005	248
	108	15/02/2005	19/08/2005	185
	109	15/02/2005	19/08/2005	185
Pulivendula	92	15/02/2005	24/10/2005	251
Rajiv Dummugudem	1/1	25/01/2007	28/03/2008	428
Somasila	11	05/05/2008	23/12/2008	232
Yellampally	Canal Network package 1	28/08/2008	02/03/2009	186

Source: Project records

The Department justified (July 2012) the delay on administrative grounds and stated that in respect of Polavaram project, the bid evaluation report was first submitted to the State level Standing Committee and then to the High Powered Committee, which caused the delay in accepting the single bid. In respect of other projects, it was stated that technical aspects and physical experience of bidders need to be examined thoroughly by various committees and as such, time frame cannot be fixed for accepting the bids.

<sup>12</sup> Nettempadu (12), one each in Devadula and Yellampally

<sup>13</sup> Handri Neeva (12), Nettempadu (11), Pulivendula (7), Rajiv Dummugudem (7), Dummugudem tail pond (6), Yellampally (5), Veligonda, Telugu Ganga, Galeru Nagari, Devadula (four each), SLBC Tunnel and Somasila (one each)

The reply is not acceptable due to the following reasons.

- ◆ Government gave shorter time for bidding, and took much longer time for evaluating and accepting the bids, which could give scope to post bidding manipulations.
- ◆ Jalayagnam was taken up to complete the projects within a time span of two to five years. If the bid evaluation and acceptance takes more than 6 months to a year, the objective of taking up the programme gets defeated.

#### **4.4.3 Award of contracts to single bidders**

- i. In 36 packages of 15 test checked projects, works were awarded to single bidders (*Appendix-4.2*). The value of such contracts was ₹7856.11 crore.
- ii. There have been 31 cases in 12 projects, where only one bidder was found to have quoted below the prescribed ceiling of five *per cent* above the IBM value. The value of such deemed single bids, which were accepted, was ₹10,009.14 crore.
- iii. In 52 packages pertaining to 15 projects, the competition was very low with just two bidders. The value of contracts entrusted amidst such low competition was ₹34,169.49 crore.

The Department put forth several reasons for accepting single tenders viz., (i) single tenders were being accepted in view of poor response to earlier tender calls (ii) if the single tenders with discount are not accepted then Government might have to pay excess amounts during the next calls with revised rates, (iii) location of the work and topography of the area may not be conducive to the agencies.

#### **4.4.4 Post-tender changes**

Audit scrutiny revealed that IBM values were adjusted after opening the bids in the following cases.

- i. In LMC-8 package of Polavaram, the single qualified bidder reduced (27 August 2005) his bid amount by ₹4.88 crore (from ₹118.26 crore to ₹113.38 crore) after opening the bid (25 April 2005), which brought down the tender premium from 9.49 *per cent* to 4.97 *per cent* i.e., below five *per cent* to avoid rejection as per tender conditions. The bid evaluation report prepared on 30 August 2005 indicated that the Department waited for four months for receipt of rebate by the single bidder.
- ii. In the Mechanical Package under Phase.I of Handri Neeva, NIT was issued on 29 June 2005 and the last date for receipt of tenders was 11 November 2005. Three bidders participated in the bid. One bidder was disqualified in the technical evaluation and the financial bids of the remaining two bidders were opened. It was found that both the bidders quoted more than the prescribed limit of 5 *per cent* over the IBM, and were supposed to be rejected. However, Audit noticed that one bidder i.e, M/s.IVRCL Ltd offered two successive rebates of 2.25 *per cent* on 27 December 2005 and 3.93 *per cent* on 28 December 2005 in order to bring down the tender premium within the 5 *per cent* limit and finally got the contract at a premium of 4.94 *per cent* over IBM.

The Department replied (July 2012) that lowest bidder offering a rebate as a good gesture voluntarily is a common practice in Government departments and that, Government has only benefited on account of consideration of such voluntary rebate.

