



**GOVERNMENT OF ODISHA
DEPARTMENT OF WATER RESOURCES**

JAJPUR IRRIGATION DIVISION, JAJPUR

BID DOCUMENT

FOR THE WORK

**PROTECTION TO SCoured BANK ON BUDHA RIGHT
NEAR RAMARAJA TEMPLE**

BID IDENTIFICATION NO. : JJPR-61/26-27

**SUPERINTENDING ENGINEER
JAJPUR IRRIGATION DIVISION
JAJPUR**

BLANK

ଓଡ଼ିଶା ସରକାର
ଅଧିକାରୀଙ୍କ କାର୍ଯ୍ୟାଳୟ
ଯାଜପୁର ଜଳସେଚନ ବିଭାଜନ

ଫୋନ୍ ନଂ .06728-222022
ଇମେଲ - jpt.irrigation@gmail.com

'e' -Procurement Notice No. 01 / 2026-27

- 1 କାର୍ଯ୍ୟ ର ନାମ : ନଦୀ ବନ୍ଧ ଓ କେନାଲ ମରାମତି କାର୍ଯ୍ୟ
- 2 ମୋଟ କାର୍ଯ୍ୟ ସଂଖ୍ୟା : ୬୧ ଗୋଟି କାର୍ଯ୍ୟ
- 3 ଅଟକଳ ମୂଲ୍ୟ : ୫.୪୦ ଲକ୍ଷ ରୁ ୮୫.୦୦ ଲକ୍ଷ
- 4 ଇ.ଏମ.ଡି (Bid security) ଓ ବିଡ ମୂଲ୍ୟର ଦେୟ ପ୍ରଣାଳୀ : The bidder shall transfer the required amount of EMD (Bid Security) and cost of Bid by Online through electronic payment as per Govt. of Odisha WDOM No.17254/WE Dated 05.12.2017 as Mentioned in DTCN.
- 5 କାର୍ଯ୍ୟ ସମାପ୍ତି ସମୟ : ୬ ମାସ ।
- 6 ନିମ୍ନଲିଖିତଭାବରେ ଅନୁସ୍ଥାପନ କରିବେ :
I. Procurement Officer : ଅଧିକାରୀଙ୍କ କାର୍ଯ୍ୟାଳୟ, ଯାଜପୁର ଜଳସେଚନ ବିଭାଜନ, ଯାଜପୁର
II. ଅନୁଲାଇନ Biddingର ସମୟସୀମା : ଡା ୧୮.୦୭.୨୦୨୬ ଦିବା ୧୦ ଘଟିକାରୁ ଡା ୦୨.୦୭.୨୦୨୬ ସନ୍ଧ୍ୟା ୫ ଘଟିକା ପର୍ଯ୍ୟନ୍ତ।
III. Technical ଏବଂ Financial bid ଖୋଲାଯିବାର ତାରିଖ ଓ ସମୟ : ଅଧିକାରୀଙ୍କ କାର୍ଯ୍ୟାଳୟରେ ଡା ୦୩.୦୭.୨୦୨୬ ଦିବା ୧୧.୩୦।

ଅନୁସନ୍ଧ୍ୟା ତଥ୍ୟ ଏହି ବେସାଇଟ୍ ରେ ପ୍ରଦାନ କରାଯାଇଛି। www.tendersorissa.gov.in.


ଅଧିକାରୀଙ୍କ
ଯାଜପୁର ଜଳସେଚନ ବିଭାଜନ, ଯାଜପୁର

C O N T E N T S

SECTION	ITEMS	PAGE NO.
SECTION -1	DETAILED TENDER CALL NOTICE	3
SECTION - 2	INFORMATION & INSTRUCTION TO TENDERERS	25
SECTION –3	GENERAL RULES AND DIRECTIONS	31
SECTION – 4	CONDITION OF CONTRACT	36
SECTION – 5	TECHNICAL SPECIFICATION	60
SECTION – 6	BILL OF QUANTITY	95
SECTION – 7	GOVT. CIRCULAR	

SECTION – 1
DETAILED TENDER
CALL NOTICE

GOVERNMENT OF ODISHA
DEPARTMENT OF WATER RESOURCES
OFFICE OF THE SUPERINTENDING ENGINEER
JAJPUR IRRIGATION DIVISION, JAJPUR, ODISHA

Office Phone No.06728-222022

Email - jpt.irrigation@gmail.com

Invitation of Tenders

‘e’ -Procurement Notice No.01 / 2026-27

Bid Identification No. JJPR-1/26-27 to JJPR-61/26-27

The Superintending Engineer, Jajpur Irrigation Division, Jajpur on behalf of Governor, Odisha invites On-line **Percentage** rate tenders through e-procurement for execution of work as detailed below. The bid should be submitted by eligible class of contractors through On-line in the Govt. website www.tendersorissa.gov.in. The bidders should have necessary portal enrolment (with own digital signature certificate). The registered bidders out side of Odisha state can also participate in this on-line tender process after necessary portal enrolment but shall have to subsequently undergo registration with appropriate authority of the state govt. within a month of acceptance of bid.

Sl. No.	Name of work	Bid Identification No.	Approx Estimated Cost (Rs. In lakh)	EMD (In Rupees)	Cost of Tender document (In Rupees)	Class of Contractor
1	2	3	4	5	6	7
1	Restoration to Distributary No.2 of Jajpur canal for 2026-27	JJPR-1/26-27	26.33	Rs. 26,300/-	Rs 6,000/-	C & B
2	Restoration to Distributary No.2A of Jajpur canal for 2026-27	JJPR-2/26-27	8.62	Rs. 8,600/-	Rs 4,000/-	D & C
3	Restoration to Badapal minor of Jajpur canal system.	JJPR-3/26-27	8.54	Rs. 8,500/-	Rs 4,000/-	D & C
4	Construction of V.R. Bridge over Distributary No.2 of Jajpur canal near Abdalpur U.P school and Mangala Thakurani.	JJPR-4/26-27	44.57	Rs. 44,600/-	Rs 6,000/-	B
5	Jungle clearance & Raincut filling on Banapur TRE, Mallipur TRE & Chandramunha TRE on Kharasuan right.	JJPR-5/26-27	10.41	Rs. 10,400/-	Rs 6,000/-	D & C
6	Jungle clearance & Raincut filling on Badua gherry on Tantighai right.	JJPR-6/26-27	8.12	Rs. 8,100/-	Rs 4,000/-	D & C
7	Restoration and Bed cleaning of 1C2A Distributary of Jajpur canal system.	JJPR-7/26-27	6.98	Rs. 7,000/-	Rs 4,000/-	D & C

Sl. No.	Name of work	Bid Identification No.	Approx Estimated Cost (Rs. In lakh)	EMD (In Rupees)	Cost of Tender document (In Rupees)	Class of Contractor
1	2	3	4	5	6	7
8	Restoration to Both side embankment of 1A1 Distributary of Jajpur canal near Baruneswar Mandir.	JJPR-8/26-27	15.44	Rs. 15,400/-	Rs 6,000/-	D & C
9	Restoration to Both side embankment of 1C Distributary of Jajpur canal near Buleipur.	JJPR-9/26-27	19.17	Rs. 19,200/-	Rs 6,000/-	D & C
10	Restoration and Bed cleaning of Distributary No.2 of Jajpur canal system.	JJPR-10/26-27	8.17	Rs. 8,200/-	Rs 4,000/-	D & C
11	Restoration and Bed cleaning of 1A1 Distributary of Jajpur canal system.	JJPR-11/26-27	8.11	Rs. 8,100/-	Rs 4,000/-	D & C
12	Restoration and Bed cleaning of 1C2 Distributary of Jajpur canal system.	JJPR-12/26-27	11.51	Rs. 11,500/-	Rs 6,000/-	D & C
13	Restoration and Bed cleaning of 1C Distributary and Badasingha minor-2 of Jajpur canal system.	JJPR-13/26-27	12.94	Rs. 12,900/-	Rs 6,000/-	D & C
14	Restoration to left side embankment of 1C2 Distributary canal near Barikula Chhaka.	JJPR-14/26-27	24.64	Rs. 24,600/-	Rs 6,000/-	C & B
15	Construction of VRB near Basudevpur Siva Mandira, Birajapur & near Gochhayat sahi with construction of protection wall on 1B Distributary and construction of VRB near Dhamdhada on 1A1 Distributary & construction of VRB over Kapasi minor.	JJPR-15/26-27	69.98	Rs. 70,000/-	Rs 10,000/-	B
16	Improvement to left Bank of Taliha minor from Muslimsahi to Jagulai temple.	JJPR-16/26-27	72.66	Rs. 72,700/-	Rs 10,000/-	B
17	Restoration to Sudugobinda minor and Kapasi minor of Jajpur canal system.	JJPR-17/26-27	68.38	Rs. 68,400/-	Rs 10,000/-	B
18	Restoration to Akarapada minor of Jajpur canal system.from RD0.00km to 700m.	JJPR-18/26-27	79.82	Rs. 79,800/-	Rs 10,000/-	B
19	Protection to scoured bank on CE No. 5A Kharsuan Left near Village Ghantiali	JJPR-19/26-27	78.26	Rs. 78,300/-	Rs 10,000/-	B

Sl. No.	Name of work	Bid Identification No.	Approx Estimated Cost (Rs. In lakh)	EMD (In Rupees)	Cost of Tender document (In Rupees)	Class of Contractor
1	2	3	4	5	6	7
20	Protection to left flood bank of Jari Guide Bundha on Kharasuan left at village Chandamunda	JJPR-20/26-27	83.24	Rs. 83,200/-	Rs 10,000/-	B
21	Restoration to Kharasuan left on Jari Guide Bundha near Bangara High school.	JJPR-21/26-27	82.72	Rs. 82,700/-	Rs 10,000/-	B
22	Providing two nos of low level spur of Jariguide Bundha near Jhara Jhari Thakurani.	JJPR-22/26-27	82.92	Rs. 82,900/-	Rs 10,000/-	B
23	Providing two nos low level spur on Jari Guide bundha near Adhei sahi.	JJPR-23/26-27	82.13	Rs. 82,100/-	Rs 10,000/-	B
24	Restoration to left embankment of Jari Guide Budha near village Jari.	JJPR-24/26-27	24.19	Rs. 24,200/-	Rs 6,000/-	C & B
25	Construction of 7nos C.C Gada of Jari Guide Bundha at Jari.	JJPR-25/26-27	40.04	Rs. 40,000/-	Rs 6,000/-	B
26	Protection to scoured bank on Nuapada Trilochanpur TRE on Budha right embankment near Bhagatpur.	JJPR-26/26-27	82.37	Rs. 82,400/-	Rs 10,000/-	B
27	Protection to scoured bank on Baitarani right near village Nisanpur.	JJPR-27/26-27	80.70	Rs. 80,700/-	Rs 10,000/-	B
28	Protection to scoured bank on Baitarani right near village Hanuman Patana.	JJPR-28/26-27	76.46	Rs. 76,500/-	Rs 10,000/-	B
29	Protection to scoured bank on Baitarani right near village Mathurapur.	JJPR-29/26-27	76.03	Rs. 76,000/-	Rs 10,000/-	B
30	Protection to scoured bank on Baitarani right near village Dulakhapatana.	JJPR-30/26-27	82.37	Rs. 82,400/-	Rs 10,000/-	B
31	Construction of Gadas on flood protective embankment of Baitarani right near Dhanatari and Khiro.	JJPR-31/26-27	81.67	Rs. 81,700/-	Rs 10,000/-	B
32	Construction of Gadas on flood protective embankment of Baitarani right near Gobindipur and Nayak sahi.	JJPR-32/26-27	82.93	Rs. 82,900/-	Rs 10,000/-	B
33	Construction of Gadas on flood protective embankment of Baitarani right near village Mulapala Harijan sahi and Beleswar.	JJPR-33/26-27	83.14	Rs. 83,100/-	Rs 10,000/-	B

Sl. No.	Name of work	Bid Identification No.	Approx Estimated Cost (Rs. In lakh)	EMD (In Rupees)	Cost of Tender document (In Rupees)	Class of Contractor
1	2	3	4	5	6	7
34	Construction of 3 nos of Gadas on Baitarani right near Sarasada sahu sahi & Solpata Biswal sahi.	JJPR-34/26-27	80.36	Rs. 80,400/-	Rs 10,000/-	B
35	Construction of Gadas on flood protective embankment of Baitarani right near Mohapatra sahi & Sabar sahi.	JJPR-35/26-27	81.85	Rs. 81,900/-	Rs 10,000/-	B
36	Restoration to flood protective embankment near Sanal Thakurani.	JJPR-36/26-27	59.33	Rs.59,400/-	Rs 10,000/-	B
37	Jungle clearance & Raincut filling on CE 5A on Kharsuan left from RD 0.00 KM to 10.400 KM.	JJPR-37/26-27	7.34	Rs.7,400/-	Rs 4,000/-	D & C
38	Jungle clearance & Raincut filling on O.A.E 6B on Kharsuan left from RD 0.00km to 7.00 km .	JJPR-38/26-27	5.40	Rs.5,400/-	Rs 4,000/-	D & C
39	Jungle clearance & Raincut filling on Routara Gherry on Kharsuan right.	JJPR-39/26-27	6.21	Rs.6,200/-	Rs 4,000/-	D & C
40	Protection to scoured bank on Baitarani right embankment near Hemantapur.	JJPR-40/26-27	83.20	Rs. 83,200/-	Rs 10,000/-	B
41	Protection to scoured bank on Baitarani right embankment from RD 10.150km to 10.245km.	JJPR-41/26-27	83.20	Rs. 83,200/-	Rs 10,000/-	B
42	Protection to scoured bank on Baitarani right embankment near Gariba bandhu High school.	JJPR-42/26-27	83.20	Rs. 83,200/-	Rs 10,000/-	B
43	Restoration to 1E Disty of Jajpur Canal system from RD 0.00km to RD.10.660km (providing Jungle clearance and Bed Cutting).	JJPR-43/26-27	15.31	Rs. 15,300/-	Rs 6,000/-	D & C
44	Restoration to 1D Disty of Jajpur Canal system from RD 0.00km to RD.7.200km (providing Jungle clearance and Bed Cutting).	JJPR-44/26-27	11.75	Rs. 11,800/-	Rs 6,000/-	D & C
45	Restoration to 1E1 Disty of Jajpur Canal system From RD 00km to tail (providing Jungle clearance and Bed Cutting).	JJPR-45/26-27	6.85	Rs. 6,900/-	Rs 4,000/-	D & C

Sl. No.	Name of work	Bid Identification No.	Approx Estimated Cost (Rs. In lakh)	EMD (In Rupees)	Cost of Tender document (In Rupees)	Class of Contractor
1	2	3	4	5	6	7
46	Restoration to Baitarani right embankment from Ichhapur to Gunthunipada.	JJPR-46/26-27	62.92	Rs. 62,900/-	Rs 10,000/-	B
47	Restoration to 1E Disty from Susua Shiv tandav Padia to Garadiha.	JJPR-47/26-27	33.06	Rs. 33,100/-	Rs 6,000/-	C & B
48	Renovation to C/R of 1D canal and H/R 1D1 canal of Jajpur canal system,	JJPR-48/26-27	26.34	Rs. 26,300/-	Rs 6,000/-	C & B
49	Construction of multiple no of VRBs on 1 A Disty of Jajpur Canal System.	JJPR-49/26-27	85.00	Rs. 85,000/-	Rs 10,000/-	B
50	Restoration to 1A1 Disty of Jajpur Canal System.	JJPR-50/26-27	53.00	Rs. 53,000/-	Rs 10,000/-	B
51	Restoration of 1 A Disty of Jajpur Canal System near Chittalo College.	JJPR-51/26-27	83.00	Rs. 83,000/-	Rs 10,000/-	B
52	Protection to scoured bank on Baitarani right embankment near Sidheswar Temple.	JJPR-52/26-27	82.50	Rs. 82,500/-	Rs 10,000/-	B
53	Construction of VRBs on 1C & 1C1 Disty of Jajpur Canal System.	JJPR-53/26-27	62.00	Rs. 62,000/-	Rs 10,000/-	B
54	Restoration to 1 Main Disty of Jajpur canal system from RD 0.00 KM to 8.00 km (Bed Cleaning and Jungle clearance)	JJPR-54/26-27	10.20	Rs. 10,200/-	Rs 6,000/-	D & C
55	Restoration to Jajpur Main Canal from RD 0.00 km to 10.144 KM (Bed Cleaning and Jungle clearance)	JJPR-55/26-27	8.60	Rs. 8,600/-	Rs 4,000/-	D & C
56	Restoration to 1 A Disty of Jajpur canal System (Bed Cleaning and Jungle clearance)	JJPR-56/26-27	8.20	Rs. 8,200/-	Rs 4,000/-	D & C
57	Restoration to Taliha minor from RD 0.00 km tail (Bed Cleaning and Jungle clearance)	JJPR-57/26-27	6.70	Rs. 6,700/-	Rs 4,000/-	D & C
58	Restoration to 1C Disty of Jajpur Canal System at RD 300m .	JJPR-58/26-27	83.20	Rs. 83,200/-	Rs 10,000/-	B
59	Restoration to scoured bank Jari Guide bandha on Kharsuan left near Jena sahi.	JJPR-59/26-27	79.76	Rs. 79,800/-	Rs 10,000/-	B

Sl. No.	Name of work	Bid Identification No.	Approx Estimated Cost (Rs. In lakh)	EMD (In Rupees)	Cost of Tender document (In Rupees)	Class of Contractor
1	2	3	4	5	6	7
60	Construction of V.R Bridge over Disty No.2 of Jajpur canal near Hazari sahi, Harizan sahi, Abdalpur Panda sahi & Swain sahi.	JJPR-60/26-27	35.04	Rs. 35,100/-	Rs 6,000/-	C & B
61	Protection to scoured bank on Budha right near Ramaraja Temple.	JJPR-61/26-27	46.00	Rs. 46,000/-	Rs 6,000/-	B

2. Period of availability of tenders On-line / Date of time of bidding On-line / Last date of seeking clarification / date of opening of tender papers. : Details as follows.

