Appendices and Glossary

Appendix-I
(Paragraph No. 3.1.3 & Page No. 14)
Statement showing the discharge capacity of feeder canal without lining

Bed width of the feeder canal (in meters)	23.00
Full Supply Depth (FSD) (in meters)	5.95
Side Slope	1:1
Top width of the canal (Bed width + FSD x 2)	34.90
Area of Cross section {½ (Bed width + Top width) x FSD} (A)	172.25
Wetted Perimeter {Bed width + FSD x Square root of (2) x 2} (P)	39.82
Hydraulic Mean Radius {A/P} (R)	4.32
Section adopted (S)	1 in 6000
Value of 'n' (Rugosity coefficient) to be adopted	0.0275
Velocity $\{1/n \times R^{2/3} \times S^{1/2}\}(V)=\{1/0.0275 \times 4.3247^{2/3} \times (1/6000)^{1/2}\}$	1.24612
Discharge in cumecs {Area x Velocity} Q	214.64
Discharge required (in cumecs)	328

Source: Compiled based on agreement copies furnished by the Department

Appendix-II (A)
(Paragraph No. 3.2 & Page No.15)
Statement showing various contractors involved in execution of Tunnel I

Components of work	Old contractor	New contractor and date of entrustment	Whether SOR revised	Reasons for entrustment	Procedure adopted
Excavation of tunnel from Km 0.000 to Km 18.800 including approach channel, Head Regulator and Exit channel	Not Applicable	M/s. Sabir Sew Prasad (JV) (August 2005)	First entrustment	---	Bids invited under EPC contract system
Excavation of tunnel from Km 0.000 to Km 15.200 was completed along with part work of exit channel					
Excavation of tunnel from Km 15.200 to Km 18.800 and balance exit channel	M/s. Sabir SEW Prasad (JV)	M/s. MEIL (October 2018)	Yes. SOR 2017-18	Slow progress of work	Bids invited under LS contract system
Excavation of tunnel from Km 15.200 to Km 17.747 was completed					

Components of work	Old contractor	New contractor and date of entrustment	Whether SOR revised	Reasons for entrustment	Procedure adopted
Excavation of tunnel from Km 17.747 to Km 18.800	M/s. MEIL	M/s. RR Edifice (July 2021)	No	To derive early benefits	No bids were invited. Excavation using manual drill and blast method

Source: Compiled based on agreement copies furnished by the Department

Appendix-II (B)
(Paragraph No. 3.2 & Page No.15)
Statement showing contractors involved in execution of Tunnel-II

Components of work	Old contractor	New contractor and date of entrustment	Whether SOR revised	Reasons for entrustment	Procedure adopted
Excavation of tunnel II from Km 0.000 to Km 18.800 including approach channel, Head Regulator and Exit channel	Not Applicable	M/s. HCC – CPPL (JV) (June 2017)	First entrustment	---	Bids invited under EPC contract system
Excavation of tunnel from Km 0.000 to Km 10.703 was completed along with part work of exit channel					
Excavation of tunnel from Km 10.703 to 10.750	M/s. HCC – CPPL (JV)	M/s. Rithwik Projects Private Limited (October 2019)			Supplemental agreement was concluded
Excavation of tunnel from Km 10.750 to Km 18.800	M/s. HCC – CPPL (JV)	M/s. Rithwik Projects Private Limited (September 2018)	Yes SoR 2017-18	Slow progress of work	Bids invited under LS contract system
Excavation of tunnel from Km 10.703 to Km 11.212 was completed					
Excavation of tunnel from Km 11.212 to Km 18.800	M/s. Rithwik Projects Private Limited	M/s. MEIL (January 2020)	No	Slow progress of work	Bids were invited for the balance work under Reverse tendering

Source: Compiled based on agreement copies furnished by the Department

Appendix-II (C)
(Paragraph No. 3.2 & Page No.15)
Statement showing contractors involved in execution of head regulator & approach channel

Components of work	Old contractor	New contractor and date of entrustment	Whether SoR revised	Reasons for entrustment	Procedure adopted
Approach channel and Head Regulator work of (Tunnel I)#	M/s. Sabir SEW Prasad (JV) (August 2005)	M/s. RK Infracorp Private Limited (May 2017)	Yes. SoR 2016-17	Non grounding of work by first Contractor	Bids invited under EPC contract system
Part work was completed by M/s. RK Infracorp Private Limited					
Approach channel and Head Regulator work of (Tunnel II)	M/s. HCC – CPPL (JV) (June 2017)	M/s. RK Infracorp Private Limited (May 2017)	Yes. SoR 2016-17	Non grounding of work by first contractor	Bids invited under EPC contract system
Approach channel and Head Regulator work (Balance work of Tunnel I and II together)	M/s. RK Infracorp Private Limited	M/s. RR Edifice (October 2019)	No	---	Tender discount of three *per cent* against the tender premium of 4.7119 *per cent* of old contractor

Source: Compiled based on agreement copies furnished by the Department
#The balance work along with Tunnel II approach channel, Head Regulator was entrusted to M/s. RR Edifice

Appendix-III
(Paragraph No. 3.2.2 & Page No. 17)
Statement showing wasteful expenditure on segment lining and cutters

Sl. No.	Description	Amount (in ₹)
(a)	Total quantity of segments kept idle at segmentation plant	2,839.25 cum
(b)	Rate per cum as per estimate (in ₹)	8,682.12
(c)	Total number of cutters procured and not utilized	132
(d)	Rate per cutter as per estimate (in ₹)	37,192.69
(e)	Cost of manufacturing segments at estimate rates (in ₹) (2,839.25 x ₹8,682.12)	2,46,50,709.21
(f)	Cost of cutters at estimate rates (in ₹) (132 x ₹37,192.69)	49,09,435.08
(g)	Total wasteful expenditure towards segments and cutters at estimate rates ((e) + (f)) (in ₹)	2,95,60,144.29
(h)	Tender premium at 0.16 *per cent* (in ₹)	47,296.23
(i)	Total wasteful expenditure towards segments and cutters at agreement rates (₹2,95,60,144.29 + ₹47,296.23) (in ₹)	2,96,07,440.52

Source: Compiled as per information furnished by the Department

Appendix-IV (A)
(Paragraph No. 5.1.1 & Page No. 26)
Statement showing required peak discharge for Teegaleru canal

Description	Water requirement/ discharge
Total water required for peak demand (2nd half of the month) for 15 days (in MCFT (Million Cubic Feet))	**1,279.144**
Total water required for one day (1279.144/15) (in MCFT)	85.2762667
Total water required for one day (85.2762667 X 10,00,000) (in CFT(Cubic Feet))	85276266.70
Total water required for one second (85276266.7 / (24 hours x 60 minutes x 60 seconds) (in cusec)	986.99
Discharge in cumecs (986.99x 0.028316847)	27.95
Total discharge required for peak demand as per DPR (in cumecs)	27.95

Source: Compiled as per the information furnished by the Department
1 cusec = 0.028316847 cumecs

Appendix-IV (B)
(Paragraph No. 5.1.1 & Page No. 26)
Statement showing peak discharge with parameters adopted in scope of work of Teegaleru canal

Description	
Bed width (in meters)	6.00
Full Supply Depth (FSD in meters)	3.00
Bed fall (Section- S)	1 in 12000 (i.e. 1/12000)
Slopes	1:1
Rugosity co-efficient value (n)	0.018
Area of Trapezoid section (A) (FSD x {(Bed width) + (FSD)}	27
Perimeter (P) (Bed width + 2 x √2 x FSD) #	14.4853
Hydraulic mean radius (R) (Area/ Perimeter)	1.8640
Velocity (V) (1/n x $R^{2/3}$ x $S^{½}$) $	0.7682
Discharge in cumecs (Q) = (A x V)	20.74