The reply is not justified, as the bid amounts in these cases were initially higher than the prescribed limit of five *per cent*, which was later brought down to within the ceiling by virtue of voluntary rebate, which otherwise should have been rejected, particularly when such an opportunity to revise the bid amounts after opening was not given to all the bidders, though all the bidders including the lowest one had quoted higher than the prescribed limit.

#### 4.5 Variations to specifications/designs/agreements

With regard to the projects taken up under Jalayagnam, Government provided the broad scope of work and the districts to be covered while creating an ayacut of 97.46 lakh acres and provision of drinking water to 6310 villages. Consequently, there were several instances of variations to technical specifications/ designs/agreements after award of works/ during execution in the test checked packages, as detailed below.

- i. In Nettempadu, tenders (January 2005), as well as the agreements in packages 104 and 105, specified the canal bed level (CBL) to be + 380M. After entrustment of works, the CBL was changed (March 2006) to +385M due to non-availability of contemplated ayacut with CBL of +380M. The proportionate cost due to decrease in the length of the canal as a result of change in the CBL was **₹4.43 crore**, which was not adjusted from the dues of the contractor.

The Department stated (July 2012) that technical experts examined the issue and opined that the raising of bed level from +380M to +385M to achieve targeted ayacut is technically feasible and there was no additional financial commitment to Government. The reply is not acceptable, as under similar conditions where the CBL of +250M was changed to +253M in Handri Neeva package No.1, the Department adjusted the cost of ₹4.31 crore after obtaining approval from the State Level Standing Committee and IBM committee.

- ii. In Handri Neeva (Phase I package I), approach channel from intake in Siddeswaram to Machumurry was designed with a discharge of 165 cumecs. The discharge capacity was increased to 206 cumecs after awarding the work, which was treated as an additional item and **₹9.19 crore** was paid. While the total quantity of earth work as per the IBM estimate with design discharge of 165 cumecs was 44.26 lakh cum, it was only 44 lakh cum as per the revised discharge of 206 cumecs.

The Department has not furnished reply to this observation.

- iii. In Veligonda (Teegaleru canal), the ayacut envisaged was 62000 acres, while the design provided was adequate only for 33,892 acres. Government had to pay an extra amount of **₹13.76 crore** on this additional item.

The Department admitted the fact and stated that the original bed width and FSD of the canal were proposed with **lined** section, which was shown as **unlined** in technical specification, by oversight.

- iv. In Handri Neeva, the NIT specified the lengths of the canals/pressure main pipes clearly and the bidders quoted for these works based on the length specified. During execution, there was a significant reduction in the lengths of these items of work, which involved a saving of **₹48.98 crore** to the contractors, since they had quoted for higher lengths. However, in the absence of appropriate clause in the agreement to take care of such variations, Government could not derive the benefit due to such reductions.
- v. In Veligonda project, estimates for package-4 specified the quantity of earth work involved in 'Excavation of Link canal for KM 0.000 to KM 9.800' as 32.39 lakh cum and the cost was included in the estimate. Subsequent to the award of work, the Government decided to increase the scope of the entire project and accordingly, the capacity of the link canal was also increased by concluding a supplemental agreement with the contractor. While working out the cost of the additional work, the quantities to be executed for the total discharge of the canal was taken at 50.12 lakh cum and the value of 26.57 lakh cum of earthwork was deducted, as against the original quantity of 32.39 lakh cum provided in the initial estimate. As a result, the value of supplemental agreement increased by **₹5 crore** being the value of the 5.82 lakh cum excess provided in the revised estimate.
- vi. In Galeru Nagari, there were several changes to the specifications as detailed below:
- In package 28/06, the length of the canal specified in NIT was 29.00 kms, while the length executed was only 26.47 kms, with the impact of reduction in length being **₹15.11 crore**. This was a saving to the contractor.
  - This was the case with packages 6/06 and 7/06 also, where the canals are being executed with shorter length by 3.23 and 5.17 km respectively, compared to the original specification, resulting in saving of **₹4.61 crore** and **₹13.13 crore** to the contractors of these packages.
  - In package 24/06, the width of BT inspection path was reduced from 4.25 M to 3.75 M, involving a reduction in the cost by **₹0.42 crore** to the contractor.
  - In package 31, the original design was single tunnel with RCC lining, which was changed to twin tunnel with SFRS lining, with a financial impact of **₹17.33 crore**.
  - Due to increase in discharge capacity from 10000 to 20000 cusecs in packages 48 and 49, canals had to be widened and the initial trimming of slopes (specified in IBM) was no longer required. However, ₹7.06 crore was paid to the contractors on this account. The Department contended that no separate provision was made for trimming and it was shown only to ensure that the contractor does his job. The reply is not acceptable, because, this item was not required to be executed at all, in view of the widening of canal and fresh provision made for that.