Procurement Officer	Bid Identification No.	Availability of tender On-line for bidding		Last date and time of seeking tender clarification	Date, time & place of opening of Bid
		From	To		
1	2	3	4	5	6
S.E. Jajpur Irrigation Division, Jajpur	JJPR-1/26-27 to JJPR-61/26-27	18.06.2026 at 10.00 AM	02.07.2026 up to 5.00 PM.	24.06.2026 up to 5.00 P.M	03.07.2026 at 11.30 A.M O/O the Superintending Engineer, Jajpur Irrigation Division, Jajpur

**Superintending Engineer
Jajpur Irrigation Division
Jajpur**

**GOVERNMENT OF ODISHA
DEPARTMENT OF WATER RESOURCES**

**OFFICE OF THE SUPERINTENDING ENGINEER
JAJPUR IRRIGATION DIVISION, JAJPUR**

DETAILED TENDER CALL NOTICE

Bid Identification No.- JJPR-61/26-27

1. The **Superintending Engineer, Jajpur Irrigation Division, Jajpur** on behalf of Hon'ble Governor of Odisha invites on-line **percentage rate** tender in the prescribed form to be eventually drawn in P.W.D. **P1** form, from "**B**" Class Contractor Registered with the State Govt. of Odisha or from contractors of equivalent grade / class registered with other State Govt. / Central Govt. / M.E.S. / Railways or other Govt. undertakings. All the contractors are to be registered in the State portal and must possess compatible digital signature certificate of Class-III for online bidding. The website for online bidding is <http://tendersodisha.gov.in>
2. The tender documents can be downloaded from the website identified as <http://tendersorissa.gov.in> from **18.06.2026 at 10.00 A.M to 02.07.2026 upto 5.00 P.M.** for the work "**Protection to scoured bank on Budha right near Ramaraja Temple.**" The bidder for participation in online bidding will have to pay **Rs.6,000/- (Rupees Six thousand)** only towards bid document cost for each set through online payment mode. The bid will be received through e-procurement portal from **18.06.2026 at 10.00 A.M to 02.07.2026 upto 5.00 P.M.** Each set of bid document contains Technical Bid and Price Bid i.e. an intelligent bill of quantity in MS Excel format. The tender will be opened on **03.07.2026 at 11.30 A.M** in the **O/o Superintending Engineer, Jajpur Irrigation Division, Jajpur** in presence of the tenderer or their authorized agents. The bidders who participated in the on-line bidding can witness opening of the bid from any system logging on to the portal away from opening place. The bids can only be opened by the pre-designated officials only after the opening time mentioned in the bid. In the event of the specified date of bid opening being declared a holiday the bid will be opened at the appointed time and location in the next working day.
3. The value of the work tendered for is **Rs.45,91,967.00**
4. The bidders shall prepare the documents and upload the scanned typed document in PDF format and BOQ in excel format (or as specified in the portal) in appropriate place.
5. No tenderer will be permitted to furnish their tender in their own manuscript.
6. Bidder shall transfer online the Bid Security @ 1% of the amount put to tender i.e. **Rs.46,000.00** only for the above work through a process as mentioned in DTCN through e-procurement portal.

The lowest preferred bidder is required to produce documents in original i.e. Registration Certificate (R.C.), GST Registration Certificate, GSTIN, PAN Card, Affidavit regarding authenticity of the tender documents, certificate issued by the competent

authorities required for fulfilling eligible criteria as specified in the bid document. NRC along with ownership and hiring of plants and machineries etc which were uploaded in the e-procurement portal during submission of tender to the inviting authority within the stipulated period i.e. within 5 days from date of opening of financial bid /lottery as applicable for verification. Bidder has to submit the original affidavit regarding authenticity of the documents to the inviting authority.

7. (a) Providing facilities to the Engineer contractor
 - i) As per works Department No.FR-11/2001/10003/00 Bhubaneswar dtd 24.5.01, 5% price preference allowed to the Engineer contractor in the tender rates has been withdrawn.
 - ii) The Engineer contractor shall have to execute the work if awarded to him under his direct supervision and he will not be allowed to execute such work through his Power of Attorney Holder.
 - (b) Adjustment of earnest money given with other tenders previously and submitted in other tenders shall not be entertained.
 - (c) Engineering Contractor desirous to avail EMD exemption have to submit affidavit with uploading the same in the e-procurement portal declaring therein to the effect that they have not yet availed 3 (three) nos. of EMD exemption during the current financial year and to show the original registration certificate to the tender inviting authority as and when required for confirmation.
8. The work is to be completed in all respect within **06 (Six) calendar months** from the date of issue of work order.
 9. The plans specifications and scope for the work can be seen in the office of the **Superintending Engineer, Jajpur Irrigation Division, Jajpur** during any working days.
 10. The tenderers shall carefully study the tentative drawings and specifications applicable to the contract and all documents which form part of the agreement to be entered into by the accepted tenderer and detailed specifications for Odisha and other relevant specifications and drawings which are available with the tender document or with the **Superintending Engineer, Jajpur Irrigation Division, Jajpur**.

Complaint at a future date that plans and specifications have not been seen by the tenderers can not be entertained.
 11. The bidder can resubmit his bid through online e-procurement mode out of which the system shall consider only the last bid submitted to the portal.
 12. Every tenderer is expected before quoting his rates to inspect the site of the proposed work. He should also inspect the quarries and approach road to quarries and locality of the work and satisfy himself about the quality and availability of materials including the medical aids, labour and foodstuff etc. In every case the materials must comply with the relevant specifications. The contractors would, however, be responsible for

procurement of materials from authorized sources and voluntarily disclose the source of procurement for the purpose of billing. Besides, the bidder would be required to submit the details of quarry for procurement while submitting the bids.

The tenderer will be deemed to have satisfied himself that the rates quoted by him in the tender will be adequate to complete the work according to the specifications and conditions attached to and that he has taken into account all conditions, difficulties that may be encountered during its progress and to have quoted labour rates and materials, entry tax and other duties, leads, lifts, loading and unloading and freight for materials and all other charges necessary for the completion of the work to the entire satisfaction of the Engineer-in-charge of the work and his authorized subordinates. In the course of awarding a work, the Department may desire the analysis of the rate arrived for against any item(s) of work.

13. Each tenderer must quote a definite percentage rate over the estimated cost of work and be included in the contract. Tenders containing indefinite terms such as estimated rates will not be considered.
14. If any further necessary information is required the bidder can **seek clarification on the bids within 7 days** from the start of sale of bid document. The employer response for the queries raised by the bidder will be posted in the portal.
15. All rates should be for finished items of work unless otherwise mentioned in the tender schedule.
16. BOQ in MS Excel format shall be made available to the bidder through e-procurement portal. The bidder shall download that particular excel sheet and fill in the rates in figures at the appropriate locations. The line total amounts shall be calculated automatically and shall be visible to the bidder. The bidder is not supposed to change or modify the format of the excel sheet in any form. Bidders are to submit only the original BOQ updated by publisher after entering the relevant fields without any alteration/deletion/modification. Multiple BOQ submission shall lead to cancellation of bid. In the percentage rate tender the bidder quoting zero value is valid and will be taken as schedule of rates.
17. The bidder shall submit the documents in the designated locations of technical bid (Cover-I) and Financial bid (Cover-II). *The 1st cover i.e. Cover-I (Technical bid) should contain GST, PAN, Contractor's R.C, Affidavit, undertaking declaring no relationship with Department officials etc & any other documents as per SBD/DTCN in PDF format similarly, the 2nd cover i.e. Cover-II (Financial bid) should contain bill of quantities (BOQ) in xls format, Special conditions in conformity with DTCN, if any in pdf format.* Submission of bid documents shall be effected by using DSC of appropriate class and thus shall be in encrypted form. The bidder shall only submit single copy of the document. He is required to check the documents uploaded with the requirement asked for in the bid. Only after satisfying that all the documents have been uploaded he should activate submit button. His bid shall not be considered responsive and action as per relevant clause shall be taken if he does not provide the required

- document or provides illegible documents. Clarity of the document may be ensured by taking out a sample printing.
18. Bidders desirous to hire machineries or equipments from out side the State are required to transfer online i.e. 2% (Two percent) of the amount put to tender as bid security. Tender not accompanied with bid security and security for hired machineries as specified above shall be liable for rejection.
 19. The tenderer may at his option quote reasonable rate for each item of work carefully so that the rate for one item should not be unworkably low and for others too high.
 20. Contractor shall bear all cost of various incidental charges, sundries, contingencies necessary for the work (Rent, Royalty and other charges of materials) GST on works contract as applicable at the time of payment shall be paid extra over the gross amount of R/A bill of Odisha Goods and Service Tax Act-2017.
 21. Labour Welfare Cess @ 1% will be deducted from the work bill of the contractor as per resolution No. 12653 dt. 15.12.2008 of Labour & Employment Department, Government of ODISHA
 22. Request for raising and lowering the rates or dealing with any point in connection with the tender will not be considered.
 23. Conditional tenders will not be taken in to consideration.
 24. The tender containing extraneous conditions not covered by the tender notice are liable for rejection and quotations should be strictly in accordance with the tender call notice. Any change in the wording will not be accepted.
 25. It is allowed to modify the bid through the e-procurement portal. The bidder shall have to log in the system and resubmit the documents as asked for by the system including the price bid. In doing so, the bids already submitted by the bidder will be removed automatically from the system and latest bid only will be admitted. But the bidder should avoid modification of the bid at the last moment to avoid system failure or malfunction of the internet or traffic jam. If the bidder fails to submit his modified bids within the designated time of receipt, the bids already in the system shall be taken for evaluation.
 26. Withdrawal of bid is also allowed in the e-procurement portal. The bidder has to click on the "withdraw" button and record the necessary justification for the same in the space provided. In addition to this he has to write a letter addressed to officer inviting the bid and upload the scanned document from portal in respective bid. The system shall not allow any withdrawal after expire of the closure of the bid.
 27. The e-procurement portal system shall reject submission of any bid through portal after closure of the receipt time. For all purpose the portal time displayed in the system shall be the time to be followed by the bidder.
 28. All tenders received will remain valid for 90 days from the last date of receipt of tenders and validity of tenders can also be extended if required without any monetary compensation.

29. **No Relation Certificate**

- The contractor shall have to furnish certificate along with the tender to the effect that he is not related to any officer in the rank of an Assistant Engineer and above in the State P.W.D. or Under Secretary and above in the Water Resources Department., If the fact subsequently proved to be false the contract will be rescinded. The earnest money and the total security will be forfeited and shall be liable to make good the loss or damage resulting from such cancellation.
30. While determining the validity of tenders the following points shall be taken in to consideration by the authority empowered to accept tenders and his decision in the matter shall be final.
- (a) Any special condition which does not find place in the tender notice and which are not acceptable.
 - (b) Indefinite conditions which will make it difficult for access to the financial implications.
 - (c) Tenders being incomplete in some important respects.
 - (d) Incomplete schedule of time for completion of the work.
 - (e) Failure to furnish the specified bid security.
 - (f) Tendered rates being unduly low and unworkable.
 - (g) Rates in different items of a tender being irrational.
31. The Department reserves the right of authority to reject any or all tenders received without assigning any reason whatsoever.
32. The tender may not (at the discretion of the competent authority) be considered unless accompanied by attested true copies of Registration of Firms/S.S.I. unit/ EPM rate contract holder certificate, PAN Card, GST Certificate, etc as the case may be and the original certificates are to be produced if required in any subsequent date during processing of tender. Attested true copy of work done certificate is to be furnished alongwith the tender obtaining from the Superintending Engineer concerned.
33. The earnest money will be retained in the case of successful tenderer and will be dealt with as per the terms and condition of O.P.W.D. code. The earnest money of the unsuccessful tenderer except the three lowest tenderer should be refunded on application. The EMD given by the other two parties except one whose tender is accepted should also be refunded within 15 days of acceptance of tender and drawl of agreement. After Award of Contract the EMD already transferred @1% shall be refunded to the successful bidder.
34. The EMD will be forfeited in any of the following cases.
- a) If the bidder withdraws the bid after bid opening during the period of bid validity.
 - b) If the bidder does not accept the correction of the bid price.

c) In the case of a successful bidder if the bidder fails within the specified time limit to

(i) Sign the agreement or

(ii) Furnish the required performance security.

d) If any of the statements, documents, certificate uploaded by the bidder through e-procurement portal, is found to be false / fabricated / bogus; the bidder will be black listed and his EMD / Bid Security forfeited.

35. If more than one bid is quoted (decimal up to two numbers will be taken for all practical purposes) either at the estimated cost put to tender or less than the estimated cost put to tender, the tender accepting authority will finalize the tender through a transparent lottery system, where all bidders / their authorized representatives, the concerned SE/Executive Engineer of concerned Division and DAO will remain present.

The time and venue of the lottery shall be intimated to the respective bidders through their e-mail only. No other communication in this regard will be made.

36. The tenderer whose tender is selected for acceptance shall within a period of seven days upon intimation being given to him of acceptance of his tender make an **Initial security deposit @2% of the accepted tender amount** in shape of NSC / Post Office Savings Bank Account / Post Office Time Deposit Account / Kisan Vikas Patra / Bank Guarantee in favour of **Superintending Engineer, Jajpur Irrigation Division, Jajpur** from any Nationalised / Schedule Bank in India counter guaranteed by its local Branch at Bhubaneswar / e-Bank Guarantee executed on the National e-Governance Services Limited (NeSL) Digital Document Execution Portal towards E.M.D. / Initial Security Deposit / any other Security Deposit from the Contractor or Supplier and sign agreement in the P.W.D. form No.P1 (Schedule XLV No.61) for the fulfillment of the contract in the office of the **Superintending Engineer, Jajpur Irrigation Division, Jajpur, Dist - Jajpur, Odisha.**

The security deposit of Initial Security money according to the provision of P1 agreement, shall be retained as Security for the due fulfillment of this contract. Failure to enter into the required agreement and to make the security deposit as above shall entail forfeiture of the earnest money. The written agreement to be entered into between the contractor and the Govt. shall be the foundation of the rights of both the contractor and the Govt. and the contract shall be deemed to be incomplete until the agreement has first been signed by the contractor and then by the proper officer authorized to enter into the contract on behalf of the Govt. The bids of the technically qualified bidders will be opened for evaluation of the price bid.

Additional Performance Security (As per Works Department OM No.173 dt.03.01.2026) shall be obtained from the bidder when the bid amount is less than estimated cost put to the tender. In such an event, only the successful bidder who has quoted less bid price / rates than the estimated cost put to tender shall have to furnish the Additional Performance Security as per the following rate.

Additional performance security shall be taken on an incremental basis from the selected bidder for low bid prices in the project works as under.

- (I) **Where the bid price is below 0% but not below 10% of the project cost put to bid**, no additional performance guarantee/security percentage is required.
- (II) **Where the bid price is below 10% but not below 20% of the project cost put to bid**, the additional performance guarantee/security percentage shall be incremented by 0.1% for every percentage of bid price below 10% of the project cost put to bid starting at 11% with the additional bid performance guarantee being 0.1% and this additional performance guarantee percentage shall be applied on the bid price ;
- (III) **Where the bid price is 20% or more below of the project cost put to bid**, the additional performance guarantee percentage shall be incremented by 0.2% for every percentage of bid price below 20% of the project cost put to bid in addition to 1% of the bid price and this additional performance guarantee percentage shall be applied on the bid price.
- (IV) The additional performance guarantee percentage shall be rounded off to the next lower percentage based on whether the decimal point of the percentage of bid price is below 0.5% or next higher percentage based on whether the decimal point of the percentage of bid price is 0.5% or more.
- (V) The additional performance security shall be treated as part of the performance security.
- (VI) Justification for abnormally low bids shall be scrutinized by the Departmental Technical Committee and recommended to the competent authority of the Administrative Department for the approval of the Additional Performance Security (APS). An abnormally low bid is one in which the Bid price, in combination with other elements of the Bid, appears so low that it raises material concerns as to the capability of the Bidder to perform the contract at the offered price. Procuring Entity may, in such cases, seek written clarifications from the Bidder, including detailed price analyses of its Bid price in relation to scope, schedule, resource mobilization, allocation of risks and responsibilities, and any other requirements of the bid document. If, after evaluating the price analyses, the procuring entity determines that the Bidder has substantially failed to demonstrate its capability to deliver the contract at the offered price, the Procuring Entity may reject the Bid/Proposal. However, it would not be advisable to fix a normative percentage below the estimated cost, which would automatically be considered as an abnormally low bid.

The applicable Additional Performance Security (APS) shall have to be furnished by the successful bidder in shape of Term Deposit Receipt pledged in favour of **Superintending Engineer, Jajpur Irrigation Division, Jajpur** / Bank Guarantee in favour of the **Superintending Engineer, Jajpur Irrigation Division, Jajpur** from any Nationalised / Scheduled Bank in India counter guaranteed by its local branch at Bhubaneswar within seven days of issue of Letter of Acceptance (LoA) by the

Superintending Engineer, Jajpur Irrigation Division, Jajpur (by e-mail) to the successful bidder otherwise the bid of the successful bidder shall be cancelled. Further, proceeding for blacklisting shall be initiated against the bidder. (*Vide Office Memorandum No -14459/W dated 20.09.2018 of Works Department, Govt. of Odisha*).

The **security** will be refunded after one year on completion of the work in all respect provided the final bill is passed and will not carry any interest. Any defect noticed during the period of one year after the actual date of completion shall be rectified by the contractor at his own cost. Failure to comply such rectification the cost involved to carryout the defective work shall be met from his dues available with Department. (Ref. works Deptt order No. 17823/WE dt. 11.10.2006. The e-procurement portal system shall generate the award of the contract letter and intimate the bidder in his e-mail after acceptance of the tender.