Source: Compiled by audit based on the information furnished by Department
#As 1:1 slope was adopted for canals, height of slope will become the product of squares of other sides and its Square root i.e., √ (1 x 1 + 1 x 1) = √2 (Pythagoras theorem)
$As per Manning equation (IS Code 7112:2002)

Appendix – V
(Paragraph No. 5.2.1 & Page No. 28)
Statement showing cost of lining of Gottipadia canal

(length/thickness in meter)

Sl. No	Canal dimensions				Canal dimensions inclusive of lining thickness					Difference in area i.e., lining area (Sq.m)	Reach length	Difference in quantity i.e., lining quantity (Sq.m)	Lining area for paver (Sq.m)
	Bed width	FSD	Top width	Area of canal without lining thickness (Sqm.)	Lining thickness	Bed width	Depth	Top width	Area of canal with lining thickness (Sq.m)				
A	**B**	**C**	**D=B+ (C x 2)**	**E=½ (C) x (B+D)**	**F**	**G= B+ (2xF)**	**H= C+F**	**I= D+ (2xF)**	**J= ½ (H) x (G+I)**	**K=J-E**	**L**	**M=K x L**	**N =L x {B+2 x (1.414*C)}**
1.	6.9	1.25	9.4	10.1875	0.1	7.1	1.35	9.6	11.2725	1.085	570	618.45	5,948
2.	6.2	1.1	8.4	8.0300	0.1	6.4	1.2	8.6	9.0000	0.970	3172	3,076.84	29,534
3.	4.5	0.9	6.3	4.8600	0.1	4.7	1	6.5	5.6000	0.740	3372	2,495.28	23,756
4.	2.1	0.7	3.5	1.9600	0.1	2.3	0.8	3.7	2.4000	0.440	4326	1,903.44	17,648
Total quantity												**8,094.01**	**76,886**
Rate per cum for concrete lining (in ₹)													2594
Rate per Sqm for paver charges (in ₹)													39
Total cost of concrete lining at IBM rates (8,094 cum x ₹2,594) (in ₹)													2,09,95,836
Total cost for paving at IBM rates (76,886 sqm x ₹39) (in ₹)													29,98,554
Total cost for lining and paving at IBM rates (in ₹)													2,39,94,390
Tender discount at 6.75 *per cent* (in ₹)													16,19,621
Total cost of concrete lining at agreement rates (₹2,39,94,390 – ₹16,19,621) (in ₹)													**2,23,74,769**

Note: In the absence of data for lining in Package III, the rate per cum of ₹2,594 was adopted from the data of Package IV for ultimate stage as both the IBMs were prepared with same SOR

Appendix – VI
(Paragraph No. 5.4.1(a) & Page No. 38)

Statement showing the payments made towards hydro mechanical and electromechanical items for five Lifts

Sl. No.	Lift Number	Description	Amount (₹ in crore)
1.	Lift-1	Supply of Soft starters, DG Sets, EOPD Butterfly Valves, Dual Plate Check valves, Dismantling Joints, Capacitor Banks, HT Switch Board, EOT Crane, LT Switch Board	17.14
2.	Lift-2	Supply of Battery, Battery Charger, EOPD Butterfly Valves, Dual Plate Check valves, Dismantling Joints, Capacitor Banks, Soft starters, HT Switch Board, LT Switch Board	7.45
3.	Lift-3	Supply of Battery, Battery Charger, Soft starters, EOPD Butterfly Valves, Dual Plate Check valves, Dismantling Joints, HT Switch Board, Capacitor Banks	6.75
4.	Lift-4	Supply of Soft starters, Capacitor Banks, DG Sets, Dual Plate Check valves, Dismantling Joints, EOPD Butterfly Valves, HT Switch Board, Battery, Battery Charger, EOT Crane, LT Switch Board	25.42
5.	Lift-5		25.42
		Total	**82.18**

Appendix – VII (A, B & C)
(Paragraph No. 5.4.1 (b) & Page No. 38)

(A) Statement showing percentage as per original payment schedule (18.50 *per cent*) and revised payment schedule (15.17 *per cent*)

Lift No.	Percentage adopted in break-up of payment schedule as per		Excess percentage adopted
	Original payment schedule	Revised payment schedule*	
A	B	C	D = B-C
1.	3.7138	3.0457	0.6681
2.	1.8456	1.5136	0.332
3.	1.8456	1.5136	0.332
4.	5.5475	4.5496	0.9979
5.	5.5475	4.5496	0.9979
Total	**18.5000**	**15.1721**	**3.3279**

* Percentages were calculated based on proportion to total percentage for example 3.7138 x 15.1721/18.5

(B) Statement showing percentage to be adopted as 2.16 *per cent*

Sl. No.	Description of the item	Value (in percentage)
1.	Supply of EOPD Butterfly valves	0.2709
2.	Supply of Duel Plate Check valves	0.2709
3.	Supply of Dismantling Joints	0.1636
4.	Supply of EOT crane	0.0564
5.	Supply of HT Switch Board	0.4576
6.	Supply of LT Switch Board	0.2065
7.	Supply of Soft Starters	0.2895
8.	Supply of Capacitor Banks	0.2822
9.	Supply of DG Set	0.1580
	Total	**2.1556**

(C) Statement showing percentage to be adopted in payment schedule with revised percentage 15.17 *per cent* and at 85 *per cent* payment against supply of material

Sl. No.	Components	Percentage adopted in Payment schedule of Lift 1 with 18.5 *per cent*	Percentage to be adopted in Payment schedule of Lift 1 with 15.1721 *per cent*	Percentage adopted in Payment schedule of Lift 2 with 18.5 *per cent*	Percentage to be adopted in Payment schedule of Lift 2 with 15.1721 *per cent*	Percentage adopted in Payment schedule of Lift 3 with 18.5 *per cent*	Percentage to be adopted in Payment schedule of Lift 3 with 15.1721 *per cent*	Percentage adopted in Payment schedule of Lift 4 with 18.5 *per cent*	Percentage to be adopted in Payment schedule of Lift 4 with 15.1721 *per cent*	Percentage adopted in Payment schedule of Lift 5 with 18.5 *per cent*	Percentage to be adopted in Payment schedule of Lift 5 with 15.1721 *per cent*
I	**Total percentage**	**3.7138**	**3.0457**	**1.8456**	**1.5136**	**1.8456**	**1.5136**	**5.5475**	**4.5496**	**5.5475**	**4.5496**
i	EOPD Butterfly valves	0.2709	0.2222	0.1298	0.1065	0.1298	0.1065	0.4469	0.3665	0.4469	0.3665
ii	Dual Plate check valves	0.2709	0.2222	0.1298	0.1065	0.1298	0.1065	0.4469	0.3665	0.4469	0.3665
iii	Dismantling joints	0.1636	0.1342	0.0959	0.0786	0.0959	0.0786	0.2709	0.2222	0.2709	0.2222
iv	EOT Crane	0.0564	0.0463	Not paid	Not paid	Not paid	Not paid	0.088	0.0722	0.088	0.0722
v	HT Switch board	0.4576	0.3753	0.2082	0.1707	0.2082	0.1707	0.6387	0.5238	0.6387	0.5238
vi	LT Switch Board	0.2065	0.1694	0.0925	0.0759	Not paid	Not paid	0.2882	0.2364	0.2882	0.2364
vii	Soft starters	0.2895	0.2374	0.1704	0.1397	0.1704	0.1397	0.4093	0.3357	0.4093	0.3357
viii	Capacitor Banks	0.2822	0.2314	0.0959	0.0786	0.0959	0.0786	0.395	0.3239	0.395	0.3239
ix	DG Set	0.1580	0.1296	Not paid	Not paid	Not paid	Not paid	0.2213	0.1815	0.2213	0.1815
x	Supply of battery	Not paid	Not paid	0.0271	0.0222	0.0271	0.0222	0.0677	0.0555	0.0677	0.0555
xi	Battery charger	Not paid	Not paid	0.0395	0.0324	0.0395	0.0324	0.1016	0.0833	0.1016	0.0833
II	**Percentage to be adopted (Total of i to xi)**	**2.1556**	**1.768**	**0.9891**	**0.8111**	**0.8966**	**0.7352**	**3.3745**	**2.7675**	**3.3745**	**2.7675**
III	Percentage adopted in RA Bill		2.2764		0.9891		0.8966		3.3745		3.3745
IV	Excess percentage adopted (III – II)		0.5084		0.178		0.1614		0.607		0.607