- vii. In Rajiv Dummugudem (package 32), the length of pressure main pipes executed was 24.50 KM, as against 38.18 KM specified in the agreement. The consequent saving that accrued to the contractor was **₹106.65 crore**.
- viii. In Bhupathipalem reservoir, as against the contemplated ayacut of 23086 acres, only 14028 acres ayacut is being developed. Government stated that the difference in cost of **₹4.81 crore** would be deducted from the contractor.
- ix. In Polavaram (packages 63 & 64), against the original design specification of M20 with steel reinforcement, actual execution was PCC M20 without steel, which involved saving of **₹45.53 crore** to the contractor.
- x. In SLBC, the IBM contemplated excavation of an adit for the tunnel. Accordingly, a quantity of one lakh cum of excavation in hard rock (@ ₹964 per cum) and a quantity of 0.80 lakh running meters (RMT) of rock bolts (@ ₹315 per RMT) was provided in the estimate. However, the adit was not executed. Thus, there has been a reduction in the cost of execution by ₹12.16 crore, which did not accrue to the Government.

The Department replied that adit tunnels are generally provided for ventilation and to decrease leads for materials and that the requirement of adit tunnel or otherwise would be known only after detailed engineering. It was stated that the scope of work may vary since the estimates were prepared in the absence of detailed engineering.

- xi. The IBM of the tunnel work in SLBC was inclusive of lining of second tunnel (T2) with a thickness of 500 mm. However, during the execution the agency proposed the lining with thickness of only 425 mm. The extra provision of 75 mm thickness for lining inflated the IBM value by ₹8.07 crore being the cost of the differential quantity of cement concrete involved.

The Department replied that the thickness of 500mm was provided in the estimate as per IS codes and that the approved lining thickness was 425mm. The reply is not acceptable since the agreement also provides for execution of work as per the same IS codes.

- xii. In Nettempadu, the agreement for Stage II stated that price variation would be applicable for copper, aluminum, steel and cement according to IEEMA<sup>14</sup> formula and will be payable on production of documentary evidence of rates prevailing on the date of bidding and as on the date of claim as per RBI indices. It also stipulated that the bidders shall clearly indicate the rates considered for these items in their offer so that the variation, if any, would be compensated.

Audit scrutiny revealed that though the Government had paid ₹15.53 crore and had also approved payment of another ₹2.51 crore for copper and aluminum although the contractor did not produce the documentary evidence in support of the prevailing rates on the date of bidding and as on the date of claim.

Further, while the Government orders allowed price adjustment after the variation crosses five *per cent*, the Department allowed compensation within the limit of five

<sup>14</sup> Indian Electrical and Electronics Manufacturers Association

*per cent* also. The excess payment on this account was ₹49.67 lakh. The Department replied that RBI indices would be followed in future bills for cement and steel also.