37. Before acceptance of tender, the successful bidder will be required to submit a work programme and milestone basing on the financial achievement so as to complete the work within the stipulated time and in case of failure on the part of the agency to achieve the milestone liquidated damage will be imposed.
38. The contractor shall sign as a token of final acceptance of the plans, sections and agreements for the work prior to take up the work for execution.
39. The date of commencement of work shall be as notified in work order.
40. On signing the agreement the site will be handed over to the contractor for execution and completion of works in all respect.
41. On no account, the contract work should be sublet to any body without the prior approval of the Tender accepting authority of the Department. In such an event the contract may be rescinded.
42. The authority reserves the right to make such increase or decrease in quantity of items of works mentioned in the scheduled attached to the tender notice as may be considered necessary for the satisfactory completion of the contract work. All such increase or decrease shall in no way invalidate/ vitiate the contract rates. The contractor shall not be entitled for any compensation on this account, except grant of extension of time where considered necessary.
43. The work may be splitted up and distributed among several contractors if considered necessary on the exigency of the circumstances of the work and the contractor is not entitled to any compensation on this account.
44. That for the purpose of jurisdiction in the event of any dispute if any, the contract would be deemed to have been entered into within the State of Odisha and it is agreed that neither party to the contract will be competent to bring a suit in regard to the matter by this contract at any place outside the State of Odisha.
45. Under section12 of contract labour (Regulation and Abolition Act 1970) the contractor who undertakes execution of work through labour, should produce valid license from licensing authority of labour department (labour license) to start the work.

46. The contractor shall be liable to fully indemnify the Department of any compensation under workmen compensation Act VII of 1993 on account of the workmen employed by the contractor and full amount of compensation paid will be recovered from the contractor. In the event of any claim sub-judice before any court of law, the claim amount shall be kept withheld till final disposal.
47. Contractor is required to abide by the fair wages clauses as introduced by Govt. of Odisha and will not pay less than the Fair wages fixed by Govt. to the labourers engaged by him for the work.
48. In case of any complaint by the labourer about the non payment of his wages as per latest minimum wages Act., the Superintending Engineer will have the right to investigate and if the contractor is found to be at fault, Superintending Engineer may recover such amount due in any form from the contractor and pay such amount to the labourer directly under intimation to the local labour office of the Govt. The decision of the Superintending Engineer is final and binding on the contractor.
49. The contractor will have to submit the **Superintending Engineer, Jajpur Irrigation Division, Jajpur** monthly return of labour both skilled and unskilled employed by him on the work.
50. The contractor should keep himself in touch with the Engineer-in-charge for smooth execution of the work and arrange adequate labour depending on the workload and working space available. No claim for detention for labour on any account will be entertained.
51. No compensation will be paid by the Department for any damage done by rain, flood, cyclone & earthquake tide or by any other natural calamities during the execution of the work.
52. It should be understood clearly that no claim whatsoever will be entertained in regard to extra items of work or extra quantity of any item besides estimated amount, unless written order is obtained from the Engineer-in-charge and rates settled before the extra items of work or extra quantity of any item of work is taken up.
53. The tenderer shall have to abide by the C.P.W.D. safety code rules introduced by the Govt. of India, Ministry of Works, Housing and Supply in their standing order No.44150 dated 25.1.1957.
54. The tenderer shall bear various incidentals, sundries and contingencies necessitated by the work in full within the following or similar category.
 - (a) Rent, royalties and other charges of materials & all other taxes including ferry tolls, conveyance charges and other cost on account of land and buildings including temporary building and temporary electric connection to work site as well as construction of coffer dam, construction of service road, diversion road and its maintenance till completion of work required by the tenderer for collection of materials, storage housing of staff other purpose of the work. No tenderer will however be liable to pay for temporary occupation of land owned

by Govt. at the site of the work. GST on works contract as applicable at the time of payment of R/A bill shall be paid extra over the gross amount of R/A bill.

- (b) Labour camps or hutments including conservancy and sanitation arrangements upto the satisfaction of the local health authorities should be arranged by the contractor.
 - (c) Suitable water supply including pipe water supply wherever available for the staff and labour as well as for the work.
 - (d) Fees and duties levied by the municipal canal or water supply authorities.
 - (e) Suitable equipment and wearing apparatus for the labour engaged in risky operations and medical aid to the labourer engaged for the work.
 - (f) Suitable fencing, barriers, signals including paraffin and electric signals where necessary at work and approaches in order to protect public and employees from accident.
 - (g) Compensation including cost of any suit for injury to persons or property due to neglect of any major precautions also become payable due to operation of the workmen compensation Act.
 - (h) The contractor has to arrange adequate lighting arrangement for the work wherever necessary at his own cost.
55. In case of delay in acquisition of land handing over possession of work site no compensation will be admissible but extension of time will be allowed if applied in prescribed format within due time to keep the contract in force.
56. The department will have the right to supply at any time in the interest of the work and departmental material to be used in the work and the contractor shall use such materials at the stock issue rate fixed by the Department by adding + 10 percentage in a particular item of work or market rate whichever is higher.
57. If a contractor removes any Govt. material or stores supplied to him from the site of the work in contravention of the provision of this clause with a view to dispose of the same dishonestly, he shall be in addition to any other liability civil or criminal arising out of this contract be liable to pay penalty equivalent to (5) five times of the price of the materials cost. The penalty so imposed shall be recoverable at any time from the sum that may be due then or at any time thereafter become due to the contractor or from his security deposit or from his other available dues with the Department.
58. Over and above these conditions including the Technical specifications the terms, conditions, rules and regulations and specifications laid down in I.S.I. code are also binding on the part of the contractor.
59. Deduction of income tax at source and surcharge on income tax will be made from each running account bill for the work at the rate as per Income Tax Act and as amended from time to time.

60. (a) The rates quoted by the contractor shall be deemed to be exclusive of GST on all the materials that he will have to purchase for performance of this contract.
- (b) The rates quoted by the contractor in the tender for works shall be exclusive of GST that may be levied on turnover on works contract according to the Laws and Regulations as applicable from time to time.
- (c) Deduction of GST at source will be made from each running account bill for the work at the rate of 2% prescribed by Odisha Goods & Service Tax Act-2017 or amended from time to time.
- (d) 1 % (One percent) of the gross amount of the bill will be deducted from the contractor bill towards labour cess as per Odisha building and other construction workers (RE & CS) rules 2002 and Amendment during 2008 and as amended by Govt. from time to time.
61. The amount on royalties of different materials as utilized by the contractor in the work will be recovered from his bill, basing on the rate fixed by the Govt. or as amended from time to time during the period of execution.
62. Schedule of quantity accompanies the tender notice: It shall be definitely understood that the Government do not accept any responsibility for the correctness and completeness of this schedule and this schedule is liable for alternations or omissions, deductions or additions as set forth in the condition of contract and such omissions, deductions, additions or alternations shall in no way invalidate/ vitiate the contract and no extra monetary compensation will be entertained.
63. Sample of stone, metal, chips, sand, cement, moorum etc to be used are to be deposited noting the quarry under dated initial of the tenderer in the Office of the Concerned Sub-Divisional Officer before the procurement for testing and acceptance. The transportation & testing charges of construction materials will be borne by the contractor.
64. Items of works not covered by the tender notice shall be paid at the current schedule of rates of the State and those not covered by the said schedule of rate will be paid on actual analysis approved by the competent authorities prevailing during the period of execution of work.
65. All preliminary works such as vats, mixing platforms etc are to be done by the contractor at his own cost. No payment will be made for benchmarks, level pillars, profiles, benching and leveling the ground where required. The rates to be quoted should be for finished items of works inclusive of such incidental items of works.
66. After the work is finished all surplus materials and debris's should be removed from 100 Mtr. clear away from the site of the work. Preliminary work such as vats, mixing platforms etc. should be dismantled and all materials removed from the site and premises shall be made neat and clean and this is inclusive of the rates quoted by him.

67. The contractor is to supply necessary labour and materials for the purpose of alignment lying recording of levels whenever required at his own cost.
68. The contractor should arrange necessary tools and plants such as Pumps, Excavator, Trucks, compressors, Tippers, batching plants, Concrete Mixer, steel shutter plates etc. required for the efficient execution work at his own cost. The running charges of such plant and cost of consumables and conveyance are to be borne by the contractor. Any deviation from this may lead recession of contract.
69. In the event of delay in supply of design reasonable extension of time shall be granted on the application of the contractor. But no claim for monetary compensation will be entertained under any circumstances.
70. Under no circumstances, interest is chargeable for the dues or any additional dues, if any payable for the work.
71. **An affidavit shall be furnished by the contractor** at the time of submission of tender paper about the authentication of tender documents. The scanned copy of the affidavit is to be uploaded through the e-procurement portal along with the technical bid. The affidavit in original is to be produced before the officer inviting tender after opening of the tender positively.
72. Prediction of flood/monsoon Damage:
The contractor shall make his own arrangement at his cost to shift the machineries, equipment's, materials, labourer and departmental machineries if hired by the contractor to a safe place prior to flood. The work shall have to be resumed after the flood come to normal. No extension of time for the completion of the work may be considered by the Department if the discontinuance of the work is beyond the reasonable attempts of the contractor to such eventualities.
73. The debris, sand and other materials, accumulated in the work area during flood shall be removed by the contractor as required for continuing the work at his own cost. By any chance, if any excavated portion that could not be filled up with concrete by the contractor, gets filled up during the monsoon period with earth such removal will not be paid again. The contractor will have to re-excavate the same at his own cost.
74. It shall be distinctly understood that it is entirely the responsibility of the contractor to make such arrangements may be required from time to time to protect the men, machinery, materials and the work under progress and work for which the measurements were recorded and payment made, against any damages either during working season or during the flood. The department accepts no liability, what so ever for any damage or loss of men, materials, machinery and type of hindrance caused to the progress of work.
75. The contractor should provide at his own cost adequate protection measures to the completed works at the end of working season or work in progress against such eventuality till completion and handing over the entire work to the Department.

76. Dewatering from the foundation of structures when and where necessary during execution will have to be done by the contractor and no extra payment will be made on that account. The rate of respective items of work is inclusive of the dewatering.

The term dewatering shall mean the execution or operation of the items due to standing water as well as due to percolation water.

77. The quantities in respect of the items for which quoted rates are more than 25% of the estimated rates are not to be varied by more than five percent. In case, if it exceeds the limit approval of the competent authority should be obtained prior to execution.

78. In case of discrepancy revealed between **P₁ form** and Detailed Tender Call Notice, condition in P₁ form shall prevail over the Detailed Tender Call Notice.

79. No claim for idle labour etc. on any account will be entertained by the Department.

80. The clause of printed form of **P₁ contract** with latest addition/ deletion/ corrections/ substitution etc. will also be binding.

81. **GENERAL INSTRUCTION TO CONTRACTORS as per DoWR letter No.20415 dt.14.09.2015**

- (a) Any agency or contractor executing a work should be aware about the local festivals like Makar Sankranti, Raja Sankranti, Chaiti Parab, Danda Nata or any such festivals which may effect the work schedule. Therefore, the contractor should engage more work forces during working period available at his disposal to complete the work as per schedule.

- (b) In the peak summer season, working hour is curtailed by the Labour Department to avoid exposure to personnel to the scorching sun and heat. It is the duty of the agency to increase the number of work force and to employ the existing work force during morning and afternoon hours as per Government orders.

- (c) Rainfall is a normal occurrence during monsoon in Odisha. So, unless there is unusually heavy rainfall resulting in a declared calamity, the contractor is not eligible for any extension of time. The contractor should plan the deployment of workforce and machinery, so as to complete the work as per schedule considering ordinary vagaries of nature.

The same applies for borrow area ponding also. The contractor should foresee possible ponding of borrow area in monsoon and like wise lift more quantity of soil/ other materials during dry period, so as to complete the work as per schedule.

- (d) The contractor should take up the work with due diligence in the acquired land without waiting for acquisition of entire land. This should be completed in proportionally less period depending on the quantum of available work front.

- (e) The Agency should plan his work programme and mobilize men and machineries considering the canal closure programme of a particular system or area. Khariff / Rabi closure can't be imposed arbitrarily on the farmers as per the convenience of the

- agency. Closure of canal for the interest of work will be solely at the discretion of the Engineer-in-charge and can't be claimed as a matter of right.
- (f) There will be always be standing crop before harvesting season as per crop schedule and this fact has to be clearly understood by the agency. Extension of time on this ground may not be considered by the Division officer.
 - (g) Only the day(s) of elections to the Local Bodies / Assembly / Parliament will be treated as non working day(s)

82. Definitions

In the contract (as hereinafter defined) the following words and expressions will have the meanings here by assigned to them.

- a) Approved / Approval – Means approved in writing.
 - b) Construction Plant – Means all equipments, appliances or things of whatsoever nature required for the execution, or completion, maintenance of the works or temporary works but does not include materials or other things intended to form or forming part of the permanent work.
 - c) Contract – means the instruction and information for tenderers General and Special conditions of the contract, Technical Specification, drawings, tender (including the schedule of quantities and tender prices) the formal agreement and all agenda and attachment related to the above.
 - d) Contractor – means the particular person, firm or corporation with whom the contract has been made for executing the work.
 - e) Drawing – Means the drawings referred to in the specifications, any modifications of such drawings approved in writing by the **Superintending Engineer, Jajpur Irrigation Division, Jajpur** and such other drawings as may from time to time be furnished or approved in writing by the Engineer-in-Charge.
 - f) Engineer-in-Charge–Means the Superintending Engineer, in-charge of the work specified or parts of the works under the contract, or such other departmental assistants or sub-ordinates to whom the Superintending Engineer, in-charge may have delegated certain duties, acting separately within the scope of particular duties entrusted to them.
 - g) Government – Means Government of Odisha, Department of Water Resources.
 - h) I.S.S. / B.I.S. – Means Indian Standard Specifications / Bureau of Indian Standard.
 - i) Temporary Works – Means all temporary works of every kind required for the performance of the contract.
 - j) Specification – Whenever the terms “Specification” is used, apart from a specified standard specification, it shall mean the specification or plan prepared for a particular site as instructed to the contractor in executing that item of work.
 - k) Year - Means Financial Year.
83. THE CONTRACTOR HAS TO MENTION PERCENTAGE EXCESS OR LESS OVER THE AMOUNT PUT TO TENDER.

84. The contractor will write percentage excess or less upto two decimal point only if he writes the percentage excess or less upto more than two decimal point, the two decimal point shall only be considered without rounding up.
85. A bidder can submit only one tender paper for a particular work, submission of more than one tender paper by a bidder for a particular tender will liable for rejection of all such tender papers as per Works Department Letter No.4985/W dt.28.03.2007.
86. The single tender received in the first call shall be cancelled without opening of the bid. The acceptance of a single tender received, even after retendering should have prior approval of the next higher authority as per Works Department Memorandum No.16 dt.01.01.2015.
87. The ST/SC contractors willing to avail the facilities as fixed by Government will submit the affidavit on-line for the same along with tender document. Otherwise, they will not be entitled to avail the facilities.
If the rate quoted by the SC and ST Category Contractors comes to the rate quoted by the L1 bidder (decimal up to two numbers will be taken for all practical purposes) after availing 10% price preference as per Para 2 of Works Department Resolution No.27748 dated 11.10.1977, the tender shall be finalized by the tender accepting authority through a transparent lottery system along with other categories of contractors.
88. Security for the due fulfillment of a contract should invariably be taken. The security may be taken in shape of N.S.C/Post Office Savings Bank Account/Post Office Time Deposit Account/Kisan Vikas Patra/Bank Guarantee in favour of the Divisional Officer from any Nationalized Schedule Bank in India counter guaranteed by its local Branch at Bhubaneswar/e-Bank Guarantee executed on the National-Governance Services Limited (NeSL) Digital Document Execution Portal towards E.M.D/Initial Security Deposit/any other security deposit from the contractor or supplier.
89. The concessional payment of performance security and BID Security / EMD Exemption to Local MSME / start ups is not allowed as per Government of Odisha Works Department Order No.4281/W Dt.05.03.2025.
90. Joint Ventures are not allowed.

**Sd/-
Superintending Engineer
Jajpur Irrigation Division
Jajpur**

SECTION – 2
INFORMATION AND
INSTRUCTION TO TENDERERS

SECTION-2

1. Preparation of Tender Documents

The intending tenderer shall log in to the e-procurement portal identified as <http://tendersorissa.gov.in> and download the technical bid and price bid in shape of a bill of quantity in MS Excel format. As per the requirement of the bid document the bidder will fill up the required informations and fill up the percentage in figures on the bill of quantity in MS Excel sheet. The bidder is to scan his registration certificate, GST No., PAN Card, Affidavit, No relation certificate. The bidder is also required to scan the RC books and other papers relating to the machineries and other documents as specified in the bid document.

2. Method of submission of Tender Documents

- 2.1 The tenderer shall upload the scanned copy / copies of the documents and information as per requirement of the bid documents through the e-procurement portal. All documents and scanned copies are to be uploaded in the designated location of the technical bid except the filled up bill of quantity in excel sheet. The filled up intelligent bill of quantities in Excel format will be uploaded in the designated location of price bid. The bidder is required to upload the required documents in appropriate location of Technical and Financial bid failing which the bid will be rejected. All the uploaded documents should be clear and legible. Before activating the submit button the clarity of the document may be ensured by taking out a sample copy. In the e-procurement tendering system the bidder is required only to submit the required information as per bid document instead of submitting the entire technical bid document. The "online" bidder shall digitally sign on all statements, documents, clarifications uploaded by him owning responsibility for their corrections / authenticity. **If any of the information furnished by the bidder is found to be false / fabricated / bogus, the bidder will be black listed.**
- 2.2 The information required as per bid documents may be provided in the specified format annexed to the bid document. .
- 2.3 If the intending tenderer is an individual, the documents shall be digitally signed by the individual while uploading the tender through e-procurement portal.
- 2.4 If the intending tender is a proprietary firm it shall be digitally signed by the proprietor while uploading the tender through e-procurement portal.
- 2.6 If the intending tenderer is a firm in partnership it shall be digitally signed by a partner holding the power of attorney for the firm in partnership in which case a certified copy of power of attorney shall accompany in the technical bid documents.
- 2.7 If the intending tenderer is a limited company or Corporation, it shall be digitally signed by a duly authorized person holding the power of attorney in which case certified copy of power of attorney shall accompany.