Note: Variation in total percentage (0.12 *per cent*) for Lift 1 was noticed as 2.28 *per cent* was adopted in RA Bill instead of 2.16 *per cent* as per payment schedule. In respect of balance Lifts 2 to 5 no such variation noticed. Percentage for each component for 15.17 *per cent* was calculated on prorate basis (Eg.: 0.2709 x 15.1721/18.5000)

Total excess percentage adopted (0.5084 + 0.1780 + 0.1614 + 0.6070 + 0.6070) (in ₹)	**2.0618 *per cent***
Total agreement value (in ₹)	753,14,32,133
Excess payment made to contractor (753,14,32,133 x 2.0618*per cent*) (in ₹)	**15,52,83,068**

APPENDIX – VIII (A, B & C)
(Paragraph No. 5.5.1 & Page No. 39 to 41)
Statement showing instances of failure to adhere to provisions of EPC contract system

A.	Sanction of additional quantities
(i)	As per the original scope of work (Package II), design and execution of structures on feeder canal has to be made for Stage II discharge of 328 cumecs (85 cumecs for Stage I). The Teegaleru canal has to be excavated for creation of 62,000 acres of ayacut. The Department sanctioned additional quantities, in respect of structures on feeder canal, by stating that the discharge was increased from 85 to 328 cumecs, and supplementary agreements[125] for ₹17.03 crore were concluded. Similarly, in Teegaleru canal, an amount of ₹20.84 crore was sanctioned towards additional quantities of CM & CD works and two supplementary agreements[126] were concluded. As per provisions of EPC contract, the contractor is not eligible for any additional amounts for additional quantities if there is no change in the scope of work. However, the Government sanctioned an amount of ₹37.87 crore towards additional quantities for the structures on feeder and Teegaleru canal despite there was no change in scope of work. The Department replied (March 2022) that the execution of feeder canal was entrusted with 85 cumecs discharge and subsequently, revised to 328 cumecs. This led to change in basic parameters and hence additional quantities were sanctioned and accordingly supplemental agreements were concluded. These provisions are essentially required to complete the balance work to arrive the intended benefits. The reply is not acceptable. The execution of structures on feeder canal has to be made for 328 cumecs discharge as per the original scope of work. As such, there was no revision in basic parameters. Hence, the recommendation for sanction towards additional quantities is against the laid down provisions of EPC contract system.
(ii)	As per the scope of work of Package IV (EMC first reach), designing and execution of structures on EMC was to be done for Stage II parameters. The State Level Standing Committee (SLSC) recommended (January 2019) an amount of ₹36.40 crore at agreement rates towards additional quantities by stating increase in quantities as per approved designs than provided in the IBM and also due to increase in number of structures from 30 (as per estimate) to 49 (as per approved designs). Government accorded[127] (April 2019) administrative sanction and supplementary agreement[128] was concluded (August 2019) with the contractor.

[125] Supplementary Agt. No. 26/2018-19 dated 04.08.2018 for ₹13.58 crore (10 out of 20 sanctioned structures in G.O. Ms. No. 70 dated 06.07.2018) and Supplementary Agt. No. 30/2018-19 dated 05.08.2018 for ₹3.45 crore (five out of 20 sanctioned structures in G.O. Ms. No. 70 dated 06.07.2018)

[126] Supplementary Agreement No. 27/2018-19 dated 04.08.2018 for ₹11.42 crore (30 out of 73 structures) and Supplementary Agreement No. 30/2018-19 dated 05.08.2018 for ₹9.42 crore

[127] G.O.Ms. No. 44 Water Resources (Projects-II) Department dated 02.04.2019

[128] No. 06/2019-20 dated 01.08.2019

	Audit noticed that the scope of work for structures on EMC was not increased. As such, the contractor is not eligible for any additional sanctions towards increase in number of structures/ additional quantities. This resulted in irregular sanction of ₹36.40 crore at agreement rates. Out of this, an amount of ₹19.49 crore[129] was already paid to the contractor as of November 2020. The Department replied (March 2022), that Government issued orders[130] by superseding earlier orders[131] and accordingly the above sanctions were made. The reply is not acceptable, as the contract was awarded under EPC contract system, wherein the components of work have to be executed as per scope of work without reference to estimate and its quantities. Further, the Government orders issued in February 2015, does not supersede the EPC code, instead reiterated to follow the codal provisions.
(iii)	As per scope of work of Package VI (EMC second reach), the contractor has to execute required structures on canal. As per agreement condition[132], no extra payment should be made to the bidder, if there is any change in type of structure, specifications, variation in quantities as per actual site conditions. Audit noticed that though the scope of work in respect of structures and tunnels under this package was not changed, the Department concluded two supplementary agreements[133] (December 2016 and May 2018) for ₹114.19 crore with the contractor towards additional quantities on structures and tunnels, which is irregular. Out of this, an amount of ₹22.97 crore[134] was already paid to the contractor as of November 2020. The Department replied (March 2022) that as per IBM, the number of structures were 69 and increased to 136 as per approved Hydraulic particulars (HPs). As such, there was increase in quantities and also stated that the quantities in IBM were arrived based on line estimates and there were changes in design parameters. As per Government orders (February 2015), the proposals for additional quantities were placed before DLSC and the same were recommended by DLSC. The reply is not acceptable, as the contract was awarded under EPC contract system wherein the components of work have to be executed as per scope of work without reference to IBM and its quantities.
(iv)	As per scope of work of Package VII (Western Branch Canal), the contractor has to execute required structures, pump houses, etc., for creation of contemplated ayacut. Scrutiny of records revealed that the Department sanctioned (December 2017) an amount of ₹59.00 crore at agreement rates towards additional quantities in respect of