**xiii.** The contract (January 2004) relating to Phase-I stage-I package of Devadula project stated that no price escalation would be applicable on account of changes in laws or variation in the cost of materials, labour or other inputs during the contract period. During the pre-bid meeting (August 2003) itself, the bidders' specific request for price adjustment on steel was rejected by Government. However, Government subsequently permitted (March 2009) price escalation on steel, cement and fuel used in this work and an amount of ₹196.96 crore was paid (August 2009) to the contractor. Out of this amount, ₹125.60 crore was towards increase in the prices of steel plates used in manufacture of pipes. Computation of the price escalation amount was incorrect, as brought out below.

As per the procedure stipulated (April 2008) by the Government, for computation of price adjustment, the rates of the materials provided in the departmental estimates have to be taken as base rates and the current prevailing rates would be decided by the Board of Chief Engineers every month by collecting quotations from various manufacturers. However, while computing the price escalation, the department neither ascertained the current steel rates from various steel manufacturers nor did it insist on production of the original invoices from the contractor towards purchase of steel plates. Instead, it relied on a letter obtained by the contractor from Steel Authority of India Limited showing the general trend of market rates.

Even if the current prices furnished by the contractor are considered, there was an excess payment of ₹35.86 crore due to incorrect computation of price escalation amount as discussed below:

- ◆ Before tendering (August 2003), the cost of the work was estimated at ₹737.49 crore and the rate adopted for steel plates was ₹20,514 per MT. After opening the price bids, the estimate was revised (November 2003) to ₹781.60 crore on account of increase in the cost of steel plates, and the cost adopted for this item was ₹22,318 per MT. However, for computing the price escalation in March 2009, the Department incorrectly adopted the rate provided in the initial estimate, instead of the rate provided in the revised estimate, which was used for comparing the bids. This resulted in excess payment of ₹20.99 crore to the agency.
- ◆ Further, the steel rate provided in the estimate was inclusive of the prevailing central excise duty (CED). The total amount of CED loaded in the estimate was ₹54.27 crore (out of which ₹34.35 crore was towards CED on steel plates). Subsequently, the GoI exempted (January 2004) pipes etc. used in water supply schemes from CED. Here, the Government lost on two counts – (a) CED exemption (₹34.35 crore) did not accrue to it due to absence of any clause to this effect in the agreement, and (b) incorrect computation of price escalation of steel (₹14.87 crore) inclusive of CED, instead of comparing the prices excluding CED.

The Department stated that in an EPC contract, completion of work is what matters and not quantities, like in the traditional lump sum mode of contracting, and that, the

contractor was free to design the alignment of the canal in keeping with the basic parameters, so long as the start and end points don't change. It was further stated that, the contractor will bear the risk and also the benefit, and that, there were several cases where the contractors had to bear losses in view of the absence of variation clause in the agreements.

The reply is not acceptable on account of the following.

- ◆ Higher specifications should not have been indicated in the agreement when execution with lower specification would suffice. Alternatively, if higher specifications were required as per the standards of the Department, execution with lower specifications should not have been permitted. Further, if the contractors were to be given freedom to adopt various alternatives, there was no reason why these were mentioned specifically in the tenders and agreements in the first place, since the bids were received with reference to these specifications.
- ◆ In an EPC contract, it is extremely important to determine the exact scope of work, before tendering and award of contracts. The performance criteria under EPC system should clearly articulate the scope, design aspects, quality parameters, schedule and other requirements of a project, like villages to which irrigation facilities are to be provided, placement and number of balancing reservoirs enroute a canal etc.
- ◆ Audit has in the past recommended inclusion of variation clause in the agreements, so that each case is examined with reference to the specific issue rather than the Government or the contractor bearing the loss by default. FIDIC model of EPC contracts contains such a clause and Government had provided for such a variation clause in EPC contracts relating to water supply schemes and projects being executed under JNNURM<sup>15</sup>.

In the absence of a clearly spelt out mechanism for dealing with variations, objectivity in dealing with each case of deviation was lacking as detailed below.