- 2.8 All witnesses and sureties shall be persons of status and probity and their full names, occupation and address shall be stated below in the appropriate place.
- 2.9 The period of execution is **06 (Six) calendar months.**
- 2.10 The agency will install display board mentioning information about the work at worksite after drawl of the agreement at his own cost.

3. Opening of Tender Documents.

The tender **will be opened on 03.07.2026 at 11.30 A.M** by the openers in the **O/o the Superintending Engineer, Jajpur Irrigation Division, Jajpur** in the presence of tenderers or their authorized representative, who wish to be present.

4. Minimum Qualifying Criteria

- A. Not required as per Govt. of Odisha, DOWR Letter No.01/WR dated 01.01.2019.**
- B. The bidder must upload the valid R.C, Valid GST No. and PAN, Affidavit, undertaking regarding No-relationship certificate which are mandatory.**

5. Final Decision making authority

The competent authority reserves the right to accept or reject or disqualify any of the tenders without assigning any reasons and its decision shall be final.

6. Further Clarification

The Superintending Engineer, Jajpur Irrigation Division, Jajpur may be contacted during office hours on any working days for any further clarification. The bidder can also seek clarification through the portal **within 7 days** from start of sale of bid documents. The officer inviting the tender will respond for the queries raised by the bidder through the same portal.

7. Odisha Bridge & Construction Corporation Ltd. will be allowed price preference upto 3% over the lowest quotation or tender laid down in Works & Transport Department Resolution No.-285, dtd. 17.04.1974. The Odisha Construction Corporation will be allowed a price preference to the extent up to 3% over the lowest tender amount (where their tender is not the lowest) provided they express willingness to execute the work after reduction of rates by negotiation.
8. **Sample of all material:** The contractor shall supply sample of all materials before procurement for the work for testing by **Superintending Engineer, Quality Assurance Division, Bhadrak** at his own cost. If found unsuitable the same may be rejected.
9. **Trial Boring :** The foundation level as indicated in the body of the departmental drawing is purely tentative and for the general guidance only. The Department have no responsibility for the suitability of actual strata at the foundation level. The contractor has to conduct his own boring before starting the work and get the samples tested at his own cost to ascertain the S.B.C. and credibility of the strata at founding

level. While quoting his rates for tender the contractor shall take in to account of the above aspects.

10. From the commencement of the works to the completion of the same, they are to be under the contractors charge. The contractor is to be held responsible to make good all injuries, damages and repairs occasioned or rendered necessary to the same by fire or other causes and they hold the Govt. of Odisha harmless for any claims for injuries to person or structural damage to property happening from any neglect, default, want of proper care or misconduct on the part of the contractor or any one in his employment during the execution of the work. Also no claim shall be entertained for loss due to earth quake, flood, cyclone, epidemic, riot or any other calamity whether natural or incidental damages so caused will have to be made good by the contractor at his own cost.
11. Where it will be found necessary by the Department, the Officer-in-Charge of the work shall issue an site order book to the contractor to be kept at the site of the work with pages serially numbered. Orders regarding the work whenever necessary are to be entered in his book by the PWD Officer-in-Charge with their dated signatures and duly noted by the contractor or his authorized agents with their dated signature. Orders entered in his book and noted by the contractor's agent shall be considered to have been duly given to the contractor for following the instructions of the Department. The order book shall be the property of the PWD and shall not be removed from the site of work without written permission of the Engineer (Superintending Engineer) and to be submitted to the Engineer-in-Charge every month.
12. The tender should conduct three bores at each pier and SBC of soil at foundation level and abutments location and furnish the test results in conformity with IRC code at his own cost before execution of the work and rates quoted by the contractor should be inclusive of such bores and SBC tests etc without any extra cost to the Department.

(AFFIDAVIT)

(To be submitted in original in legal stamp paper)

I, SRI.....AGED.....YEAR,

Son/ Daughter/ Wife of Sri..... at present residing

At..... P.O.....P.S.....Dist.....

Pin..... do here by solemnly affirm as follows.

- i) That, I / We posses a valid license for execution of works contract issued by *..... belongs toClass & is valid up to **.....

I am submitting tenders before the **Superintending Engineer, Jajpur Irrigation Division, Jajpur, Odisha** for execution of **“Protection to scoured bank on Budha right near Ramaraja Temple.”** in response to **Bid Identification No.JJPR-61/26-27 of ‘e’- Procurement Notice No.01 / 2026-27.**

- ii) I am the authorized signatory on behalf of contractor for the tender for the work mentioned above.
- iii) I am swearing this affidavit that all tender documents and accompanying papers those being submitted by me before the **Superintending Engineer, Jajpur Irrigation Division, Jajpur** in any shape are all authentic and bonafied documents in the eyes of the law of the land.
- iv) The undersigned do hereby certify that I am not related to any officer WR Deptt. above the rank of Assistant Engineer & under Secretary.

That the fact stated in the affidavit are true to the best of my knowledge and belief .

(Signature of the Contractor)

Date:

Note :

- * Mention the license issuing authority.
- ** Mention the date up to which the license is valid
- *** Mention name of works for which bid is being submitted.

CERTIFICATE OF NO RELATIONSHIP

I/We hereby certify that I/We am / are not related to any officer of P.W.D. of the rank of Asst. Engineer and above and any officer of the rank of Assistant / Under Secretary and above in the Water Resources Department. I/ We am/are aware that if the facts subsequently proved to be false my/our contract will be rescinded with forfeiture of EMD & security deposit and I/We shall be liable to make good the loss or damage resulting from such cancellation.

Signature of Contractor

Address _____

Date: _____

NB : To be signed during the Execution of the Agreement

SECTION – 3
GENERAL RULES & DIRECTIONS

ODISHA PUBLIC WORKS DEPARTMENT

(FORM P-1)

**PERCENTAGE RATE TENDER AND CONTRACT FOR WORKS
GENERAL RULES & DIRECTIONS FOR THE GUIDANCE OF CONTRACTORS**

1. The work proposed for execution by contract will be notified in a form of invitation to tender posted through Govt. website www.tendersorissa.gov.in
This notice will state the work to be carried out, the items and approximate quantities thereof as well as the date for submitting and opening tenders also the amount of earnest money to be deposited and the amount of the security deposit by the successful tenderer and the percentage if any to be deducted from bills. Copies of the specifications, designs and drawings and any other documents required in connection with the submission of tender signed for the purpose of identification by the Sub-Divisional Officer/ Superintending Engineer shall also be open for inspection by the contractor at the office of the Sub-Divisional Officer/ Superintending Engineer during office hours.
2. In the event of the tender being submitted by a firm it must be signed separately by each member thereof, or in the event of the absence of any partner, it must be signed on his behalf by a person holding a power of attorney authorizing him to do so.
3. Receipts for payment made on accounts of works, when executed by a firm must also be signed by the several partners, except where the contractors are described in their tender as a firm in which case the receipts must be signed in the name of the firm by one of the partners, or by some other person having authority to give effectual receipts for the firm.
4. The memorandum of work tendered for and the memorandum of materials to be supplied by the Public Works Departments and their issue rates shall be filled in and completed in the office of the Sub-Divisional Officer/ Superintending Engineer before the tender form is issued if a form is issued to an intending tender without having been so filled in and completed, he shall request the office to have this done before he completes and delivers his tender.
5. The amount of earnest money to be remitted will be 1% (online).
6. Any person who submits a tender shall fill up the usual printed form stating at what rate he is willing to undertake each item of the work. Incomplete tender and tender rate he is willing to undertake each item of the work specified in the said form of invitation to tender or which they contain any other conditions of any sort, or omit to note the time within which the work can be finished or which are not accompanied by a treasury Challan for the required earnest money will be liable to rejection. No single tender shall include more than one work, but contractors who wish to tender for two or more work shall submit a separate tender for each tender.
7. The Engineer-in-charge or his duly authorized assistant will open the tenders in the presence of any intending contractors who may be present at the time and will enter the amounts of the several tenders in a comparative statement in a suitable form.

8. The Engineer-in-charge shall have the right of rejecting all or any of the tenders.
9. In the event of a tender being selected for acceptance the Engineer who opened the tenders will, if he is competent to accept the tender, inform the tenderer of the selected tender who shall there upon sign copies of the specification and other documents with the agreement. The tenderer of the selected tender shall also deposit the required amount of the security money within the prescribed time. If the tenderer fails to deposit the required amount of the security money within the prescribed time the Engineer-in-charge may reject the tender.

If the Engineer is not competent to accept the tender himself, he will inform the tenderer of the tender which he decides to recommended for acceptance, such tenderer shall thereupon sign forthwith copies of the specification and other documents mentioned in rules 1 and 4 and shall deposit the required amount of the security money with in the prescribed time. The tender with the specification and other documents signed by the tenderer will then be forwarded for acceptance to the Engineer who is competent to accept the same. If the said Engineer rejects the tender the security money deposited shall be refunded to the tenderer.

10. When a tender is selected for acceptance, the tenderer shall deposit the required amount of the security money. No tender shall be finally accepted until the required amount of the security money has been deposited.
11. The amount of security money to be deposited by the tenderer whose tender is selected for acceptance shall be 2 (two) percent of the estimated value of the work, failing which tender shall be liable to rejection.

Taxes as per provisions of Government shall be deducted from the bills of tenderer.

12. When tender has been selected for acceptance and the required amount of the security money has been deposited the Engineer shall scrutinize all pages of the form of item, Rate Tendered/quoted percentage in case of percentage tender and Contract for works to see that the form has been properly filled up and signed by the contractor and the signature witnessed. He shall then, if he is competent to accept the tender, sign the acceptance of the tenders or if he is not so competent to, shall send the form for signature of the acceptance to the officer competent to accept it.
13. All tenderers are required to submit a list of works, which are in hand at the time of submitting their tenders. The list of works are required to be submitted in the proforma by the Superintending Engineer under whom he has executed the work in order to judge their past performance (vide Works Department Circular No. 15443 dt. 01.08.2005.)
14. The earnest money deposited is liable to be forfeited to Govt. if the tenderer backs out from the offer before acceptance of the tender by the competent authority.
15. T.D.S (Tax Deducted at Source) towards GST will be deducted at the rate prescribed in the Odisha Goods and Service Tax Act-2017 or as amended from time to time.

TENDER FOR WORKS

I / We hereby tender for the execution for the Government of Odisha for the work specified in the under written memorandum at the rates specified therein a period of **06 (Six) calendar months** from the date of written order to commence and in accordance in all respects with the specifications designs and other documents referred to in rule. I here of and subject to the annexed conditions of contract and with such materials as are provided for by and in all other respects in accordance with such condition so far as applicable.

MEMORANDUM

a) If several sub-works are included they should be detailed in a separate sheet.	(a) Name of Work	:	Protection to scoured bank on Budha right near Ramaraja Temple.
	(b) Estimated Cost : (Amount put to tender)	:	Rs.45,91,967.00
	(c) Agreement Value	:	
	% Excess / Less	:	
	(d) EMD	:	Rs.46,000.00
d) This deposited will be 2 percent of the estimated cost of the work.	(e) Initial security deposited (including earnest money) to be deposited before the commencement of the work.	:	Rs.
	(f) Additional Performance Security (APS)	:	
g) This percentage from bills will be credited to the contractor's security	(g) Security deposit to be deducted from bills.	:	3%
	GST	:	
	IT	:	1%
	Cess	:	1%
	(h) Time required for the work from date of written order to commence	:	06 (Six) calendar months
	(i) Date of written order to commence	:	
	(j) Actual date of commencement of work	:	
	(k) Schedule date of completion	:	
	(l) Total number of item of works tender for	:	03 (Three)

Nature of contractor before submission of tender

Should this tender be accepted I/We hereby agree to abide by and fulfill the terms and provision of the said condition of contract annexed here to so far as applicable, or in defaults thereof to forfeit and pay to the Governor of Odisha or his successors in office, the sum of money mentioned in the said conditions.

Dated theDay of2026

Signature of witness to one tender's signature

Witness :

Address:

CONTRACTOR

Signature of Officer by whom accepted

The above tender is hereby accepted by me on behalf of the Government of Odisha.

Dated theDay of2026

**Superintending Engineer
Jajpur Irrigation Division**

Agreement No.....P1 Certified that this agreement containsPages only

**Superintending Engineer
Jajpur Irrigation Division**

SECTION – 4
CONDITION OF CONTRACT

CONDITIONS OF CONTRACT

Clause-1: All compensation or other sums of money payable by the contractor of Government under the terms of his contract may be deducted from or paid by, the sale of a sufficient part of his security deposit or from the interest arising there from, or from any sums which may be due or may become due to the contractor by Government on any account whatsoever and in the event of his security deposit being reduced by reason of any such deduction or sale as aforesaid, the contractor shall within ten days thereafter make good in cash or Government securities endorsed as aforesaid any sum or sums which may have been deducted from or raised by, sale or the security deposit or any part thereof.

Compensation for delay

Clause 2(a): The time allowed for carrying out the work as entered in the tender shall be strictly observed by the contractor and shall be reckoned from the date on which the written order to commence work is given to the contractor. The work shall throughout the stipulated period of the contract, be carried on with all due diligence (time being deemed to be of essence of the contract on the part of the contractor) and the contractor shall pay, as compensation, an amount equal to $\frac{1}{2}$ percent on the amount of the estimated cost, if the whole work as shown by the tender for everyday that the work remains uncommenced, or unfinished after the proper dates (The work should not be considered finished until such date as the Superintending Engineer shall certify as the date on which the work is finished after necessary rectification of defects as pointed out by the Superintending Engineer or his authorised agents, are fully complied with by the contractor to the Superintending Engineer 's satisfaction). And further, to ensure good progress during the execution of the work the contractor shall be bound, in all cases in which the time allowed for any work exceeds one month, to complete one-fourth of the whole of the work before one fourth of the whole time allowed under the contract has elapsed, one half of the work, before one half of such time has elapsed, and three fourth of work before three fourths as such time has elapsed, in the events of the contractor failing to comply with the conditions, he shall be liable to pay as compensation an amount equal to one-third percent on the said estimated cost of the whole work for everyday that the due quantity of work remains incomplete. Provided always that the entire amount of compensation to be paid under the provisions of this clause shall not exceed 10 percent on the estimated cost of the work as shown in the tender.

The work should not be considered finished until such date as the E.E. shall certify as the date on which the work is finished after necessary rectification of defects as pointed out by E.E. or his authorized agents are fully complied with by the contractor to the E.Es satisfaction.

(b) If there are possibilities of exceeding this compensation amount as mentioned in clause (a) 10% of the estimated cost, or in any case in which under any clause or clauses of this contract the contractor shall have rendered himself liable to pay compensation amounting to the whole of his security deposit in the hands of Government (whether paid in once on or deducted by installments) the Superintending Engineer on behalf of the Governor of Odisha, shall have power to adopt

Action when whole security deposit is forfeited

any of the following courses, as he may deem best suited to the interest of the Government.

- i) To rescind the contract (of which rescission notice in the writing to the contractor under the hands of the Superintending Engineer shall be conclusive evidence) 20% of the value of left over work will be realized from the contractor as penalty
- ii) To employ labour paid by the Public Works Department and to supply materials to carry out the work or any part of the work, debiting the contractor with the cost of the labour and the price of the materials (of the amount of which the cost and price certificate of the Superintending Engineer shall be final and conclusive against the contractor) and crediting him with the value of the work done. In all respects in the same manner and at the same rate as if it had been carried out by the contractor under the terms of his contract, the certificate of the Superintending Engineer as to the value of work done shall be final and conclusive against the contractor.
- iii) To measure of the work of the contractor and to take such part of the work of the contract as shall be in executed out of his hands and to give it to another contractor to complete, in which case any expenses which may be incurred in excess of the some which would have been paid to original contractor. If the whole work had been executed by him (of the amount of which expect the certificate in writing of the Superintending Engineer shall be final and conclusive) shall be borne and paid by the original contractor and may be deducted from any money due to him by Government under the contract or otherwise or from his security deposit or the proceeds of sale thereof or a sufficient part thereof.

In event of any of the above courses being adopted by the Superintending Engineer the contractor shall have no claim to compensation for any loss sustained by him by reason of his having purchased or procured any materials, or entered into any engagements, or made any advances on account of or with a view to the execution of the work or the performance of the contract. And in case the contract shall be rescinded under the provision aforesaid, the contractor shall not be entitled to recover or be paid any sum for any work there of for actually performed under this contract. Unless and until the Superintending Engineer shall have certified in writing the performance of such work and the value table in respect thereof and he shall only be entitled to be paid the value of so certified.

- iv) Security deposit of the contractor shall be refunded only **twelve months** after the date of completion of the work provided the final bill has been paid and defects, if any rectified.

Clause - 3: In any case in which any of the powers conferred upon the Superintending Engineer by clause 3 thereof, shall have become exercisable and the same shall not be exercised, the non exercise thereof shall not constitute a waiver of any of the conditions in the event any further here of and such powers shall not with standing be exercisable in the event of any future case default by the contractor of which by any clause or clauses hereof he is declared liable to pay compensation amounting to the whole of his security deposit, and the liability of the contractor for past and future compensation shall remain unaffected, in the event of the Superintending Engineer putting in force the powers vested in him under the preceding clause may be, if he so desires, take possession of all or any tools, plants, materials and stores, in or upon the works, or the site thereof or belonging to the Contractor, or procured by him and intended to be used for the execution of the work or any part thereof, paying or allowing for the same in the account at the contract rates, or in case of these not being applicable, at current market rates to be certified by the Superintending Engineer whose certificate thereof shall be final, otherwise the Superintending Engineer may be noticed in writing to the contractor or his clerk of the works, foreman or other authorised agent require him to remove such tools, plants, materials, or stores from the premises (within a time to be specified in such notice) and in the event of the contractor failing to comply with any such requisition, the Superintending Engineer may remove them at the contractor's expense or sell them by auction or private sale on account of the contractor and at his risk in all respects, and the certificate of the Superintending Engineer as to the expense of any such removal and the amount of the proceeds and expense of any such sale shall be final and conclusive against the contractor.