[129] additional quantities on structures (₹16.08 crore) and Tunnel (₹3.40 crore)
[130] G.O.Ms. No. 22 Irrigation and CAD (Reforms) Department dated 23.02.2015
[131] Government superseded the G.O. Ms. No. 50 dated 02.03.2009 and G.O. Ms. No. 13 dated 07.02.2014
[132] condition No. 8 of Special conditions of contract
[133] 35/2016-17 dated 31.12.2016 – ₹78.05 crore (Additional quantities for structures), 03/2018-19 dated 30.5.2018 – ₹36.14 crore (Additional quantities for tunnels on EMC)
[134] additional quantities on structures : ₹15.25 crore + additional quantities for Tunnel I: ₹5.34 crore and additional quantities for Tunnel 2 : ₹2.38 crore up to RA Bill No. 18 and part

	structures, cost of pump houses, etc., by stating increase in number of structures from 21 (as per IBM) to 35 (as per execution). Similarly, an amount of ₹2.10 crore[135], at agreement rates, was also sanctioned (September 2018) towards additional quantities for surplus weir in Turimella reservoir. Audit noticed that the scope of work in respect of structures, cost of pump houses and surplus weir of reservoir under this package was not changed. However, the Department sanctioned ₹61.10 crore towards additional quantities on these items, which is irregular. Out of this, an amount of ₹28.16 crore was already paid to the contractor as of November 2020. The Department replied that the surveys and preparation of HPs and design proposals made by the contractor was approved by competent authority. There is no need to follow the alignment specified in the estimate, only basic parameters shall be followed and the lengths, numbers and quantities may increase/decrease. In the present case, there is an abnormal increase in quantities over and above estimated quantities. Additional sanctions were approved by DLSC based on government instructions. Accordingly, supplementary agreements were concluded, and payments were made. The reply is not acceptable, as the above Government Order does not stipulate sanctioning additional quantities for the items which were within the original scope of work.
B.	**Decrease in length of canals/earthen bund**
(i)	The agreed rate for execution of Gottipadia canal (Package III) for a length of 12.875 km was ₹1.88 crore (₹2.02 crore[136] minus tender discount of 6.75*per cent).* Scrutiny of status report, IBM and approved hydraulic particulars revealed that the length of Gottipadia canal was executed for a length of 11.440 km. Thus, there was a reduction in length of canal by 1.435 Km having a proportionate cost of ₹0.21 crore (₹1.88 crore x 1.435 Km/12.875 Km). The Department admitted (March 2022) that the length of canal is decreased and the reduced length was sufficient to create the contemplated irrigation potential of 9,500 acres. However, the proportionate cost towards reduction in length of canal was not recovered.
(ii)	As per IBM of Package VI (EMC second reach), the length of the earthen bund of the Peddireddipalli reservoir was 2.100 Km. The total cost of earthen bund was ₹86.70 crore (including Cost of Head Sluice : ₹0.66 crore + Cost of Surplus weir : ₹2.28 crore). The earthen bund, as per designs approved by Department, was

[135] ₹5.67 crore minus (₹3.41 crore plus tender premium 4.86 *per cent*)
[136] cost of canal as per IBM : ₹1.88crore + LS Provision Share : ₹0.14 crore

	1.650 Km. As such, there was a reduction by 450 m (2.100 Km – 1.650 Km) with a proportionate cost of ₹18.77 crore[137]. The Department replied that the storage capacity of the reservoir was increased from 1.721 to 2.010 TMC. The position of earth bund was shifted to upper stream of existing alignment with new sections. Due to this change, the cost of head sluice and surplus weir construction was increased and there was a decrease in the cost of land acquisition. The reply is not acceptable, as the cost of head sluice and surplus weir was only 3.39 *per cent* (₹2.94 crore x 100/₹86.70 crore). As such, the increase in cost of these items could not be compared with the remaining components which constitute 96.61 *per cent*.
(iii)	As per IBM of Western Branch Canal (Package VII), the cost of the length of lined canal measuring 17.275 Km in three reaches[138] was ₹20.03 crore (Excavation : ₹10.58 crore + Lining : ₹9.45 crore). However, as per actual execution, the length of canal was 14.315 Km[139] only. As such, there was reduction in length of canal by 2.960 Km with a proportionate cost of ₹3.60 crore[140]. The Department admitted (March 2022) that there was decrease in length of canal and stated that the works were entrusted under EPC contract system wherein contractor has to follow the basic parameters and there may be increase/ decrease in lengths and quantities. The payments are being made as per the approved payment schedule. Further, stated that the contractor is bound to complete all the components of works as per the agreement conditions within the limits of provisions made in the approved payment schedule. However, the proportionate cost towards reduction in length of canal was not recovered.
C.	**Savings in Earthwork quantities**
(i)	As per original agreement (August 2005) of Link canal, EMC (first reach) and Kakarla dam, the contractor[141] has to investigate and design these components for Stage II. The execution was initially limited to Stage I. Subsequently, the Department proposed to execute these items for Stage II. Accordingly, the total quantities was assessed for both Stage I and II for Link canal, EMC first reach and Kakarla dam as 50,11,837 cum, 1,99,73,392 cum and 2,68,138 cum respectively. The execution for Stage II was entrusted (January 2009) to same contractor at original agreement rates. Out of above total quantities, the quantities as per execution, as stated in status reports, work bills etc., towards link canal, EMC 1st reach and Kakarla dam was 33,05,518 cum, 1,55,00,000 cum and 2,27,600 cum respectively.

[137] ₹83.76 crore x 450/2100 + tender premium at 4.588 *per cent*
[138] From Km 2.000 to Km 8.300, Km 11.300 to Km 14.200 and Km 14.800 to Km 22.875
[139] Reach I : Km 3.100 to Km 9.800, Reach II : Km 15.000 to Km 17.500 and Reach III : Km 18.560 to Km 23.675
[140] ₹20.03 crore x 2.960/17.275 + tender premium at 4.86 *per cent*
[141] M/s. SCL-BSCPL (JV)

	Audit noticed that the investigation for total quantities was entrusted initially to the contractor. As such, the Department has to assess the total quantities accurately. However, there was variation between total quantities and quantities as per execution. This indicates that the Department failed to estimate the quantities correctly despite investigation was done. This resulted in undue financial advantage of ₹48.75 crore. Out of this, an amount of ₹47.72 crore was already paid. The Department replied (March 2022) that the quantities executed from the date of initial agreement to December 2012 were not recorded and were not mentioned in the status booklet. It was further replied that the works were executed without any deviation from the basic parameters and scope of work and payment made were within agreement amount only. The reply is not acceptable, as the quantities as per Status Report and RA Bill No. 119 & part were in line. Therefore, the reply furnished by Department stating that non recording the quantities upto December 2012 in the status report was not correct.
(ii)	As per IBM of Package VI (EMC second reach), the contractor has to execute the canal for a length of 102.285 Km. The quantities to be executed, as per IBM, was 1.63 crore cum[142] at a cost of ₹152.76 crore (₹42.87 crore plus ₹109.89 crore). As per execution, the quantities executed were only 1.01 crore cum. As such, there was a reduction in earthwork quantities by 0.62 crore cum with a proportionate cost of ₹60.47 crore[143]. The Department replied (March 2022) that the works were entrusted under EPC turnkey contract system and also the quantities given in Bill of Quantities were meant for general assessment of value of work done and these were subject to alterations, additions and deductions. The basis for payment would be percentage payment at various stages of work which would be assessed on quantities measured by the contractor and approved by Engineer-in-Charge to complete the work as per scope of work. However, the reduction in cost due to reduction in quantities to be executed was not recovered.