- ◆ One of the important components of the SLBC Tunnel scheme was formation of Dindi Balancing Reservoir. The work was entrusted (February 2009) to a firm for ₹157.74 crore including investigation, design and execution. The agreement stipulated: “A spillway with radial gates shall be designed for a maximum flood discharge (MFD). However it should not be less than 8580 cumecs. Spillway should be designed as per I.S. codes, CWC manual, APDSS<sup>16</sup> and Chief Engineer, CDO norms and Guidelines issued from time to time”.

The contractor, after investigation, adopted a MFD of 8936 cumecs. However, the Chief Engineer, Hydrology, after conducting a study, estimated that the flood is of the order of 18625 cumecs (November 2009). The contractor assessed (December 2009) the cost increase due to change in MFD at ₹64 crore in view of the increase in the (i) number of vents from 17 to 33 and (ii) length between abutments from 244 meters to 476 meters and requested for additional payment. When the matter

<sup>15</sup> Jawaharlal Nehru National Urban Renewal Mission

<sup>16</sup> AP Detailed Standard Specifications



was referred to State Level Standing Committee (SLSC) by Government, the SLSC opined that the spillway was to be constructed for 8580 cumecs only as indicated in the basic project parameters.

- Under contrasting conditions, in Pulichintala project, despite reduction in (i) number of vents from 33 to 24 and (ii) length of the dam from 534 meters to 355 meters, Government did not adjust the cost of the contract on the ground that the quantities were not relevant in EPC contracts and that the contracting system followed does not envisage reduction in payments for reduction in quantities.

The Department contended (July 2012) that the mechanism to deal with changes in the basic parameters is to refer the changes to State level standing committee (SLSC) and the decision of Government based on the recommendations of the SLSC is final and binding on the contractor firm.

The reply is not acceptable as there should be a prescribed procedure for dealing with the variations under EPC agreements itself rather than referring all the variations to SLSC each time.

Government defined the basic parameters only in May 2008<sup>17</sup>, by which time, a majority of the agreements under Jalayagnam were concluded and some of the projects had already run into disputes, hampering the progress of the projects.

Further, while the Department made payments for additional items based on current SSRs, with regard to the deleted items, it adopted the payment schedule. The benefit of variation to specifications/designs/scope/agreements etc, thus, invariably went in favour of the contractor in all the cases. Lack of uniformity in assessing variations further benefited the contractors to the extent of ₹2.81 crore in Galeru Nagari. With regard to non-EPC contracts in Jalayagnam, reduction in tender discount resulted in a benefit of ₹2.60 crore in Sriramsagar Stage-II and ₹9.62 crore in Bhupathipalem reservoir.

In addition to giving benefit to the contractors where variations occurred during execution, it was observed in Audit that Government took it upon itself, execution of certain items, which were the responsibility of the contractors as per the agreements. This was so in respect of 8<sup>18</sup> of the 26 test checked projects, which resulted in extra financial burden of ₹439.78 crore to Government. Details are given in *Appendix-4.3*.

#### 4.5.1 Payment schedules

The work specified in the contract is divided into several components to facilitate payments and the cost of each component has to be specified as a percentage of the total bid price. This is illustrated below with an example from Polavaram project (package 64).

<sup>17</sup> Circular Memo.No.34843/Reforms/2006, dated 7<sup>th</sup> May 2008

<sup>18</sup>(i) Yellampally (ii) Polavaaram (iii) Handri Neeva (iv) Galeru Nagari (v) CBR-Lingala (vi) Nettekpadu (vii) Devadula and (viii) Thotapally projects

**Table-4.13**

Description of work	Payment schedule as per contract (Amount in ₹)	Revised payment schedule during execution of work (Amount in ₹)
Investigation	1.62 lakh (0.022%)	1.62 lakh (0.022%)
Construction of entry channel	24.63 crore (33.33%)	3.22 crore (4.36%)
Construction of twin tunnels	24.63 crore (33.33%)	60.85 crore (82.34%)
Construction of exit channel	24.63 crore (33.33%)	9.81 crore (13.28%)

Source: Records of Polavaram project

As can be seen above, equal percentage was given for three items while drawing up the agreement. Based on the extent of completion of work, the percentage weightage accorded to the construction of twin tunnel was increased to 82.34 *per cent*, while that of the exit channel was reduced to 13.28 *per cent*. In Polavaram project alone, the impact of such ‘**front end payments**’ amounted to ₹228.19 crore.