Contractor remains liable to repay compensation if action not taken under clause –6 Power to take possession of or require removal of or sell contractors plants

Clause - 4 : The period of completion is fixed and can not be altered except in case of exceptional circumstances with due approval of next higher authority. If the contractor shall desire an extension of the time for completion of the work, on the ground of his having been unavoidably hindered in its execution or any other ground, he shall apply in writing to the Superintending Engineer within 30 days of the date of the hindrance on account of which he desires such extension as aforesaid and, the Superintending Engineer shall, if in his opinion (which shall be final) reasonable grounds be shown therefore, authorise such extension of time, if any, as may in his opinion be necessary or proper. The Superintending Engineer shall at the same time in form the contractor whether he claims compensation for delay.

Extension time

Clause - 5 : On completion of the work, the contractor shall be furnished with a certificate by the Superintending Engineer (hereinafter called the Engineer-in-charge) of such completion, but no such certificate be given nor shall the work be considered to be completed until the contractor shall have removed from the area of the premises (to be distinctly marked by the Superintending Engineer in the site plan) on which the work shall be executed, all scaffolding surplus materials and rubbish, and cleared off the dirt from all wood-work, doors, windows, walls, floors, or other parts of any building in upon or about which the work is to be executed, or of which he may have had possession for the purpose of the execution thereof, nor until the work shall have been measured by

Final Certificate

the Officer of the Public Works Department in accordance with the rules of the department whose measurements shall be binding and conclusive against the contractor, if the contractors shall fail to comply with the requirements of this clause as to removal of scaffolding surplus materials and rubbish and cleaning off dirt on or before the date fixed for work, the Engineer-in-charge may at the expense of the contractor remove such scaffoldings materials and rubbish and dispose of the same as he thinks fit and clean off such dirt as aforesaid and the contractor shall forthwith pay the amount of all expenses incurred and shall have no claim in respect of any such scaffolding or surplus materials; as aforesaid except for any cum actually realised by the sale thereof.

Sub-Clause to Clause - 5: If in the opinion of the Engineer-in-charge which shall be final and binding on the contractor occupation or utilisation of a portion of the, completed in no way interferes with the progress of a rest of the work the same may be occupied or utilised by or on behalf of the Government under the written order of the Engineer-in-Charge. This will not impede the right of the Engineer-in-charge to get the defects if any rectified by the contractor at his (Contractors) own cost within 6 months from the date of completion of the whole work provided that the contractor will not be allowed any connection either in the shape of extension of stipulated period or any other monetary compensation on account of such occupation or use.

Clause - 6: A bill shall be submitted by the contractor each month on or before the date fixed by the Engineer-in-charge for all works executed in the previous month and the Engineer-in-Charge or his subordinate shall take the requisite measurement for the purpose having the same verified and the claim as far as admissible, adjusted, if possible, before the expiry of ten days from the presentation of the bill. If the contractor does not submit the bill within the time fixed as aforesaid, the Engineer-in-charge or his subordinate shall measure up the said work in the presence of the contractor whose countersignature to the measurement list will be sufficient warrant, and the Engineer-in-charge or his subordinate shall prepare a bill from such list which shall be binding on the contractor in all respects.

Provided that, if any balance of the 10% security is outstanding from each such payment shall be deducted so much, not exceeding 5% as may be necessary to make up the balance of the security. All such intermediate payments to the contractor shall be regarded as payments by way of advance against the final payment only and not as payments for work actually done and completed and shall not preclude the requiring of bad, unsound and imperfect or unskillful work to be removed and taken away and reconstructed or erected , or any part thereof in any respect, or the accrual of any claim nor shall it conclude, determine, or effect in any way the powers of the Engineer-in-charge under these conditions or any of them as to the final settlement or adjustment of the accounts or otherwise , or in any other way vary or affect the contract.

Clause - 7: The final bill shall be prepared by the officers of the Public Works Department in accordance with the rules of the Department in the presence of the contractor within one month of the date fixed for completion of the work.

Payment on intermediate certificate be regarded as advances and bill to be submitted monthly

Clause - 8: If the specification or estimate of the work provides for the use of any special description of materials to be supplied from the Engineer-in-charge's store, or if it is required that the contractor shall use certain stores to be provided by the Engineer-in-charge under the conditions of this contract (such materials and stores, and the price to be charged therefore as hereinafter mentioned being so far as practicable for the convenience of the contractor, but not so as in any way to control the meaning or effect of this contract or are specified in the schedule or memorandum hereto annexed) the contractor shall be supplied with such materials and stores noted in the annexed schedule as are required from time to time to be used by him for the purposes of the contract only, and the value of the full quantity of materials and stores so supplied at the rates specified in the said schedule may be set off or deducted from any sums then, due or thereafter to become due to the contractor under the contract or otherwise, or against or from the security deposit, or the proceeds of sale thereof if the same is held in Government securities, the same or a sufficient portion thereof being in this case sold for the purpose. All materials supplied to the contractor shall remain the absolute property of Government and shall not on any account be removed from the site of the work and shall at all times be open to inspection by the Engineer-in-charge. Any such materials unused and in perfectly good condition at the time of the completion or determination of the contract shall be returned to the Engineer-in-charge's store, at the prevailing market rate or at the issue rate whichever is less if by a notice in writing under his hand he shall so require, but the contractor shall not be entitled to return any such materials unless with such consent, and shall have no claim for compensation on account of any such materials so supplied to him as aforesaid being unused by him, or for any wastage in or damage to any such materials.

Stores supplied by
Government

Clause - 8(a): "If a contractor removes any material or stock so supplied to him from the site of the work in contravention of the provision of this clause with a view to dispose of the same dishonestly, he shall, in addition to any other liability, civil or criminal arising out of this contract be liable to pay a penalty equivalent to five times the price of the said materials or stock, according to the stipulated rate. The penalty so imposed shall be recoverable from any sum that be then, or at any time thereafter may become due to the contractor, or from his security deposit, or the proceeds of sale thereof."

Clause - 8(b): Owing to difficulty in obtaining certain materials in the open market the Government have undertaken to supply materials specified in the schedule hereto annexed. There may be delay in obtaining materials by the Department and the contractor is thereof, required to keep himself in touch with the day to day position regarding the supply of materials from the Engineer-in-charge and to so adjust the progress of the work that their labour may not remain idle nor may there be any other claim due to or arising from delay in obtaining the materials. It should be clearly understood that no monetary claim whatsoever shall be entertained by the Government on account of delay in supplying materials. However, extension of time for completion of work can be granted on timely application by the contractor vide also Clause-5.

Clause - 9: The contractor shall execute the whole and every part of the work in the most substantial and workmanlike manner, and both as regards materials and otherwise in every respect in strict accordance with the specifications. The contractor shall also confirm exactly, full and faithfully to the designs, and drawings and instructions in writing relating to the work signed by the Engineer-in-charge and lodged in his office, and to which the contractor shall be entitled to have access at such office, for the purpose of inspection during office hour and the contractor shall, if he so requires, be entitled at his own expense to make or cause to be made copies of the specification, and of all such designs, drawings and instructions as aforesaid.

Works to be executed in accordance with specification drawing and orders, etc.

Clause-10: The Engineer-in-charge shall have power to make any alterations in or additions to the original specifications, drawings, designs and instructions that may appear to him necessary and advisable during the progress of work, and the contractor shall be bound to carry out the work in accordance with any instructions which may be given to him in writing signed by the Engineer-in-charge and such alteration shall not invalidate the contract, and any additional work which the contractor may be directed to do in the manner above specified as part of the work shall be carried out by the contractor on the same conditions in all respects on which he agreed to do the main work, and at the same rates as are specified in the tender for the main work. The time for the completion of the work shall be extended in the proportion that the additional work differs to the original contract work and the certificate of the Engineer-in-charge shall be conclusive as to, such proportion. And if the additional work includes any class of work, for which no rate is specified in this contract, then such class of work shall be carried out at the rates entered in the sanctioned schedule of rates of the locality during the period when the work is being carried on and if such last mentioned class of work is not entered on the schedule of rates of the district then the contractor shall within seven days of the date of his receipt of the order to carry out the work inform the Engineer-in-charge of the rate which it is his intention to charge for such class of work, and if the Engineer-in-charge does not agree to this rate he shall by notice in writing be at liberty to cancel his order to carry out such class of work and arrange to carry it out in such manner as he may consider advisable.

Do not invalidate contractors

Rates or work not in estimate or schedule of rates of the District

Extension of time in consequence of alterations.

No deviations from the specification stipulated in the contract or additional items of work shall ordinarily be carried out by the contractor, nor shall any altered, additional or substituted work be carried out by him, unless the rates of the substituted, altered or additional items have been approved and fixed in writing by the Engineer-in-charge.

The contractor shall be bound to submit his claim for any additional work done during any month on or before the 15th day of the following month accompanied by a copy of the order in writing of the Engineer-in-charge for the additional work and that the contractor shall not be entitled to any payment in respect of such additional work if he fails to submit his claim within the aforesaid period.

Provided always that if the contractor shall commence work or incur any expenditure in regard thereof before the rates shall have been determined as lastly herein before mentioned, in such case he shall only be entitled to be paid in respect of the work carried out or expenditure incurred by him prior to the date of the determination of the rates as aforesaid according to such rates as shall be fixed by the Engineer-in-charge. In the event of a dispute, the decision of the Superintending Engineer, Jajpur Irrigation Division, Jajpur will be final.

Clause-11: If at any time after the commencement of the work the Government of Odisha shall for any reason whatsoever not required the whole thereof as specified in the tender to be carried out the Engineer-in-charge shall give notice in writing of the fact to the contractor who shall have no claim to any payment or compensation whatsoever on account of any profit or advantage, which he might have derived from the execution of the work in full but which he did not derive in consequence of the full amount of the work not having been carried out neither shall he have any claim for compensation by reason of any alterations having been made in the original specification drawings, designs and instruction which shall involve any curtailment of work as originally contemplated.

Clause-12: If it shall appear to the Engineer-in-charge or his sub-ordinate-in-charge of the work, that any work has been executed with unsound, imperfect or unskillful workmanship or with materials of any inferior description, or that any materials or articles provided by him for the execution of the work are unsound or of a quality inferior to that contracted for or otherwise not in accordance with the contract, the contractor, shall on demand in writing from the Engineer-in-charge specifying the work, materials or articles complained of notwithstanding that the same may have been inadvertently passed certified and paid for, forthwith rectify or remove and reconstruct the work so specified in whole or in part, as the case may require or as the case may be, remove the materials or articles so specified and provide other proper and suitable materials or articles at his own proper charge and cost, and in the event of his failing to do so within a period to be specified by the Engineer-in-charge in his demand aforesaid, then the contractor shall be liable to pay compensation at the rate of one percent on the amount of the estimate for every day not exceeding ten days, while his failure to do so shall continue and in the case of any such failure the Engineer-in-charge may rectify or remove, and re-execute the work or remove and replace with others, the materials or articles complained of as the case may be at the risk and expense in all respects of the contractor.

Clause-13: All work under or in course of execution or executed in pursuance of the contract shall at all times be opened to the inspection and supervision of the Engineer-in-charge and his subordinates and the contractor shall at all times during the usual working hours, and at all other times at which reasonable notice of the intention of the Engineer-in-charge or his subordinate to visit the works shall have been given to the contractor either himself be present to receive orders and instruction, or have a responsible agent duly accredited in writing present for that purposes. Orders given to

No compensation for alternation in or restriction of work to be carried out.

Action and compensation payable in case of the work.

Contractor or responsible Agents to be present.

the contractor's agent shall be considered to have the same force as if they had been given to the contractor himself.

Clause-14: The contractor shall give not less than five days notice in writing to Engineer-in-charge or his subordinate-in-charge of the work before covering up or otherwise placing beyond the reach of measurement of any work in order that the same may be measured and correct dimensions there of be taken before the same is so covered up or placed beyond the reach of measurement and shall not cover up or place beyond the reach of measurement, any work without the consent in writing of the Engineer-in-charge or his subordinate-in-charge of the work and if any work shall be covered up or placed beyond the reach of measurement without such notice having been given or consent obtained, the same shall be uncovered at the contractor's expense, or in default thereof no payment or allowance shall be made for such work of the materials with which same was executed.

Work to be open for inspection.

Notice to be given before work is covered up.

Clause -15: If the contractor or his work people, or servants shall break, deface injure or destroy any part of a building in which they may be working or any building, road, fence, enclosure, or grass land or cultivated ground continuous to the premises on which the work of any part of it is being executed or if any damages shall happen to the work while in progress, from any cause whatever or any imperfection became apparent in it within six months from the date of final certificate of its completion shall have been given by the Engineer-in-Charge, as aforesaid the contractor shall make the same to be made good by other workmen and deduct the expenses (of which the certificate of the Engineer-in-Charge shall be final) from any sums that may be then, or at any time thereafter may become due to the contractor, or from his security deposit or the proceeds of sale thereof, or of a sufficient portion there of and the contractor shall be liable to pay any part of the expenses not so recovered by the Engineer-in-charge.

Contractor liable for damage done and for imperfection for 3 months after certificate

Clause -16 : The contractor shall supply at his own cost all materials (except such special materials, if any as may in accordance with the contract be supplied from the engineer -in -charges stores), Plant, tools, appliances, Implements, ladders, cordage, tackle scaffolding and temporary works requisite or proper for the proper execution of the work whether original, altered or substituted, and whether included in the specification or other documents forming part of the contract or referred to in these conditions or not to which may be necessary for the purpose of satisfying or complying with the requirement of the Engineer-in-Charge as to any matter as to which under this conditions be is entitled to be satisfied which he is entitled to require together with carriage therefore to and from the work. The contractor shall also supply without charge the requisite number of persons with the means and materials necessary for the purpose of setting out works, and counting, weighing and assisting in the measurement of examination at any time and from time to time of the work or the materials. Failing him so doing the same may be provided by the Engineer-in-Charge at the expense of the contractor under the contract or from his security deposit or the proceeds of sale thereof, or of a

Contractor to supply plant, Ladders, Scaffolding etc.

And is liable for damages arising from non provisions of lights fencing etc.

sufficient portion thereof. The contractor shall also provide all necessary fencing and lights required to protect the public from accident, and shall be bound to bear the expenses of defense of every suit, action or other proceedings at law that may be brought any person for injury sustained owing to neglect of the above precautions, and to pay damages and cost which may be awarded in any such suit, action or proceedings to any such person or which may with the consent or the contractor be paid to compromise any claim by any such person.

Clause -17 : No female labour shall be employed within the limits of a cantonment.

The contractor shall not employ for the purpose of this contract any person who is below the age of twelve years, and shall pay to each labourer for the work done by such labourer, wages not less than the wages paid for similar work in the neighborhood.

The Superintending Engineer shall have the right to enquire into and decide any complaint alleging that the wages paid by the contractor to any labourer for the work done, by such labourer is less than the wages paid for similar work in the neighborhood.

Explanation - Fair wages means wages whether for time of piece work prescribed by the State P.W.D. provided that where higher rates have been prescribed under the minimum wages Act. 19-18 wages at such higher rates would constitute Fair Wages.

The Superintending Engineer shall have the right to enquire into and decide any complaint alleging that the wages paid by the contractor to any labourer for the work done, by such labourer is less than the wages paid for similar work in the neighborhood.

The officer-in-charge of the work shall have the right to decide whether any labourer employed by the contractor is below the age of twelve years and to refuse to allow any labourer whom he decides to be below the age of twelve years to be employed by the contractor.

Clause-18: The contractor shall not be assigned or sublet without the written approval of the Superintending Engineer. And if the contractor shall assign or sublet his contract or attempt so to do or become insolvent or commence any insolvency, proceedings or make any composition with his creditor or attempt so to do or if any bribe, gratuity, gift, loan, perquisite reward, or advance, pecuniary or otherwise, shall either directly or indirectly be given, promised, or offered by the contractor, or any of his servants or agents to any public officer or persons in the employ of Government in any way relating to his office employment, or if any such officer or person shall become in any way directly or indirectly interested in the contract, the Superintending Engineer may there upon by notice in writing rescind the contract and the security deposit of the contractor shall there upon stand forfeited and be absolutely at the disposal of Government and the same consequences shall ensure as if he contract had been rescinded under the clause 3 hereof, and in addition the contractor, shall not be entitled to recover or be paid for any work thereto for actually performed under the contract.

Work not to be sublet. Contract may be rescinded and Security Deposit Forfeited for subletting bribing or if contractor becomes insolvent.

Sum payable by way of compensation to be considered as reasonable compensation without reference to actual loss.

Clause-19: All sums payable by way of compensation under any of these conditions shall be considered as reasonable compensation to be applied to the use of Government without reference to the actual loss or damage sustained and whether or not any damage shall have been sustained.

Clause-20: In the case of a tender by partners, any change in the constitution of the firm shall be forth with notified by the contractor to the Engineer-in-charge for his information.

In case of failure to notify the change in the constitution within fifteen days the Engineer-in-charge may by notice in writing rescind the contracts and the security deposit of the contractor shall thereupon stand forfeited and be absolutely at the disposal of Government and the same consequences shall ensue as if the contract had been rescinded under clause 3 hereof, and in addition the contractor shall not be entitled to recover or be paid for any works therefore actually performed under the contract.

Changes in
constitution of firm

Clause-21: All works to be executed under the contract shall be executed under the direction and subject to the approval in all respects of the Superintending Engineer, Jajpur Irrigation Division, Jajpur for the time being who shall be entitled to direct at what point or points and in what manner they are to be commenced and from time to time carried on.

Clause-22: DELETED.

Clause-23: When the estimate on which a tender is made includes lump sums in respect of parts of the work the contractor shall be entitled to payment in respect of the items of work involved or the part of the work in question at the same rates as are payable under this contract for such items, or if the part of the work in question is not, in the opinion of the Engineer-in-charge capable of measurement, the Engineer-in-charge may by his discretion pay the lump sum amounts entered in the estimate, and the certificate in writing of the Engineer-in-charge shall be final and conclusive against the contractor with regard to any sum or sums payable to him under the provisions of this clause.