[142] 45,62,086 cum plus 1,16,93,083 cum
[143] ₹152.76 x 0.62 crore/1.63 crore + Tender premium of 4.588 *per cent*

Appendix – IX
(Paragraph No. 5.5.2 (a) & Page No. 42)
Statement showing excess payment of price variation on steel in Package II

(in ₹)

Proceeding No.	Month	Quantity (MT)	Initial cost (₹28,000) + five *per cent* to be adopted	Price as per BOC	Difference	Amount	Already paid	Excess payment
A	B	C	D	E	F=E-D	G =C x F	H	I = H-G
Main Contractor								
SE/CC(P)/OGL/DB/ATO-3/ W-30/39 MRK dated 25.11.2008	March 2007	15.545	29,400	29,100	-300	0		
	April 2007	7.385	29,400	29,100	-300	0		
	May 2007	15.077	29,400	29,100	-300	0		
	June 2007	6.054	29,400	30,850	1,450	8,778		
	July 2007	0.879	29,400	30,850	1,450	1,275		
	August 2007	4.432	29,400	30,850	1,450	6,426		
	September 2007	3.174	29,400	31,400	2,000	6,348		
	October 2007	1.560	29,400	31,400	2,000	3,120		
	November 2007	0.304	29,400	31,400	2,000	608		
	December 2007	2.658	29,400	33,000	3,600	9,569		
	February 2008	7.091	29,400	33,000	3,600	25,528		
	March 2008	2.664	29,400	41,490	12,090	32,208		
	May 2008	5.328	29,400	41,500	12,100	64,469		
	June 2008	1.045	29,400	44,500	15,100	15,780		
	July 2008	7.747	29,400	47,000	17,600	1,36,347		
	August 2008	4.623	29,400	50,800	21,400	98,932		
Sub Total						**4,09,387**	**4,42,906**	**33,519**

SE/CC(P)/OGL/DB/ATO-3/ W-30/67 MRK dated 16.04.2010	September 2008	12.644	29,400	45,000	15,600	1,97,246		
	October 2008	7.084	29,400	47,000	17,600	1,24,678		
	November 2008	26.128	29,400	40,600	11,200	2,92,634		
	January 2009	5.288	29,400	31,500	2,100	11,105		
	February 2009	12.489	29,400	31,500	2,100	26,227		
	April 2009	17.796	29,400	33,000	3,600	64,066		
	May 2009	7.933	29,400	33,500	4,100	32,525		
	June 2009	5.552	29,400	31,500	2,100	11,659		
	July 2009	11.709	29,400	31,000	1,600	18,734		
	August 2009	11.478	29,400	30,000	600	6,887		
	September 2009	4.464	29,400	31,000	1,600	7,142		
	October 2009	22.976	29,400	30,000	600	13,786		
Sub Total						**8,06,689**	**8,83,096**	**76,407**
SE/CC(P)/OGL/DB/ATO-3/ W-30/198 MRK dated 05.11.2010	December 2009	10.968	29,400	30,000	600	6,581		
	January 2010	46.835	29,400	34,500	5,100	2,38,859		
	February 2010	16.809	29,400	32,500	3,100	52,108		
	March 2010	12.380	29,400	34,500	5,100	63,138		
	April 2010	1.499	29,400	37,500	8,100	12,142		
Sub Total						**3,72,827**	**4,19,286**	**46,459**
SE/CC(P)/OGL/DB/ATO-1/ W-30/79 MRK dated 18.06.2014	January 2012	7.938	29,400	44,000	14,600	1,15,895		
	March 2012	14.002	29,400	49,500	20,100	2,81,440		
	August 2013	29.470	29,400	41,500	12,100	3,56,587		
	February 2014	1.326	29,400	44,000	14,600	19,360		
	February 2014	0.730	29,400	43,000	13,600	9,928		
Sub Total						**7,83,210**	**8,11,279**	**28,069**

SE/CC(P)/OGL/DB/ATO-3/ W-30/157 MRK dated 21.11.2014	August 2014	3.710	29,400	48,000	18,600	69,006		
	September 2014	14.692	29,400	42,000	12,600	1,85,119		
Sub Total						**2,54,125**	**2,63,786**	**9,661**
SE/CC(P)/OGL/DB/TO-177 MRK dated 19.08.2015	January 2015	17.682	29,400	43,500	14,100	2,49,316		
Sub Total						**2,49,316**	**2,58,599**	**9,283**
SE/CC(P)/OGL/DB/TO-17 MRK dated 23.01.2017	June 2015	2.856	29,400	42,000	12,600	35,986		
	July 2015	8.419	29,400	41,000	11,600	97,660		
	August 2015	2.660	29,400	34,000	4,600	12,236		
	September 2015	26.604	29,400	34,000	4,600	1,22,378		
	October 2015	2.425	29,400	33,000	3,600	8,730		
	November 2015	6.227	29,400	32,000	2,600	16,190		
	June 2016	30.891	29,400	34,500	5,100	1,57,544		
	August 2016	71.878	29,400	34,500	5,100	3,66,578		
	September 2016	119.967	29,400	34,500	5,100	6,11,832		
	October 2016	103.195	29,400	34,500	5,100	5,26,295		
	November 2016	193.691	29,400	34,500	5,100	9,87,824		
		130.419	29,400	34,500	5,100	6,65,137		
	December 2016	44.134	29,400	34,500	5,100	2,25,083		
		69.533	29,400	34,500	5,100	3,54,618		
Sub Total						**41,88,091**	**46,14,864**	**4,26,773**
SE/CC(P)/OGL/DB/TO-143 MRK dated 22.06.2017	January 2017	32.964	29,400	36,000	6,600	2,17,562		
		76.802	29,400	36,000	6,600	5,06,893		
	February 2017	10.880	29,400	36,000	6,600	71,808		
		8.056	29,400	36,000	6,600	53,170		
Sub Total						**8,49,433**	**9,17,002**	**67,569**

SE/CC(P)/OGL/DB/TO/ JTO/W/30/Est./237 MRK dated 28.11.2017	January 2017	0.207	29,400	36,000	6,600	1,366		
		1.988	29,400	36,000	6,600	13,121		
	February 2017	0.217	29,400	36,000	6,600	1,432		
		1.318	29400	36000	6,600	8,699		
	March 2017	15.173	29,400	37,500	8,100	1,22,901		
		74.004	29,400	37,500	8,100	5,99,432		
	April 2017	8.231	29,400	38,500	9,100	74,902		
		15.046	29,400	38,500	9,100	1,36,919		
	May 2017	1.224	29,400	37,500	8,100	9,914		
		34.752	29,400	37,500	8,100	2,81,491		
	June 2017	4.991	29,400	37,500	8,100	40,427		
Sub Total						**12,90,605**	**13,73,115**	**82,510**
SE/CC(P)/OGL/DB/TO/ JTO(V)/W-30/Est./222 MRK dated 29.08.2018	February 2017	0.124	29,400	36,000	6,600	818		
	March 2017	0.248	29,400	37,500	8,100	2,009		
	June 2017	11.014	29,400	37,500	8,100	89,213		
		20.340	29,400	37,500	8,100	1,64,754		
	July 2017	3.230	29,400	38,500	9,100	29,393		
		65.404	29,400	38,500	9,100	5,95,176		
	August 2017	3.074	29,400	38,500	9,100	27,973		
		14.214	29,400	38,500	9,100	1,29,347		
	September 2017	14.648	29,400	32,700	3,300	48,338		
		8.816	29,400	32700	3,300	29,093		
	October 2017	6.351	29,400	32,100	2,700	17,148		
		9.563	29,400	32,100	2,700	25,820		
	November 2017	2.082	29,400	32,000	2,600	5,413		
		29.729	29,400	32,000	2,600	77,295		