The other test checked projects where premature payments were made to contractors were Galeru Nagari (₹94.35 crore), Nettempadu (₹1.45 crore), Dummugudem NS Tail pond (₹346.78 crore), Pranahita-Chevella (₹1052.59 crore), Telugu Ganga (₹4.45 crore) and Gandikota-CBR lift scheme. The total amount of such premature payments was ₹1499.62 crore. In fact, in Galeru Nagari (package 48), due to increase in the discharge from 10000 cusecs to 20000 cusecs, the width of canal had to be increased and the original contract was foreclosed due to the refusal of the contractor to continue the work. In this case, payment was made for actual quantities executed, instead of at IBM rates minus tender discount, which was an excess of ₹15.30 crore over the IBM value. The Department stated that payments were made as per payment schedules only.

The Department stated that it retains 7.5 *per cent* of money from every bill which would become its property including all the property at site and there would be no loss to Government in case the contractor firm leaves the work midway.

The reply is not acceptable, since the contractors allocate higher percentage/weightage to the work that can be completed early and get their claims accordingly. Although these amounts would be adjusted eventually, the payments made to contractors would be blocked for prolonged periods, in case of delays or foreclosures. A case in point is Dummugudem NS Tail Pond, where ₹346.78 crore stands blocked for the past year and a half, since the work is yet to start (September 2012).

#### **4.6 Mobilization Advances – Blocking of Government funds**

As per the procedure prescribed by the State Government (September 2006), an amount equivalent to 10 *per cent* of the contract value could be paid to the contractors as mobilization advance (MA) at 5 *per cent* each for labour and machinery. One *per cent* of the contract value could be paid as MA towards labour component on entering into an agreement, and the balance four *per cent* at the time of commencement of work (after completion of survey, investigation and designs). The amount so advanced was recoverable only after the completion of at least 10 *per cent* of the value of work.

Considering that a number of packages have not moved off the ground for various reasons, a substantial chunk of public money is blocked with the contractors on account of MA. The status of MA granted to the contractors since taking up the Jalayagnam programme and the amount yet to be recovered, is given below.

**Table-4.14**

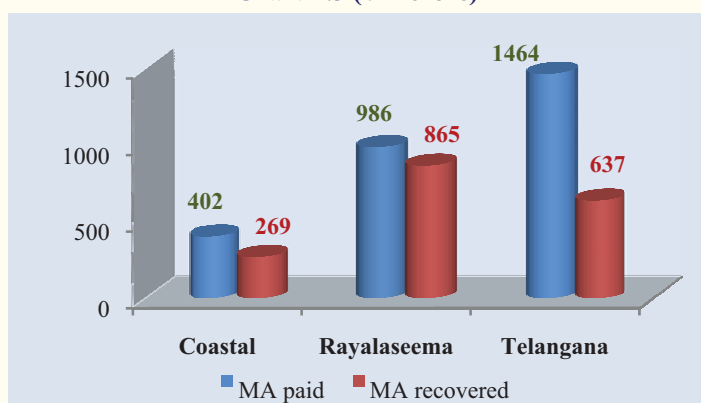
(₹ in crore)

Region	No. of projects	No. of packages	Value of contracts	No. of packages for which MA was given	Amount of MA given	Amount yet to be adjusted with interest
Coastal	21	63	9513	49	514.34	150.03
Rayalaseema	23	179	22612	152	1099.39	122.70
Telangana	30	166	81060	148	2013.67	866.13
<b>Total</b>	<b>74</b>	<b>408</b>	<b>113185</b>	<b>349</b>	<b>3627.40</b>	<b>1138.87</b>

Source: Compiled from information furnished by I&CAD Department

The status of MA paid and recovered with regard to the test checked projects is given below region-wise.