Lump sums in
estimates

Clause-24: In the case of any class of work for which there is no such specification as is mentioned in the rule I, such work shall be carried out in accordance with Circle specification and in the event of there being no circle specification, then in such case the work shall be carried out in all respect in accordance with the instructions and requirements of the Engineer-in-charge.

Clause -25 : The expression "work" or "work" where used in these conditions shall, unless there be something either in the subject or context repugnant to such construction, be construed, and taken to mean the works by or by virtue of the contract contracted to be executed, whether temporary or permanent, and whether original, altered, substituted or additional.

Clause - 26: Government shall be entitled to recover in full from the contractor any amount that the Government may be liable to pay under Workman's compensation Act VII of 1923 to any workman employed in course of execution of any part of the work covered by these contract.

Clause -27: That the purpose of jurisdiction in the event dispute if any, the contract should be deemed to have been entered into within the state of Odisha and it is agreed that neither party to the contract or of agreement will be competent to bring a suit in regard to the matters covered by this contract at any place outside the state of Odisha.

Clause -28: The department will have the right to inspect the scaffolding and centering made for the work and can reject partly or fully such structure if found defective in their opinion.

Clause -29: Sanitary arrangements will be made by the contractor at this own cost for his labour camp.

Clause -30: The contractor shall bear all taxes including sales tax, Income tax, royalty, fair-weather charges and tollage, where necessary.

Caluse 31 : Price Adjustment

31.1 : Contract price shall be adjusted for increase or decrease in rates and price of labour, materials, fuels and lubricants in accordance with the following principles and procedures and as per formula given in following Paras.

(a) The price adjustment shall apply for the work done from the start date given in the contract data up to end of the initial intended completion date of extensions granted by the Engineer and shall not apply to the work carried out beyond the stipulated time for reasons attributable to the contractor.

(b) The price adjustment shall be determined during each month from the formula given in following Paras.

(c) Following expressions and meanings are assigned to the work done during each month :

R= Total value of work done during the month. It would include the amount of secured advance granted, it any, during the month, less the amount of secured advance recovered, it any during the month. It will exclude value for works executed for extra items under variations.

31.2 : To the extent that full compensation for any rise or fall in costs to the contractor is not covered by the provisions of this or other clauses in the contract, the unit rates and prices included in the contract shall be deemed to including amounts to cover the contingency of such other rise or fall in costs :

The formula (e) for adjustment of prices are :

31(a) (i) : Adjustment of Other Materials Component

Price adjustment for increase or decrease in cost of local materials other than cement, steel, bitumen, pipe and POL procured by the contractor shall be paid in accordance with the following formula :

$$V_M = 0.85 \times P_m / 100 \times R \times (M_1 - M_0) / M_0$$

V_M = Increase or decrease in the cost of work during the month under consideration due to changes in rates for local materials other than cement, steel, bitumen and POL.

M_0 = The all India wholesale price index (all commodities) on 28 days proceeding the date of opening of Bids, as published by the Ministry of Commerce and Industry, Government of India, New Delhi.

M_1 = The all India wholesale price index (all commodities) for the month under consideration as published by the Ministry of Commerce and Industry, Government of India, New Delhi.

P_m = Percentage of local material component (other than cement, steel, bitumen and POL) of the work.

31(a) (ii) : Adjustment for Cement Component

Price adjustment for increase or decrease in cost of cement procured by the contractor shall be paid in accordance with the following formula :

$$V_C = 0.85 \times P_C/100 \times R \times (C_1 - C_0)/C_0$$

V_C = Increase or decrease in the cost of work during the month under consideration due to changes in rates for cement.

C_0 = The all India wholesale price index for Ordinary Portland Cement (OPC) on 28 days preceding the date of opening of Bids as published by the Ministry of Commerce and Industry, Government of India, New Delhi.

C_1 = The all India wholesale price index for Ordinary Portland Cement (OPC) for the month under consideration as published by the Ministry of Commerce and Industry, Government of India, New Delhi.

P_C = Percentage of Cement Component of the work.

31(a) (iii) : Adjustment for Steel Component

Price adjustment for increase or decrease in cost of steel procured by the contractor shall be paid in accordance with the following formula :

$$V_S = 0.85 \times P_S/100 \times R \times (S_1 - S_0)/S_0$$

V_S = Increase or decrease in the cost of work during the month under consideration due to changes in rates for steel.

S_0 = The all India wholesale price index for steel (Mild Steel long products) on 28 days preceding the date of opening of Bids as published by the Ministry of Commerce and Industry, Government of India, New Delhi.

S_1 = The all India wholesale price index for steel (Mild Steel long products) for the month under consideration as published by the Ministry of Commerce and Industry, Government of India, New Delhi.

P_S = Percentage of steel component of the work.

Note : For the application of this clause, index of (Mild Steel long products) has been chosen to represent steel group.

31(a) (iv) : Adjustment of Bitumen Component

Price adjustment for increase or decrease in cost of bitumen shall be paid in accordance with the following formula :

$$V_b = 0.85 \times P_b/100 \times R \times (B_1 - B_0)/B_0$$

V_b = Increase or decrease in the cost of work during the month under consideration due to changes in rate for bitumen.

B_0 = The official retail price of bulk bitumen at the IOC / BPCL depot at nearest center on the day 28 days prior to date of opening of Bids.

B_1 = The official retail price of bulk bitumen at the IOC / BPCL depot at nearest center for the 15th day of the month under consideration.

P_b = Percentage of bitumen component of the work.

31(a) (v) : Adjustment towards differential cost of pipes

Price adjustment for increase or decrease in cost of pipe shall be paid in accordance with the following formula :

$$V_{pi} = 0.85 \times P_{pi}/100 \times R \times (P_{i1}-P_{i0})/P_{i0}$$

V_{pi} = Differential cost of pipe i.e. amount of increase or decrease in rupees to be paid or recovered during the month under consideration.

P_{pi} = Percentage of pipe component of the work.

P_{i1} = All India wholesale price index of pipe for the period under consideration as published by the Ministry of Commerce and Industry, Government of India, New Delhi.

P_{i0} = The all India wholesale price index of pipe on 28 days preceding the date of opening of Bids as published by the Ministry of Commerce and Industry, Government of India, New Delhi.

31(b) : Adjustment of Labour Component

Price adjustment for increase or decrease in cost due to labour shall be paid in accordance with the following formula :

$$V_L = 0.85 \times P_l/100 \times R \times (L_1-L_0)/L_0$$

V_L = Increase or decrease in the cost of work during the month under consideration due to changes in rates for local labour.

L_0 = The minimum wages for unskilled labour as Notified by Government of Odisha as prevailed on the last stipulated date of receipt of tender including extension, if any.

L_1 = The minimum wages for unskilled labour as Notified by Government of Odisha as prevailed on the last date of the month previous to the one under consideration.

P_l = Percentage of labour component of the work.

31(c) : Adjustment of POL (fuel and lubricant) Component

Price adjustment for increase or decrease in cost of POL (fuel and lubricant) shall be paid in accordance with the following formula :

$$V_f = 0.85 \times P_f/100 \times R \times (F_1-F_0)/F_0$$

V_f = Increase or decrease in the cost of work during the month under consideration due to changes in rates for fuel and lubricants.

F_0 = The official retail price of High Speed Diesel (HSD) at the existing consumer pumps of IOC / BPCL / HPCL at nearest center on the day 28 days prior to the date of opening of Bids.

$F_1 =$ The official retail price of HSD at the existing consumer pumps of IOC / BPCL / HPCL at nearest center for the 15th day of the month under consideration.

$P_f =$ Percentage of fuel and lubricants component of the work.

Note : For the application of this clause, the price of High Speed Diesel oil has been chosen to represent fuel and lubricants group.

31(d) : Adjustment for Plant and Machinery Spares Component

Price adjustment for increase or decrease in cost of plant and machinery spares procured by the Contractor shall be paid in accordance with the following formula :

$$V_p = 0.85 \times P_p / 100 \times R \times (P_1 - P_0) / P_0$$

$V_p =$ Increase or decrease in the cost of work during the month under consideration due to changes in rates for plant and machinery spares.

$P_0 =$ The all India wholesale price index for manufacture of machinery for mining, quarrying and construction on 28 days preceding the date of opening of Bids as published by the Ministry of Commerce and Industry, Government of India, New Delhi.

$P_1 =$ The all India wholesale price index for manufacture of machinery for mining, quarrying and construction for the month under consideration as published by the Ministry of Commerce and Industry, Government of India, New Delhi.

$P_p =$ Percentage of plant and machinery spares component of the work.

Note : For the application of this clause, index of manufacturing of machinery for mining, quarrying and construction has been chosen to represent the plant and machinery spares group.

Regarding wholesale price index (WPI) for appropriate commodity for payment of price adjustment, due to change of base year of WPI from 1993-94 to 2004-05 & 2011-12, it is observed that, the commodity 'Bars and Rod', 'Cement', 'Heavy machinery and parts' included in the list of WPI 1993-94 series are not mentioned as such in the WPI 2004-05 & 2011-12 series. Therefore, the following items in the WPI 2004-05 & 2011-12 series shall be considered corresponding to items in WPI 1993-94 series :

Sl. No.	Item in WPI 1993-94 series	Item in WPI 2004-05 series	Item in WPI 2011-12 series
1.	Cement	Grey Cement	Ordinary Portland Cement
2.	Bars & Rods	Rebars	Mild steel long products
3.	Heavy Machinery & parts	Construction Machinery	Manufacture of machinery for mining, quarrying & construction

31(e) : APPLICATION OF ESCALATION CLAUSE :

The contractor shall for the purpose of availing reimbursement / refund of differential cost of steel, bitumen, cement, pipe, POL and wages, keep such books of account and other documents as are necessary to show that the amount of increase claimed or reduction available and shall allow inspection of the same by a duly authorized representative of Government and further, shall at the request of the Engineer-in-Charge, furnish documents to be verified in such a manner as the Engineer-in-Charge may require any document and

information kept. The contractor shall within a reasonable time of 15 days of his becoming aware of any alternation in the price of such material, wages of labour and / or price of POL give notice thereof to the Engineer-in-Charge stating that the same is given pursuant to this condition along with information relating to there to which he may be in position to supply.

Percentage Table

Sl. No.	Category of Works		% Component (cost wise)		
			Labour (P _i)	POL (P _f)	Steel (P _s) + Cement (P _c) + Bitumen (P _b) + Pipes (P _{pi}) + Plant & Machinery Spare & Component (P _p) + Other Materials*
1.	R & B works (% of component)	Road Works	5	5	90
		Bridge Works	5	5	90
		Building Works	5	5	90
2.	Irrigation works (% of component)	Structural Work	5	5	90
		Earth, Canal & Embankment work	5	5	90
3.	P.H. Work	Structural Work	5	5	90
		Pipeline Work	5	5	Pipe - 70% * Machinery + Other material-20%
		Sewer Line	5	5	Pipe - 70% * Machinery + Other material-20%

*Note :- Further break up may be worked out considering the consumption of Cement, Steel, Bitumen, Pipe and Plant & Machinery Spare Component in the concerned works and shall be provided in the bid document in shape of “**Schedule of Adjustment Data**” as an “**Appendix to Bid**” (enclosed herewith).

Appendix to Bid

Schedule of Adjustment Data

[For all works, adjustment factor for Labour and POL shall be considered at the rate 5% each. Steel, Cement, Pipes, Other Materials and Machinery shall contribute to 90% of Price Adjustment and shall be calculated for each work separately during preparation of estimate, shall be approved by the authority during technical sanction as a “Schedule of Adjustment Data” and shall form part of the Bid Document. The cases where the original technically sanctioned estimate gets revised, the technical sanction to the revised estimate will be obtained from the competent authority as provided under Para 3.11.2 (b) of OPWD Code, Volume-I. Based on the revised technically sanctioned estimate, the Labour & the POL component shall be given the weightage of 5% each as provided in O.M. No.15847/W dated 19.11.2019 of Works Department and the weightage of 90% on steel, cement, bitumen, pipes, other materials and plant and machinery spare component shall be given as per the technically sanctioned revised estimate excluding the extra items. The revised weightage of “Schedule of Adjustment Data” based on revised technically sanctioned estimate shall be included as an Addendum to the agreement. The technical sanctioning authority shall be the competent authority for this purpose.].

Cl. No.31 of F2/P1 Contracts Sl. No.	Index Description	Source of Index	Base Value*	Base Date*	Weightage of Item**
31 (a) (i)	Other Materials	All India wholesale price index (all commodities) as published by the Economic Advisor to the Govt. of India, Ministry of Commerce and Industry.			90%
31 (a) (ii)	Cement	Wholesale price index for Cement (Ordinary Portland Cement) as published by the office of the Economic Advisor to the Govt. of India, Ministry of Commerce and Industry.			
31 (a) (iii)	Steel	Wholesale price index for steel (Mild Steel-Long Products) as published by the office of the Economic Advisor to the Govt. of India, Ministry of Commerce and Industry.			
31 (a) (iv)	Bitumen (VG-30)	The official retail price of bulk bitumen at the nearest IOC / HPCL deport.			
31 (a) (v)	Pipes	Whole sale price index for the type of Pipe under consideration, as published by the office of the Economic Advisor to the Govt. of India, Ministry of Commerce and Industry.			
31 (b)	Labour	Minimum Wage notified by the Labour and Employee's State Insurance Department of Government of Odisha, India.			5%
31 (c)	POL	Official retail price of HSD at nearest IOCL / HPCL / BPCL Consumer Pump Deport.			5%
31 (d)	Plant and Machinery	Wholesale price index for manufacture of machinery for mining, quarrying and construction as published by the office of the Economic Advisor to the Govt. of India, Ministry of Commerce and Industry.			
			Total		100%

* Values to be filled up at the time of drawal of contract.

** Values to be filled up in the bid document.

Clause -32: After the work is finished all surplus materials and debris are to be removed by the contractor and preliminary works such as vats, mixing platforms, etc. are to be dismantled and all materials removed from the site.

FAIR WAGE CLAUSE

Clause -33 (a) The Contractor shall not employ for the purpose of this Contract any person who is below the age of fourteen years and shall pay to each labourer for work done by such labourer's fair wages.

Explanation: "Fair wage" means wages, whether for time or piece work prescribed by the State Public Works Department provided that where higher rates have been prescribed under the Minimum Wages Act, 1948 wages at such higher rates should constitute fair wages.

- b) The Contractor shall, notwithstanding the provision of any contract to contrary cause to be paid a fair wage to labourers indirectly engaged on the work including any labour engaged by his sub-contractors in connection with the said work as if the labourers had been immediately employed by him.
- c) In respect of all labour directly or indirectly employed in the work for the performance of the contractor's part of this agreement, the contractor shall comply with or cause to be complied with all regulations made by Government in regard to payment of wages, wage period deductions from wages, recovery of wages not paid and deductions unauthorisedly made, maintenance of wage register, wage cards publications of scale of wages and other terms of employment, inspection and submission of periodical returns and all other matters of a like nature.
- d) The Superintending Engineer or Sub-Divisional Officer concerned shall have the right to deduct, from the money due to the contractor, any sum required or estimated to be required for making good to the loss suffered by a worker or workers by reason of non-fulfillment of the conditions of the contract for the benefit of the workers non-payment of wages or of deductions made from his or their wages, which are not justified by their terms of the contract or non observance of the regulations. Money so deducted should be transferred to the workers concerned.
- e) Vis-vis, the Government of Odisha, the contractor shall be primarily liable for all payments to be made under and for the observance of the regulations aforesaid without prejudice to his right to claim indemnity from his sub-contractor.
- f) The regulations aforesaid shall be deemed to be a part of this contract and any branch thereof shall branch of this contract.

Clause- 34 : Incentive should be paid in respect of individual project for new construction/substantial addition or improvement works, the minimum value of which is mentioned below.

Name of work	Minimum value
1. Building work/ PH work	- Rs.40.00 lakhs
2. Road works	- Rs.3.00 Crores
3. Irrigation work	- Rs. 10.00 Crores

Incentive will be paid with approval of next higher authority of tender accepting authority on completion of original work before original time schedule.

For availing incentive clause in any project which is completed before the stipulated date of completion, subject to other stipulations it is mandatory on the part of the concerned Superintending Engineer to report the actual date of completion of the project as soon as possible through fax or e-mail so that the report is received within 7 days of such completion by the concerned SE, CE & the Administrative Department. The incentive for timely completion should be on a graduated scale of one percent to 10 percent of the contract value.

Assessment of incentives may be works out for earlier completion of work in all respect in the following scale.

Before 30% of contract period	=	5% of Contract value
Before 20 to 30% of contract period	=	4% of Contract value
Before 10 to 20% of contract period	=	3% of Contract value
Before 5 to 10% of contract period	=	2% of Contract value
Before 5% of contract period	=	1% of Contract value

Clause -34 (a) : The provision of Royalty of mineral materials used for the work is considered as following:-

- (i) Metal / Chips / Stone products-Rs.130.00/Cum.With10%DMF,5%EMF, & Addl. Royalty Rs.260.00/Cum
- (ii) Sand-Rs.35.00/Cum.With10%DMF,5%EMF,& Addl.RoyaltyRs.70.00/Cum
- (iii) Moorum-Rs.35.00/Cum.With10%DMF,5%EMF,&Addl.RoyaltyRs.70.00/Cum
- (iv) Earth-Rs.35.00/Cum.With10%DMF,5%EMF,&Addl.RoyaltyRs.70.00/Cum

Any increase of cost of royalty by the Govt. will be applicable for the work and the same will be deducted from the work bill of the contractor. The officers inviting the Bid shall not be responsible for the same.

Clause -35: Amount. Specified may vary and the work will be taken up as per availability of funds No claim what-so-ever in this regard will be entertained.