	December 2017	26.696	29,400	34,300	4,900	1,30,810		
		4.616	29,400	34,300	4,900	22,618		
	January 2018	10.075	29,400	41,000	11,600	1,16,870		
	February 2018	1.249	29,400	42,500	13,100	16,362		
Sub Total						**15,28,453**	**16,49,978**	**1,21,525**
SE/CC(P)/OGL/DB/TO/ JTO(V)/W-30/Est./308 MRK dated 31.10.2018	March 2018	12.900	29,400	41,300	11,900	1,53,510		
	April 2018	39.226	29,400	42,000	12,600	4,94,248		
	May 2018	12.809	29,400	42,000	12,600	1,61,393		
Sub Total						**8,09,151**	**8,43,242**	**34,091**
SE/CC(P)/OGL/DB/TO/ JTO(V)/W-30/Est./83 MRK dated 15.03.2019	February 2018	2.398	29,400	42,500	13,100	31,414		
	March 2018	0.992	29,400	41,300	11,900	11,805		
	April 2018	0.693	29,400	42,000	12,600	8,732		
	September 2018	14.620	29,400	42,000	12,600	1,84,212		
	October 2018	17.781	29,400	42,000	12,600	2,24,041		
		20.847	29,400	42,000	12,600	2,62,672		
	November 2018	47.543	29,400	43,500	14,100	6,70,356		
Sub Total						**13,93,232**	**1448292**	**55,061**
Total (A)						**1,29,34,520**	**1,39,25,445**	**9,90,925**
60 (C) Contractors								
SE/CC(P)/OGL/DB/TO/JTO (V)/W-30/Es/230 MRK dated 31.08.2018	October 2017	4.040	29,400	32,100	2,700	10,908		
	November 2017	4.630	29,400	32,000	2,600	12,038		
	December 2017	20.660	29,400	34,300	4,900	1,01,234		
	January 2018	2.880	29,400	42,500	13,100	37,728		
Sub Total						**1,61,908**	**1,78,819**	**16,911**
	February 2018	0.451	29,400	42,500	13,100	5,908		
	March 2018	0.301	29,400	41,300	11,900	3,582		

SE/CC(P)/OGL/DB/TO/JTO (V)/W-30/Es/282 MRK dated 08.10.2018	April 2018	0.301	29,400	42,000	12,600	3,793		
	May 2018	12.760	29,400	42,000	12,600	1,60,776		
	June 2018	12.320	29,400	42,000	12,600	1,55,232		
	January 2018	3.671	29,400	41,000	11,600	42,584		
	February 2018	2.807	29,400	42,500	13,100	36,772		
	March 2018	5.005	29,400	41,300	11,900	59,560		
	May 2018	17.740	29,400	42,000	12,600	2,23,524		
	June 2018	32.610	29,400	42,000	12,600	4,10,886		
Sub Total						**35,456**	**36,934**	**1,478**
SE/CC(P)/OGL/DB/TO/JTO -2/W-30/Es/4 MRK dated 04.01.2019	September 2018	3.964	29,400	42,000	12,600	49,946		
	October 2018	32.381	29,400	42,000	12,600	4,08,001		
		29.470	29,400	42,000	12,600	3,71,322		
		32.381	29,400	42,000	12,600	4,08,001		
Sub Total						**12,37,270**	**12,88,823**	**51,553**
SE/CC(P)/OGL/DB/TO/JTO -2/W-30/Es/21 MRK dated 18.01.2019	November 2018	3.813	29,400	43,500	14,100	53,763		
Sub Total						**53,763**	**55,765**	**2,002**
SE/CC(P)/OGL/DB/TO/JTO -2/W-30/Es/22 MRK dated 18.01.2019	October 2018	3.813	29,400	42,000	12,600	48,044		
Sub Total						**48,044**	**50,046**	**2,002**
SE/CC(P)/OGL/DB/TO/JTO (V)/W-30/Es/23 MRK dated 18.01.2019	July 2018	17.647	29,400	42,000	12,600	2,22,352		
	August 2018	19.194	29,400	42,000	12,600	2,41,844		
	October 2018	0.810	29,400	42,000	12,600	10,206		
Sub Total						**4,74,403**	**4,94,169**	**19,766**

SE/CC(P)/OGL/DB/TO/JTO-2/W-30/Es/51 MRK dated 13.02.2019	November 2018	31.438	29,400	43,500	14,100	4,43,276		
		29.744	29,400	43,500	14,100	4,19,390		
	December 2018	30.397	29,400	43,500	14,100	4,28,598		
		23.905	29,400	43,500	14,100	3,37,061		
		23.905	29,400	43,500	14,100	3,37,061		
Sub Total						**19,65,385**	**20,39,296**	**73,911**
SE/CC(P)/OGL/DB/TO/JTO-2/W-30/Es/68 MRK dated 28.02.2019	October 2018	0.284	29,400	42,000	12,600	3,578		
	November 2018	0.046	29,400	43,500	14,100	649		
Sub Total						**4,227**	**4,400**	**173**
SE/CC(P)/OGL/DB/TO/JTO-2/W-30/Es/69 MRK dated 28.02.2019	November 2018	3.280	29,400	43,500	14,100	46,248		
Sub Total						**46,248**	**47,965**	**1,717**
Total (B)						**51,29,319**	**53,45,015**	**2,15,696**
Grand Total (A + B)						**1,80,63,839**	**1,92,70,460**	**12,06,621**

Appendix-X

(Paragraph No. 5.5.2 (b) & Page No. 43)

Statement showing excess payment of fuel escalation due to irregular adoption of 'R' value by deducting Value Added Tax at 2.8 *per cent* and 'Fo' value in denominator

(in ₹)

Sl. No.	Period		Cost of HSD oil as on the date of submission of bid (F_0)	Cost of HSD oil as on the date of submission of bid + five *per cent* hike (F_0)	Cost of HSD oil as on 15th of middle month(F_1)	Variation in Amount	Value of work in the quarter after deducting VAT at four *per cent* (R)	Price Escalation Amount {0.85XPF/100X RX(F_1-F_0)/F_0}
	From	To						
1.	March 2006	May 2006	28.47	29.89	33.75	3.86	15,17,04,254	36,63,538
2.	June 2006	August 2006	28.47	29.89	35.73	5.84	4,11,60,818	15,03,878
3.	September 2006	November 2006	28.47	29.89	35.73	5.84	8,48,49,358	31,00,110
4.	December 2006	February 2007	28.47	29.89	34.63	4.74	11,59,55,071	34,38,617
5.	March 2007	May 2007	28.47	29.89	33.53	3.64	6,19,66,711	14,11,158
6.	June 2007	August 2007	28.47	29.89	33.53	3.64	5,53,28,487	12,59,986
7.	September 2007	November 2007	28.47	29.89	33.53	3.64	6,27,87,940	14,29,859
8.	December 2007	February 2008	28.47	29.89	33.53	3.64	4,45,44,897	10,14,414
9.	March 2008	May2008	28.47	29.89	34.69	4.8	3,09,52,366	9,29,503
10.	June 2008	August 2008	28.47	29.89	37.55	7.66	2,02,22,744	9,69,136
11.	September 2008	November 2008	28.47	29.89	37.75	7.86	2,76,67,974	13,60,553
12.	December 2008	February 2009	28.47	29.89	35.58	5.69	2,94,68,012	10,49,008
13.	March 2009	May 2009	28.47	29.89	33.41	3.52	3,36,65,872	7,41,393
14.	June 2009	August 2009	28.47	29.89	35.59	5.70	14,22,79,227	50,73,785
15.	September 2009	November 2009	28.47	29.89	35.59	5.70	11,57,15,521	41,26,503