**Chart-4.3 (₹ in crore)**



Source: Compiled from information furnished by I&CAD Department

The whopping gap between the MA given and recovered in Telangana region is essentially on account of Pranahita Chevella project, where, in 26 out of 28 packages, an amount of ₹354.56 crore was paid as MA, being one *per cent* of the contract value, after concluding agreement with the contractor firms.

The recovery/adjustment of this MA has not commenced (July 2012) resulting in blocking of public funds for more than two years, as the survey and investigation works have not been completed yet. The other projects where huge amounts are blocked with contractors due to non-commencement of works are detailed below.

- i. In Package No.4 of Galeru Nagari, execution of work for the reach from KM 119.000 to KM 141.350 has not commenced so far, although work was awarded in June 2007, due to not obtaining forest clearance. The mobilization advance amounting to ₹5.60 crore paid during September 2007 - July 2008 to the contractor remained blocked.
- ii. In Galeru Nagari itself, mobilization advance of ₹4.47 crore at 4 *per cent* was included and paid for (July 2008) even before completion of investigation, survey and designs. The Department replied (December 2011) that though the work of survey and investigation was certified in measurement books in February 2010, it was, in fact, completed before July 2008. However, it did not furnish any reasons for the delay in recording in measurement books.

- iii. In Indira Sagar Dummugudem LIS, ₹3.16 crore was paid to the contractors at 5 per cent of the contract value (June 2007) as mobilization advance in respect of package 49 (to EPIL) in contravention of Government orders (September 2006). This amount was not adjusted as of July 2012 resulting in blocking of funds outside Government account for more than five years.
- iv. In Yellampally project, in the package “Implementation of R & R package to displaced families in Yellampally and Murmur villages” the Department did not adjust ₹50.91 lakh out of the mobilization advance of ₹1.40 crore paid (July 2009) from the contractor firm, despite withdrawing the work from it and entrusting it to different firms at different times, due to slow progress of work by the original agency.
- v. In package 66 of Polavaram, the recovery of MA of ₹6 crore has not yet commenced even after five years, due to slow progress of work.
- vi. In packages 1 and 3 of Polavaram LMC, interest on MA of ₹6.94 crore and ₹8.11 crore was not recovered during the extended period of agreement from August 2008 to August 2010 due to delay in land acquisition and other clearances.
- vii. In **Dummugudem NS Tail pond**, out of the ₹126 crore paid as MA, only ₹3.5 crore was recovered, leaving a balance ₹122.50 crore. In fact, in this scheme, more than one per cent was paid as mobilization advance even before completion of survey and investigation, in violation of Government orders, as detailed below.

Table-4.15

(₹ in crore)

Package No	Contract value	Admissible MA (at 1%)	MA paid		Excess MA paid
			Percentage	Amount	Amount
8	1360.26	13.60	3	40.81	27.21
9	771.36	7.71	3	23.14	15.43
10	464.42	4.64	2.50	11.58	6.94
<b>Total</b>	<b>2596.04</b>	<b>25.95</b>		<b>75.53</b>	<b>49.58</b>

Source: Project records

- viii. The contractors of Packages 99, 100 and 107 in Nettempadu left the site of work by withdrawing their men and machinery. An amount of ₹3.26 crore was pending recovery from the contractors on account of MA. As there were no men and machinery at the time of site visit by audit and the progress in respect of these works was very poor, the purpose for which the advance was granted was defeated.
- ix. In Nettempadu again, the actual date of payment of MA and copies of invoices in proof of machinery purchased were not made available to audit. Hence payment without requirement could not be assessed.

x. In package 33 of Handri Neeva, MA of ₹1.48 crore was paid without invoices.

During the Exit Conference, the Department stated that orders have been issued to ensure such instances do not take place. However, it had not intimated the action proposed against the officials who had violated the prescribed rules in this regard.