Clause-36: (a) The earth work quantity will be assessed from cross section taken at suitable intervals as decided by the Superintending Engineer, Jajpur Irrigation Division, Jajpur initial levels will be taken with reference to bench marks, which should be kept at site till finalization of their contract. The initial cross section papers should be signed by both the parties before starting earth work. The final cross section of the embankment in filling reaches when finished to designed section will be taken for each portion of embankments and plotted over the initial level section to ascertain the final quantity to be arrived by deducting necessary settlement allowance. The measurement for earth work should be at 30 M or at closer grid.

(b) Stone to be excavated shall be measured in solid normally, but if the site condition do not permit solid measurement as assessed by the Engineer-in-Charge due to a mixture of various rock in the particular location, stack measurement will be taken at the direction of the Engineer-in-charge from the stacks to be measured. Deduction shall be made for voids at 40 % minimum for closely packed stacks subject to increase in percentage according to the nature of compactness in stacking. No consideration will be given to any adverse condition by the contractor in his tender.

(c) Rubble stones, boulders, rough stones, soling stones are measured by volume of closely packed stacks 1/6th volume for voids shall normally be deducted from closely packed sacks percentage of void shall be determined an actual observation and deducted.

(d) 12 ½ voids shall be deducted from metal and moorum stacks. The box of size 1.5m X 1.5m X 0.5 m to be measured as 1.5m X 1.5m X 0.44 = 1 cum. Similar measurement to be adopted for gravel stacks also and voids deducted. The rates are excluding voids.

Clause-37: Curing of all cement works will be done by the contractor as per instruction of the Engineer-in-charge at his own cost.

Clause-38: Dewatering of any magnitude either of excavation of foundation to finished section and laying concrete or masonry work or any structure when and

wherever necessary during complete execution period will have to be done by the contractor at his own cost. This is treated to be inclusive of his tendered rate.

Clause-39: (a) The contractor should keep himself in constant touch with the Engineer-in-charge for smooth execution of work and arrange for adequate labourer depending on the work load and working place available. No claim for idle labour on any account will be entertained.

(b) The contractor is fully responsible for safe guard of the Govt. property entrusted to him.

Clause-40: No extension of time shall be allowed to the contractor, however it may be considered in case of exigencies like natural calamities only. The extension of time may be allowed if authority feels necessary. But no claim for monetary compensation will be entertained under any circumstances.

Clause-41: After completion of the work the contractor shall arrange at his own cost all requisite equipments and labour for testing the work and bear the entire cost of such test.

Clause-42: All correspondence with the tenderer will be made through post in the address given in the tender. The tenderer must mention in the tender, his correct postal address where letters can be delivered to him. The department will not held responsible for non-receipt of any letter by the tenderer either for wrong address given by him or for his absence from the given address.

Clause-43: Any jungle clearance needed for borrowing earth beyond the toe of the embankment beyond the excavation limits is the responsibility of the contractor and no extra payment will be made.

Clause-44: Earth work beyond the theoretical designed will not be paid for.

Clause-45: Construction of coffer dams or islands or the works of open excavation or dressing required for construction of structure and approach drain should be included in the rates.

Clause-46: The contractor should take all precautions to protect the structures from flood damages at his own cost during the period of execution. Damages if any caused by the probable flood during monsoon till completion and handing over of entire work will be made by the contractor at his won cost.

Clause-47: By submitting a tender for the tenderer will be deemed to have satisfied himself by actual inspection of the site/quarry and locality of the work about the quality and availability of the required quantity of materials including medical aids, labour and food stuff etc. and that the rates quoted by his in the tender will be adequate to complete the work according to the specification and conditions attached to and that he has taken into account all conditions difficulties that may be encountered during its progress and to have quoted labour rates and materials, octorai and other duties leads, lifts loading and unloading and freight for materials and all other charges necessary for the completion of the work to the entire satisfaction of the Engineer-in-charge of the work and his authorized sub-ordinates. After acceptance of the contractor rates Govt. will not pay any extra charges for any reason in case the contractor is found later on to have misjudged in conditions as regards availability of materials, labour or any other factors, it should be understood clearly that no claim whatsoever will be entertained afterwards on the plea of non-availability of proper quantity of materials including food stuff or any other cause.

Clause-48: It shall be distinctly understood that it is entirely the responsibility of the contractor to make such arrangement as may be required from time to time to protect the men, machinery, materials and the work under progress and work for which the measurements were recorded and a payment made.

Clause-49: The embankment slopes and banks will be maintained by the contractor till the final payment is made and any rain cuts, sides settlements that would occur should be made good by him at his own cost without any claim.

Clause-50: (a) There will not be any compensation or extension of time granted for reason of adequate cash flow.

(b) Works could be suspended depending on availability funds and no compensation will be admissible on this accord except sanctions of extra time.

(c) No compensation / claim for delay in sanction of deviation / extra items and payment thereof will be admissible to contractor.

Clause-51: The contractor shall be responsible for compensation of any at his workman under workman's compensation Act.

Clause-52: In case of down loaded tenders received with any addition, alternation & deletion, the approved tender document available with the Superintending Engineer is binding.

Clause-53 : The terms and condition of the agreement have been read-explained to me and certify that clearly understand them.

Clause-54 : The terms and conditions of the agreements have been read / explained to me and Certify clearly understand them.

Odisha P.W.D. Electricity Department Contractor's Labour Regulations.

1. Short title: These regulations may be called "The Odisha Public Works department/ Electricity Department Contractor's Regulations.

Definitions: In these Regulations unless otherwise expressed or indicated the following words and expression shall have the meaning hereby assigned to them respectively, that is to say:

- (1) "Labour" mean workers employed by a contractor of the Odisha public Works Department/Electrical Department directly/indirectly through a sub-contractor or other person, or by an agent on his behalf.
- (2) "Fair Wages" means wages whether for time or piece work prescribed by the State Public Works Department provided that where higher rates have been prescribed under the Minimum Wages Act, 1948 wages at such higher rates should constitute fair wages.
- (3) "Contractor" shall include every person whether a sub contractor or headman or agent employing labour on the work taken on contract.
- (4) "Wages" shall have the same meaning as defined in the payment of wages Act and include time and piece rate wages, if any.

2. Display of notice regarding wages, etc.

- (a) Before he commence his work on contract, display and correctly maintain and continue to display and correctly maintain, in a clean and legible condition, in conspicuous place on the work, notice in English and in the local Indian language spoken by the majority of the workers, giving the rate of wage prescribed by the State Public Works Department/Electricity Department for the district which the work is done.
- (b) Send a copy such notice to the Engineer-in-charge of the work.

3. Payment of wages

- (1) Wages due to every worker shall be paid to him direct.
- (2) All wages shall be paid in current coin or currency or in both.

4. Fixation of wage period.

- (1) The contractor shall fix the wage period in respect of which the wages be payable.
- (2) No wage period shall exceed one month.
- (3) Wages of every workman employed on contract shall be paid before the expiry of ten days, after the last day of the wage period in respect of which the wages are payable.
- (4) When the employment of any worker is terminated by or on behalf of the contractor, the wages earned by him shall be paid before the expiry of the day succeeding the one on which his employment is terminated.
- (5) All payments of wages shall be made on working day.

5. Wage book and wage cards etc. :-

- (1) The contractor shall maintain a Wage book of each worker in such form as may be convenient, but the same shall include the following particulars:
 - (a) Rate of daily or monthly wages.
 - (b) Nature of work on which employed
 - (c) Total number of days worked during each wage period.
 - (d) Total amount payable for the work during each wage period.
 - (e) All deductions made from the wages with an indication in each case of the ground for which the deduction is made.

- (f) Wage actually paid for each wage period.
- (2) The contractor shall also maintain a wage card for each worker employed on the work.
- (3) The Superintending Engineer may grant an exemption from the maintenance of wage bond, wage cards to a contractor who, in his opinion may not directly or indirectly employ more than 100 persons on the work.

6. Fines and deductions which may be made from wages:-

- (1) The wages of a worker shall be paid to him without any deduction of any kind except the following.
 - (a) Fines.
 - (b) Deduction for absence from duty, i.e., from the place or places where by the terms of his employment he is required to work. The amount of deductions shall be in proportion to the period for which he was absent.
 - (c) Deductions for damage or loss of goods expressly entrusted to the employed person for custody or for loss of money for which he is required to account where such damage or loss is directly attributable to his neglect or default.
 - (d) Any other deductions, which the Government may from time to time allow.
- (2) No fines shall be imposed on a worker and no deduction for damage or loss shall be made from his wages until the workers has been given an opportunity of showing cause against such fines or deduction.
- (3) The total amount of fines which may be imposed in anyone wage period on a work all not exceed an amount equal to five paise in rupee of the wages payable to him in respect of that wage period.
- (4) No fine imposed on any worker shall be recovered form him by installments or after the expiry of 60 days from the date on which it was imposed.

7. Register of fines, etc.

- (1) The contractor shall maintain a register of fines and of all deductions for damage or loss. Such register shall mention the reason for which fine was imposed or deduction for damage or loss made.
- (2) The contractor shall maintain a list in English and in the local Indian language clearly defining acts omissions for which penalty or fine can the imposed. It shall display such list and maintain it is clean and eligible condition conspicuous places of the work.

8. Preservation of register:-

The wage register, the wage card and the register of fines, deduction required to be maintained under these regulations shall be preserved for 12 months after date of the last entry made in them.

9. Power of Labour Welfare Officers to make investigation or inquiry:-

The labour Welfare Officer or any other persons authorised by the Government of Odisha on their behalf shall have power to make enquiries with a view to ascertaining and enforcing due and proper observance of the fair wage clauses and the provisions of these regulations. He shall investigate into any complaint regarding default made by the contractor in regard to such provisions.

10. Report of Labour Welfare Officer:-

The Labour Welfare Officer or other authorised as aforesaid shall submit a report of the result of his Investigation or enquiry to the Superintending Engineer concerned indicating the extent. It any to which the default has been committed with a note that necessary deduction from the contractors bill be made and the wages and the other duel be paid to the labour concerned.

11. Appeal against the decision of Labour Welfare Officers:-

Any person aggrieved by the decision and recommendation of the Labour Welfare Officer or their person so authorised may appeal against such decision to the Labour Commissioner within 30 days from the date of decision forwarding simultaneously a copy of his appeal to the Superintending Engineer concerned but subject to such appeal, the decision of the officer shall be final and binding upon the contractor.

12. Inspection of Registers

The contractor shall allow inspection of the wage book and wage cards to any of his workers or to his agent at a convenient time and place after due notice is received, or to the Labour Commissioner or any other person authorised by the Government of Odisha on his behalf.

13. Submission of return:-

The Contractor shall submit periodical returns as may be specified from time to time.

14. Amendment- Government of Odisha may from time to time, add to or amend these regulation. On any question as to the application, interpretation of effect of these regulations, the decision of the Labour Commissioner or any other person authorised by the Government of Odisha in that behalf shall be final.

15. After the work is completed, preliminary works such as VATs, Mixing platforms should be dismantled and all materials removed from the worksite and premises left neat and clean .This should be inclusive of the rate.

SECTION – 5
TECHNICAL SPECIFICATION

TECHNICAL SPECIFICATION

1. EARTH WORK

The contractors shall execute the work to the lines, grade and section as per drawing and in accordance with the specification and relevant clause / clauses of relevant Indian Standard Codes unless otherwise specified. Construction of all approaches and haul roads and their maintenance shall be the responsibility of the contractor. The contractor shall ensure good workmanship and quality and shall ensure besides other aspects fulfillment of the following specified requirements to the satisfaction of the Engineer.

FLOOD EMBANKMENT

BORROW AREA

- i) Earth shall be used from borrow areas located at a distance of not less than 10h or 30m, whichever is greater from the toe of the embankment where 'h' is the height of embankment.
- ii) Borrow areas shall be stripped of top soil and cleared of stumps, roots, bushes, rubbish and other objectionable materials.
- iii) Soils of approved quality, to the satisfaction of the Engineer-in-charge shall be used which shall be free from muck, rubbish, silt and cobbles of size larger than 75mm.
- iv) Watering of borrow area shall be done wherever necessary after taking moisture content test.
- v) Borrowing of earth is responsibility of the contractor at his own cost and risk.

1.2. METHOD OF EXECUTION

- i) Contractor shall reconstruct / rehabilitate the embankment to the section and grade level as per drawing supplied to him to full satisfaction of the Engineer-in-charge.
- ii) All trees, bushes, roots and other vegetation from the base of the embankment shall be removed.
- iii) The base of the portion of the embankment to be rehabilitated shall be stripped to a depth of 20cm and roots and other vegetation shall be removed. All holes/ hollows produced by digging shall be carefully up with earth and well rammed.
- iv) The longitudinal slopes of the existing damaged embankment shall be cut to the slope not steeper than 1:4 and the surface so prepared shall be scarified and made loose for a depth of 15cm before laying of soil. Watering of scarified surface shall be done. The damaged side slopes of the bank shall be benched in convenient steps of depth not more than 30cm for proper bonding of the freshly laid soil with the old embankment.
- v) The earth fill shall be laid in layers of 15cm (canals) to 25cm (other embankments) in depth in such a way that cobbles, gravels not exceeding 7.5cm are well distributed throughout the materials and not nested in any position within or under the embankment. Clods shall be broken to 7.5 cm.
- vi) Under the circumstances the embankment shall be widened by materials dumped from the top of the existing embankment.

- vii) Adequate quantity of watering is to be done at the junction of the freshly laid soil with old embankment for proper bonding.
- viii) If initial moisture content in the soil is less than the optimum moisture content, then water shall be sprinkled over the freshly laid layer before compaction.
- ix) Extra earth used for compacting of slopes should be used in the upper layer of embankment.

1.3 METHOD OF COMPACTION BY MECHANICAL MEANS

Where the earthwork is stipulated to be compacted as per drawing and specification, compaction will be done as follows.

1.3.1 Compaction shall be done with appropriate equipment like:

- Fuel operated bed compactors
- Mechanical tampers
- Track chain of tractors
- Playing of dozers / hauling equipments (viz earth moving) equipments over the layers)
- Power rollers.

Choice of equipment shall be governed by the site conditions, nature of job/space etc. and it shall be got approved from the Engineer. Manual compaction by hand held tampers / rammers shall not be allowed except for the earth work in minors or very small sectioned channels.

1.3.2. Embankments

The thickness of compacted layers shall be restricted to 15cm and shall be compacted so as to achieve dry density of at least 95% under optimum moisture content.

Where road is proposed to be constructed over the embankment the top 0.5m of the embankment shall be considered as the sub-grade for the road and shall be compacted to 97% of proctor density.

Soil samples shall be taken from each compacted layer to ascertain the degree of compaction. Also moisture content is to be measured from each layer by taking samples. A tolerance of moisture of moisture content to the extent of +1% of O.M.C. shall be permitted.

1.3.3. Earth work for widening existing road embankment

When an existing embankment and/or sub-grade is to be widened and its slopes are steeper than 1 vertical to 4 horizontal, continuous horizontal benches, each at least 300 mm wide, shall be cut into the old slope for ensuring adequate bond with the fresh embankment/ sub-grade material to be added. The material obtained from cutting of benches could be utilized in the widening of the embankment/sub-grade. However, when the existing slope against which the fresh material is to be placed is flatter than 1 vertical on 4 horizontal, the slope surface may only be ploughed or scarified instead of resorting of benching.

Where the width of the widened portions is insufficient to permit the use of conventional rollers, compaction shall be carried out with the help of small vibratory rollers/plate compactors/power rammers or any other appropriate equipment approved by the Engineer. End dumping of materials from trucks for widening operations shall be avoided except in difficult circumstances when the extra width is too narrow to permit the movement of any other types of hauling equipment.

1.4 EARTH WORK WITHOUT COMPACTION BY MECHANICAL MEANS.

In case of small sections, when the extra width is too narrow to permit the movement of any type of mechanical equipment the earth work shall be compacted by hand held tampers / rammers. Such earth work shall be treated as earth work without compaction. Measurement and payment shall be done accordingly.

1.5 EARTH WORK FOR EMBANKMENT AND SUBGRADE TO BE PLACED AGAINST SLOPPING GROUND

Where an embankment / sub-grade is to be placed against slopping ground, the latter shall be appropriately benched or ploughed / scarified as required in previous clause before placing the embankment / sub-grade material. Extra earth work involved in benching or due to ploughing / scarifying etc shall be considered incidental to the work.

For wet conditions benches with slightly inward fall and subsoil drains at the lowest point shall be provided as per the drawings, before the fill is placed against sloping ground

Where the Contract requires construction of transverse subsurface drain at the cut.-fill interface, work on the same shall be carried out in proper sequence with the embankment and sub-grade work as approved by the Engineer

1.6. EARTH WORK OVER EXISTING ROAD SURFACE

Where the embankment is to be placed over an existing road surface. the work shall be carried out as indicated below

- i) if the existing road surface is of granular or bituminous type and lies within 1m of the new sub-grade level, the same shall be scarified to a depth of 150mm or more if specified, so as to provide ample bond between the old and new material ensuring that at least 500mm portion below the top of new sub-grade level is compacted to the desired density.
- ii) If the existing road surface is of cement concrete type and lies within 1m of the new sub-grade level. the same shall be removed completely.
- iii) If the level difference between the existing road surface and the new formation level is more than 1m, the existing surface shall be permitted to stay in place without any modification.

1.7. SOIL CLASSIFICATION

Soil classification of earth work / material to be used on the rehabilitation of embankment shall be got done on regular basis. The earth should be tested to determine its suitability for embankment construction as per I.S. 12169.

In expansive soil, layer of cohesive non swelling soil shall be provided in beds and sides.

Consolidation of CNS shall be done to 95% of maximum dry density at O.M.C.

In case of lines channels, CNS layer shall be provided of thickness conforming to Indian Standard IS 9451 depending upon the swelling pressure. Guidelines on the thickness of CNS layers (t) as outlines in the table I.S.–9451.

CNS shall be compacted to a minimum density of 95%.

1.8 EARTH WORK NEAR STRUCTURES

Back fill around structure

- Backfill shall be placed to the lines and grades shown in the drawing or as approved by the Engineer.
- Backfill material shall be got approved from the Engineer-in-Charge. It shall contain no stones larger than 75 mm.
- The surface to receive backfilling shall be free from all roots. Vegetation spoil, rubbish, it shall be properly wetted
- Backfill shall be placed In layers of 10cm to, 5cm. having optimum moisture content and shall be compacted with mechanical tampers / pneumatic tampers. .