16.	December 2009	February 2010	28.47	29.89	35.59	5.70	18,10,04,717	64,54,765
17.	March 2010	May 2010	28.47	29.89	38.37	8.48	23,93,14,662	1,26,96,407
18.	June 2010	August 2010	28.47	29.89	40.63	10.74	21,44,88,849	1,44,12,015
19.	September 2010	November 2010	28.47	29.89	40.63	10.74	33,17,76,454	2,22,92,847
20.	December 2010	February 2011	28.47	29.89	40.67	10.78	17,90,23,015	1,20,73,782
21.	March, 2011	May 2011	28.47	29.89	40.67	10.78	15,30,16,955	1,03,19,865
22.	June, 2011	August 2011	28.47	29.89	44.34	14.45	8,76,60,550	79,24,789
23.	September 2011	November 2011	28.47	29.89	44.34	14.45	7,38,75,490	66,78,577
24.	December 2011	February 2012	28.47	29.89	44.34	14.45	6,77,05,879	61,20,824
25.	March 2012	May 2012	28.47	29.89	44.34	14.45	2,48,93,398	22,50,441
26.	June 2012	August 2012	28.47	29.89	44.34	14.45	3,48,22,866	31,48,097
27.	September 2012	November 2012	28.47	29.89	50.29	20.40	3,03,80,400	38,77,389
28.	December 2012	February,13	28.47	29.89	50.29	20.40	1,63,97,494	20,92,779
29.	March 2013	May 2013	28.47	29.89	53.09	23.2	1,68,76,839	24,49,598
30.	June 2013	August 2013	28.47	29.89	55.56	25.67	1,74,76,007	28,06,621
31.	September 2013	November 2013	28.47	29.89	57.41	27.52	3,24,55,441	55,87,939
32.	December 2013	February 2014	28.47	29.89	59.36	29.47	1,82,45,626	33,63,989
33.	March 2014	May 2014	28.47	29.89	60.61	30.72	3,38,84,735	65,12,399
34.	June 2014		28.47	29.89	62.56	32.67	1,00,50,738	20,54,295
35.	July 2014	September 2014	28.47	29.89	63.81	33.92	3,84,85,039	81,67,017
36.	October 2014	December 2014	28.47	29.89	58.3	28.41	19,29,95,805	3,43,03,212
37.	January 2015	March 2015	28.47	29.89	54.37	24.48	13,66,12,006	2,09,22,615
38.	April 2015	June 2015	28.47	29.89	58.16	28.27	10,68,71,546	1,89,01,819

39.	July 2015	September 2015	28.47	29.89	51.38	21.49	9,82,21,662	1,32,05,638
40.	October 2015	December 2015	28.47	29.89	52.41	22.52	16,61,29,532	2,34,06,200
41.	January 2016	March 2016	28.47	29.89	50.54	20.65	7,81,27,128	1,00,93,403
42.	April 2016	June 2016	28.47	29.89	57.03	27.14	2,59,56,892	44,07,357
43.	July 2016	September 2016	28.47	29.89	59.01	29.12	1,54,27,562	28,10,634
44.	October 2016	December 2016	-	-	-	-	0	0
45.	January 2017	March 2017	28.47	29.89	66.24	36.35	2,36,54,831	53,79,476
46.	April 2017	June 2017	28.47	29.89	66.24	36.35	6,33,631	1,43,877
47.	July 2017	September 2017	28.47	29.89	66.24	36.35	15,48,126	3,52,240
48.	October 2017	December 2017	28.47	29.89	66.24	36.35	2,08,79,736	48,98,810
Total								**31,11,81,160**

Note: 'R' value for the period from September 2011 to March 2017 were calculated by adopting five *per cent* VAT instead of 2.8 *per cent* (Value X 105/102.)
In the absence of detailed calculation of 'R' value actual payment made was adopted, for the period April 2017 to December 2017.

Statement showing excess payment of fuel escalation due to irregular adoption of 'Fo' value in denominator in respect of additional quantities in CM & CD on EMC

Sl. No.	Period		Cost of HSD oil as on the date of submission of bid	(Fo) cost of HSD oil as on the date of submission of bid plus five *per cent* hike (F_0)	Cost of HSD oil as on 15th of middle month(F_1)	Variation in Amount (F_1-F_0)	Value of work in the Quarter (in ₹) (R)	Price Escalation Amount {0.85XPF/100XRX ($F1$-F_0)F_0}
	From	To						
1.	June 2010	August2010	28.47	29.89	40.63	10.74	31,96,360	2,14,771
2.	September 2010	November 2010	28.47	29.89	40.63	10.74	73,35,301	4,92,876
3.	December2010	February 2011	28.47	29.89	40.67	10.78	1,67,02,769	11,26,479
4.	March 2011	May2011	28.47	29.89	40.67	10.78	76,24,177	5,14,194
5.	June 2011	August 2011	28.47	29.89	44.34	14.45	65,48,389	5,91,995
6.	September 2011	November 2011	28.47	29.89	44.34	14.45	68,36,736	6,18,062
7.	December 2011	February 2012	28.47	29.89	44.34	14.45	14,19,877	1,28,361
8.	March 2012	May 2012	28.47	29.89	44.34	14.45	9,71,764	87,851
9.	October 2014	December 2014	28.47	29.89	58.3	28.41	2,90,51,627	51,63,657
10.	January 2015	March 2015	28.47	29.89	54.37	24.48	74,12,606	11,35,267
11.	April 2016	June 2016	28.47	29.89	57.03	27.14	37,00,631	6,28,350
12.	January 2017	March 2017	28.47	29.89	66.24	36.35	14,65,494	3,33,276
Total								**1,10,35,139**

Statement showing total excess payment calculation

(in ₹)

Total escalation to be paid (₹31,11,81,160 + ₹1,10,35,139)		**32,22,16,299**
	Amount paid upto RA Bill 119 and part	35,13,11,416
	Net excess payment	**2,90,95,117**

Appendix-XI

(Paragraph No. 5.5.3 (c) & Page No. 45)

Statement showing front payment due to adoption of lesser percentage to O&M charges

Description	Amount (in ₹)
Total value of work to be done	1135,84,77,000
O&M charges as per IBM	10,24,56,000
Add : Tender premium at 4.588 ***per cent*** on ₹10,24,56,000	47,00,681
O&M charges to be adopted in payment schedule at agreement rates (₹10,24,56,000 + ₹47,00,681)	10,71,56,681
O&M charges adopted in payment schedule	5,45,20,690
Amount of O&M charges adjusted in other components of work (₹ 10,71,56,681 – ₹5,45,20,690)	5,26,35,991
Value of work executed by the contractor and paid upto RA Bill No. 52	598,25,36,383
Premature payment upto RA Bill No. 52 and part (₹5,26,35,991 x ₹598,25,36,383/₹1135,84,77,000)	2,77,23,499
Value of work executed by subsidiary contractor and paid upto RA Bill No. 18	218,64,26,331
Premature payment to subsidiary contractor upto RA Bill No.18 and part (₹5,26,35,991 x ₹218,64,26,331/₹1135,84,77,000)	1,01,32,055
Total front payment (₹2,77,23,499 + ₹1,01,32,055)	**3,78,55,554**

Source: Compiled by Audit as per the information provided by the Department

Appendix – XII
(Paragraph No. 5.5.4 & Page No. 46)
Statement showing quantities of lining not deducted in structure portion

(length/width/thickness in meters)

Reach of structure	Type of structure	Discharge (in cumecs)	Length	Width	Thickness	Bed lining Qty (Cum)	FSD (m)	Height of each slope	No. of slopes	Slopes Lining Quantity (Cum)	Total lining Quantity (Cum)
A	B	C	D	E	F	G=DxExF	H	I=Hx1.8028*	J	K=DxFxIxJ	L=G+K
45.425	UT	89.375	60	11.8	0.1	70.8	4.75	8.563	2	102.76	173.56
46.950	SP	89.375	60	11.8	0.1	70.8	4.75	8.563	2	102.76	173.56
47.800	SP	89.375	60	11.8	0.1	70.8	4.75	8.563	2	102.76	173.56
49.400	SP	89.375	60	11.8	0.1	70.8	4.75	8.563	2	102.76	173.56
52.300	SP	89.375	60	11.8	0.1	70.8	4.75	8.563	2	102.76	173.56
52.650	OT	89.375	60	11.8	0.1	70.8	4.75	8.563	2	102.76	173.56
52.650	DLB	89.375	60	11.8	0.1	70.8	4.75	8.563	2	102.76	173.56
53.565	SP	89.375	60	11.8	0.1	70.8	4.75	8.563	2	102.76	173.56
54.105	SP	89.375	60	11.8	0.1	70.8	4.75	8.563	2	102.76	173.56
54.365	ESCAPE	89.375	60	11.8	0.1	70.8	4.75	8.563	2	102.76	173.56
54.690	DLB	89.375	60	11.8	0.1	70.8	4.75	8.563	2	102.76	173.56
54.765	SP	89.375	60	11.8	0.1	70.8	4.75	8.563	2	102.76	173.56
58.465	UT	89.375	60	11.8	0.1	70.8	4.75	8.563	2	102.76	173.56
58.865	SLB	89.375	60	11.8	0.1	70.8	4.75	8.563	2	102.76	173.56
59.915	SP	89.375	60	11.8	0.1	70.8	4.75	8.563	2	102.76	173.56
64.255	UT	89.375	60	11.8	0.1	70.8	4.75	8.563	2	102.76	173.56
65.115	SLB	89.375	60	11.8	0.1	70.8	4.75	8.563	2	102.76	173.56
65.115	SP	89.375	60	11.8	0.1	70.8	4.75	8.563	2	102.76	173.56
66.715	SP	89.375	60	11.8	0.1	70.8	4.75	8.563	2	102.76	173.56
66.750	OT	39.722	60	11.8	0.1	70.8	4.75	8.563	2	102.76	173.56
72.250	UT	40.74	60	8.7	0.1	52.2	4.15	7.482	2	89.78	141.98
73.300	UT	40.74	60	8.7	0.1	52.2	4.15	7.482	2	89.78	141.98
76.150	SP	40.74	60	8.7	0.1	52.2	4.15	7.482	2	89.78	141.98

79.200	UT	40.74	60	8.7	0.1	52.2	4.15	7.482	2	89.78	141.98
80.050	UT	40.74	60	8.7	0.1	52.2	4.15	7.482	2	89.78	141.98
81.450	UT	40.74	60	8.7	0.1	52.2	4.15	7.482	2	89.78	141.98
84.450	UT	40.74	60	8.7	0.1	52.2	4.15	7.482	2	89.78	141.98
85.540	UT	32.678	60	8.2	0.1	49.2	3.85	6.941	2	83.29	132.49
88.335	SP	32.678	60	8.2	0.1	49.2	3.85	6.941	2	83.29	132.49
91.025	UT	32.678	60	8.2	0.1	49.2	3.85	6.941	2	83.29	132.49
95.545	UT	22.595	60	7.8	0.1	46.8	3.35	6.039	2	72.47	119.27
98.145	UT	22.595	60	7.8	0.1	46.8	3.35	6.039	2	72.47	119.27
100.660	UT	22.595	60	7.8	0.1	46.8	3.35	6.039	2	72.47	119.27
101.990	UT	22.595	60	7.8	0.1	46.8	3.35	6.039	2	72.47	119.27
107.590	UT	22.595	60	7.8	0.1	46.8	3.35	6.039	2	72.47	119.27
108.290	UT	22.595	60	7.8	0.1	46.8	3.35	6.039	2	72.47	119.27
109.030	UT	22.595	60	7.8	0.1	46.8	3.35	6.039	2	72.47	119.27
110.351	UT	22.595	60	7.8	0.1	46.8	3.35	6.039	2	72.47	119.27
116.915	SP	22.595	60	7.8	0.1	46.8	3.35	6.039	2	72.47	119.27
119.140	AQUEDUCT	22.595	60	7.8	0.1	46.8	3.35	6.039	2	72.47	119.27
122.710	SP	22.595	60	7.8	0.1	46.8	3.35	6.039	2	72.47	119.27
124.388	UT	22.595	60	7.8	0.1	46.8	3.35	6.039	2	72.47	119.27
126.641	UT	11.966	20	5.8	0.1	11.6	2.85	5.138	2	20.55	32.15
128.348	UT	11.966	20	5.8	0.1	11.6	2.85	5.138	2	20.55	32.15
130.306	UT	11.966	20	5.8	0.1	11.6	2.85	5.138	2	20.55	32.15
130.470	UT	11.966	20	5.8	0.1	11.6	2.85	5.138	2	20.55	32.15
133.570	UT	11.966	20	5.8	0.1	11.6	2.85	5.138	2	20.55	32.15
134.620	AQUEDUCT	11.966	20	5.8	0.1	11.6	2.85	5.138	2	20.55	32.15
135.145	UT	11.966	20	5.8	0.1	11.6	2.85	5.138	2	20.55	32.15
136.720	UT	11.966	20	5.8	0.1	11.6	2.85	5.138	2	20.55	32.15
137.745	UT	11.966	20	5.8	0.1	11.6	2.85	5.138	2	20.55	32.15
138.775	UT	11.966	20	5.8	0.1	11.6	2.85	5.138	2	20.55	32.15
142.425	UT	6.087	20	4.7	0.1	9.4	2.35	4.237	2	16.95	26.35
143.952	UT	6.087	20	4.7	0.1	9.4	2.35	4.237	2	16.95	26.35
145.795	SP	6.087	20	4.7	0.1	9.4	2.35	4.237	2	16.95	26.35

76.265	SLB	40.741	60	8.7	0.1	52.2	4.15	7.482	2	89.78	141.98
85.365	SLB	40.741	60	8.7	0.1	52.2	4.15	7.482	2	89.78	141.98
93.315	SLB	22.595	60	7.8	0.1	46.8	3.35	6.039	2	72.47	119.27
98.140	SLB	22.595	60	7.8	0.1	46.8	3.35	6.039	2	72.47	119.27
109.005	SLB	22.595	60	7.8	0.1	46.8	3.35	6.039	2	72.47	119.27
123.525	SLB	22.595	60	7.8	0.1	46.8	3.35	6.039	2	72.47	119.27
130.485	SLB	11.966	20	5.8	0.1	11.6	2.85	5.138	2	20.55	32.15
134.055	SLB	11.966	20	5.8	0.1	11.6	2.85	5.138	2	20.55	32.15
137.085	SLB	11.966	20	5.8	0.1	11.6	2.85	5.138	2	20.55	32.15
142.610	SLB	11.966	20	4.7	0.1	9.4	2.35	4.237	2	16.95	26.35
119.155	ESCAPE	22.595	60	7.8	0.1	46.8	3.35	6.039	2	72.47	119.27
134.905	ESCAPE	11.966	20	5.8	0.1	11.6	2.85	5.138	2	20.55	32.15
	Total quantity (Cum)										**7,729.62**
	Rate per cum as per IBM including paver charges (in ₹)										3,058.40
	Total amount at IBM rates (7,729.62 cum x ₹3,058.40 per cum) (in ₹)										2,36,40,269.81
	Add: Tender premium at 4.588 *per cent* (₹2.36 crore x 4.588 *per cent*) (in ₹)										10,84,615.57
	Total amount at agreement rates (₹2.36 crore + ₹0.11 crore) (in ₹)										**2,47,24,885.38**

* As 1:1.5 slope was adopted for canals, height of slope would become the product of depth and square root of (1.5 x 1.5 + 1.0 x 1.0) = 1.8028 (Pythagoras theorem)

DLB: Double Lane Bridge; OT: Off-Take sluice; SLB: Single Lane Bridge; SP: Super Passage; UT: Under Tunnel