1.9 SETTLEMENT ALLOWANCE

In the mechanically compacted earth fill, settlement allowance should be provided. Accordingly extra height should be provided taking the settlement into account. The base width of the embankments shall not be increased to maintain the design slopes indicated in the drawings for additional height as settlement allowance, but the following procedure shall be adopted. **For uncompacted earth fill settlement allowance of 12.5% should be provided.**

Settlement allowance shall be calculated at various levels and the elevation including settlement allowance shall be derived keeping the embankment width at the designated levels unchanged: The edges of the embankments at the increased elevation (including settlement) when joined with the point where the slope has changed earlier below, shall give the slope to be adopted for construction.

1.10. MODE OF MEASUREMENT & PAYMENT

The unit price should include arrangement of borrow area, cost of excavation, loading transportation, unloading at site, breaking clods, spreading to proper thickness including\ watering for compaction where necessary.

The unit price shall also include stripping of borrow area, preparation and maintenance of haul road, dressing of side slopes with all other general and incidental operations connected with the work including taxes and royalties.

The payment shall be made on volumetric basis for the quantities of excavation/filling to the required extent. The cross sections shall be taken, initially before commencement of work. On completion of excavation final cross sections shall be taken at the same points longitudinally and transversely. These cross section as quantities between initial and final cross section shall be marked on the initial cross section shall be worked out as per design section and paid accordingly.

2. STONE PACKING

2.1. General

The dumping and packing shall consist of boulders and blasted rock fragments. It shall be dumped mechanically or hand placed.

2.2 Quality of dumping and surface packing stone

- i) The boulder and rock fragments shall be controlled quarry for quality, gradation and size.
- ii) The boulders and rock fragments obtained from rock excavated shall be checked for quality, gradation and size before lifting.
- iii) The stone for dumping and surface packing should be dense, resistant to abrasion and free from cracks seams, shale partings, conglomerate bonds and other defects, that would tend to increase their susceptibility to destruction by the action of water and weather. The size of stone should be of 0.003 cum & above.
- iv) The stone shall be closely packed and the interstices shall filled with small stones. The finished surface of the packing should be reasonably uniform and will be free from loose stones.

2.3 TEST OF STONE

- i) Soundness: The rock fragments shall be tested for its soundness as per I.S. 2386.
- ii) Abrasion: The rock fragments shall be tested for its abrasion as per IS-2386.
- iii) Water absorption test – As per IS 2386.

Quality of stone should confirm following standards:

- | | | |
|---------------------|---|-------------|
| 1. Soundness | - | Maximum 12% |
| 2. Abrasion | - | Maximum 40% |
| 3. Water absorption | - | Maximum 5% |

2.4. THICKNESS OF SURFACE PACKING

In no case the minimum thickness of hand placed surface packing shall be less than 30cm.

2.5. PLACEMENT OF STONE

The surface packing shall be hand placed which should consist of size 0.028 cum and above laid on edge starting from the bottom. The stone shall be laid compactly with staggered joints and so matched and inter locked that they shall be keyed together with minimum of joint space and then rock fragment and spal shall be driven by a hammer into interstices to wedge the rip rap in place.

The hand placed surface packing shall perfectly be laid in one course and the layer thickness is same as of the stone size. If two layers of stones are used the header stone extending through both layers and spaced at about 1.5m shall be used. The top layer stone shall be larger.

2.6. MEASUREMENT & PAYMENT

The measurement of dumping of stone shall be of level section.

3.0 EARTH WORK EXCAVATION / STONE WORKS

3.1. The contractors shall execute the work to the lines, grade and section as per drawing and in accordance with the specification and relevant clause / clauses of relevant Indian Standard codes unless otherwise specified. Construction of all approaches and haul roads coffer dam and de-watering if required and their maintenance shall be the responsibility of the contractor. The contractor shall ensure good workmanship and quality and shall ensure besides other aspects fulfillment of the following specific requirements to the satisfaction of the Engineer- In –Charge.

The work is to be executed as per design, drawing and specifications and direction of the Engineer-in-Charge.

3.2 PLACEMENT (EARTHWORK)

- i) Choice of equipment shall be governed by the site conditions, nature of job / space etc. and it shall be got approved from the Engineer- In – Charge.
- ii) Earth work beyond the required design section will not be paid for
- iii) Earth work quantity will be assessed from cross section taken at suitable intervals as decided by the Engineer-in-charge. Initial levels will be taken and recorded in level book with reference to the bench mark which should be kept at site till finalization of the work. The initial of the cross section papers should be signed by both the parties before starting the work. Final level is to be taken and recorded in level book after completion of the work in all respect and the contractor is to sign the final levels taken in level book as acceptance of final measurement.
- iv) Payment for earth work in cutting section measurement will be made without deducting any percent towards settlement allowance.
- v) Payment for earth work in filling section measurement will be made deducting 12.5% towards settlement allowance

4.0 RIP RAP & LAUNCHING APRON

4.1. GENERAL

The dumping & packing shall consist of boulders and blasted rock tracement. It shall be dumped mechanically of hand blaced rip rap may be hand placed or dumped by machines. The thickness of the rip rap shall be measured normal to the slope of the embankment.

4.2. QUALITY OF RIP RAP STONE

- i) Rip Rap and spall material shall be controlled in quarry for quality, gradation and size.
- ii) Rip Rap and spalls obtained from rock excavation shall be checked for quality, gradation and size before lifting.
- iii) The stone for Rip Rap should be dense, resistant to abrasion and is free from cracks, seams, shale partings, conglomerate bonds and other defects that would tend to increase their susceptibility to destruction by the action of water and weather.
- iv) The stone shall be closely packed and the interstices shall filled and will be with moorum. The finished surface of Rip Rap should be reasonably uniform free from loose stones.

4.3. Test for Stone

- i) Soundness - The rock fragments shall be tested for its soundness as per IS-2386-Part-II.
- ii) Abrasion - The rock fragments shall be tested for its abrasion as per IS-2386-Part IV.
- iii) Water absorption test – As per IS-2386.
- iv) Quality of stone should confirm following standards
 - 1 Soundness Maximum 12 %
 - 2. Abrasion Maximum 40 %
 - 3. Water absorption Maximum 5 %

4.4. THICKNESS OF RIP RAP / LAUNCHING APRRON

In no case the minimum thickness of hand placed Rip Rap-Launching aprron and dumped rip rap shall be less than 30 cm and 45cm respectively.

4.5. PLACEMENT OF RIP RAP / LAUNCHING APRRON

(i) Hand placed Rip Rap

The hand placed rip rap stone shall consists of size 0.02 cum and above size and laid on edge starting from the bottom. The stone shall be laid compactly with staggered joints and so matched & interlocked that, they shall be keyed together with minimum of joint space. Then rock fragments and spalls shall be driven by a hammer into interstices to wedge the rip rap in place.

The hand placed rip rap shall preferably be laid in one course and the layer thickness is same at the stone size. If two layers of stones are used the header stone extending through both layer and spaced at about 1.5m. shall be used. In two layers placing the tops layer stones shall be larger.

(ii) DUMPED RIP RAP / Launching Aprron

The dumped rip rap/ Launching aprron shall consist of boulders or blasted rock fragments of 30 cm and above size. It shall be dumped manually or mechanically.

4.6. MEASUREMENT AND PAYMENT

Thickness of riprap shall be measured at a number of locations and the payment shall be made towards the average thickness arrived out of the measurements. Payment for rip-rap shall be made at the applicable unit price per cubic meter in the bill of quantities for rip rap which unit price shall include the cost of procuring or finishing, hauling and placing the rock for rip rap including the rock spalls.

5. GRADED FILTER.

Provision of a suitably designed filter is necessary under the slope pitching to prevent the escape of under flying embankment through the voids of pitching when subjected to the attack of flowing water the wave action etc. In order to achieve this requirement, the filter may be provided in one or more layers satisfying the following criteria.

$$D_{15} (\text{Filter})/ D_{85} (\text{Base}) < 5$$

$$D < D_{15} (\text{Filter})/ D_{15} (\text{Base}) < 20$$

$$D < D_{50} (\text{Filter})/ D_{50} (\text{Base}) < 25$$

Note:

1. Filter design may not be required if the slope consists of CH soils with liquid limit greater than 30, resistant to surface erosion. In this case, if a layer of material is used as bedding for pitching, it shall be well graded and its D85 size shall be at least twice the maximum void size pitching.
2. If more than one filter layer is required, the same requirement as above shall be allowed for each layers. The finer filter shall be considered as base material for selection of courser filter.

6.1 SETTING OUT OF WORK

- 6.1.1 Temporary bench marks shall be fixed at every 0.5Km interval connecting permanent bench marks available near major structure site. The Contractor shall establish additional reference Bench marks as may be needed at his own cost for facilitation the setting out and taking levels for measurement of work, with the approval of the Engineer-in-charge. The bench Mark shall be marked on a concrete pillar 30cm. (a) x 30cm (b) x 75cm. (d) which shall be mark shall be embedded 55 cm into firm ground and projecting 20cm above the ground. The Bench Mark pillar shall constructed in plain cement concrete of M-10. the pillar shall be well protected from being disturbed. The RL of bench mark shall be conspicuously carved and painted on the pillar.
- 6.1.2 Before starting any work and during execution (if required), the contractor shall erect reference Bench Marks, reference lines and check profiles at convenient locations as per the direction of the Engineer-in-charge. The center line of the canal and the reference line for all alignments for demarcation purpose shall be laid by dug-belling on the ground.
- 6.1.3. The check profiles shall be located 15meter apart or longer as directed by the Engineer-in-charge to serve as a guide for execution on all slops and steps to the elevations. All important levels and all reference points with respect to bench marks and reference lines shall be fixed and co-related by the contractor as per directions of the Engineer-in-Charges.

6.2 CLEARING AND GRUBBING

- 6.2.1 The area described or shown on the relevant site plan shall be cleared of all obstructions, loose stones and of all kinds of rubbish. All brushwood shall be cleared and the roots grubbed up. No trees shall be cut down and removed without the instructions of the Engineer-in-Charge.

The products of the clearing shall be stacked in such place and manner as may be ordered by the Engineer-in-charge and the ground shall be left in a perfectly clean conditions. All products of the clearing shall be the property of Government and shall be disposed off as per the directions of Engineer-in-charge. All holes of hollows, whether originally existing or produced by digging up roots shall be carefully filled up with earth and leveled off as directed.

6.3 DAMAGES BY MONSOON

Damaged due to rain or flood or either in cutting or in banks shall have to be made good by the Contractor till the work is handed over to the department. The responsibility for desilting and making good to the damages rests with the Contractor. No extra cost is payable for such operations and the Contractor shall, therefore, have to take all necessary actions to protect the work during the construction period.

6.4 PROCEDURE FOR MEASUREMENT

Before commencement of work, initial levels to indicate existing ground levels shall be taken at 30m. intervals longitudinally along the embankment. The level points transversely along the cross sections shall be maximum at 5m. intervals in flat ground and 1.5-2 M in undulating terrain. The cross sections shall extended beyond the limits of work to a suitable distance and minimum 5M. beyond the toe lines of slopes on both the sides. The intervals stipulated shall be made closer depending on the topography or any stipulated made by the Engineer-in-Charge.

All initial levels shall be recorded in ink in the level books issued by the Engineer-in-Charge and shall be signed by the Junior Engineer/Assistant Engineer when he records the levels. The Assistant Engineers and Superintending Engineer shall exercise checks strictly in accordance with the codal provisions.

Actual construction work shall not be allowed to start unless the above formalities are fulfilled. If the work is awarded to any agency, the level shall be recorded in the presence of the contractor or his authorized agent. The contractor or his authorized agent shall sign each page of the level book/field book in taken of acceptance. These cross sections shall form the basis of all future measurements and payments. Each dimension shall be measured to the nearest 0.01m. Areas shall be computed to nearest 0.01sqm. Volume shall be computed to nearest 0.01 cum.

7.1 CONCRETE STRUCTURES

7.1.1 Concrete in Structures

- a. Concrete in structure shall confirm to the requirements of paragraph 7.2.1 to 7.2.22.
- b. Measurement and payment for concrete in structure shall be made as prescribed in paragraphs 7.2.21 and 7.2.22.

7.1.2 Construction of Structures

The item of schedules for concrete in the structures includes all cast-in-place concrete in the structure.

Cast-in-place concrete for the structures shall confirm to the requirement of section 7.2. Pipe and fittings miscellaneous metal work, mechanical and electrical equipment and other items forming a part of the structures are provided for elsewhere in these specification.

The structure will be located on the various points along the canal as shown on the drawings, or as otherwise designated.

The structure shall be built to the lines, grades and dimensions shown on the drawings. The dimensions of each structure as shown on the drawings will be subject to such modifications as may be found necessary by the Engineer-in-Charge to adopt the structure to the conditions disclosed by the excavation or to meet other conditions. Where the thickness of any portion of a concrete structure is variable it shall vary uniformly between the dimensions shown.

Where necessary, as determined by the Engineer-in-Charge, the Contractor shall be furnished additional detailed drawings of the structures to be constructed. The Contractor will not be entitled to any additional allowances above the price bid in the bill of quantities by reason of the dimensions fixed by the Engineer-in-Charge or by reasons of any modifications or extension of a minor character to adopt a structure at site as determined by the Engineer-in-Charge.

The cost of furnishing all materials and performing all work for installing timber, metal and other accessories for which specific price are not provided into the schedule, shall be included in the applicable prices bid in the schedule, shall be included in the applicable prices bid in the schedule for the work to which such items are appurtenant.

7.2 General Concrete Requirements

7.2.1 Composition

(A) General

Concrete shall be composed of cement, sand, coarse aggregate, water admixtures (if any) as specified and all well mixed in batching plant or by concrete mixture by weight and brought to the proper consistency Batching plant shall confirm to I.S. code No. 4925-1968.

For works in which water tightness is required the specification in I.S. 3370-1965 paragraph 1 to 10 shall be applied.

(B) Mixing

Concrete shall be mixed in a mechanical mixer and shall be as dense as possible, plastic enough to consolidate well and stiff enough to stay in place on the slopes.

Mixing shall be continued until there is a uniform mixing of the materials and the concrete uniform in colour and consistency. The time of mixing shall be as shown in table I of 1.5 457-1957 reproduced below.

Capacity of Mixer	Minimum Time of Mixing	
	Natural Aggregates	Manufactured Aggregates
All Mixer	2 minutes	2.5 minutes

(C) Nominal Maximum Size of Aggregates

Fore sizes of aggregates IS 383-1970 shall apply. The coarse aggregate to be used in concrete shall be as large as practicable consistent with required strength, spacing of reinforcement and embedded items and placement thickness. The size of the coarse aggregates to be used will be determined by the Engineer-in-Charge and may vary incrementally according to the conditions encountered in each concrete placement Nominal maximum size of aggregate for concrete in structures and canal lining shall be as indicated in the relevant drawing appended to contract documents. Smaller coarse aggregate than specified shall be used where in the opinion of the Engineer-in-Charge that proper placement of concrete is impracticable with the size of the aggregate specified in the drawings.

(D) Mix Proportions

The proportions of various ingredients to be used in the concrete for different items of the work are given in the bill of quantities. In proportioning concrete; the quantity of both cement and aggregate should be determined by weight. Water shall be either measured by volume in calibrate tanks or weighed. Batching plant shall confirm I.S. 4925-1968. (Indian Standard Specification for batching and mixing plant). All measuring equipment shall be maintained in a clean serviceable condition and their accuracy periodically checked. Adjustment shall be made as directed to obtain concrete having suitable workability impermeability, density, strength and durability without the use of excessive cement. The acceptance or rejection of concrete shall be as per the acceptance criteria laid down in clause of I.S. 456-2000.

The net water cement ratio exclusive of water observed by the aggregate shall be sufficiently low to provide adequate durability in concrete. The water cement ratio or various grades of concrete shall be as determined and ordered by the Engineer-in - Charge.

Admixtures of Pozzolanas, if ordered, shall conform to the requirements specified in I.S. 9103-1979 (Indian standard specification for admixtures of concrete).

* Any difference in actual cement level with estimated cement level as above shall not lead to any financial claim or recovery.

(E) Consistencies

i) The slump of concrete at the placement shall be as follows :

Sl. No.	PLACE CONDITIONS	Degree of workability	Value of workability
1.	Concreting of the light reinforced sections without vibration or heavily reinforced section with vibrations.	Medium	25mm to 75mm slump for 20mm aggregate
2.	Concreting of heavily reinforced sections without vibration	High	75mm to 125mm slump for 20mm aggregate

ii) For plain concrete work, slump requirements mentioned in item I above are applicable.

iii) Lining with slip form machine 60 to 70mm slump and 50mm for concrete paver finisher. If the specified slump is exceeded at the placement, the concrete is unacceptable. The Engineer-in-Charge reserve the right to require lesser slump whenever concrete of such lesser slump can be consolidated readily into place by means of the vibration specified by the Engineer-in-Charge. The use of an equipment which will not readily handle and place concrete of the specified slump will not be permitted.

To maintain concrete at proper consistency, the amount of water and sand batched for concrete shall be adjusted to compensate for any variation in the moisture content or grading of the aggregates as they enter the mixer. Addition of water to compensate for stiffening of the concrete after mixing but before placing will not be permitted. Uniformity in concrete consistency from batch to batch will be required.

(F) The Engineer may allow nominal mix concrete and volumetric proportioning batching as well, if the quantity of concrete involved in a particular work is very small.

7.2.2 Concrete Quality Control Measures and Concrete Quality Assurance Test Programme

(A) Concrete Quality Control Measures

- a. The Contractor shall be responsible for providing quality concrete to ensure compliance of the contract requirements.
- b. Making and curing concrete test specimens in the field will conform to I.S. 516-1959.
- c. Capping cylindrical concrete specimens will conform to I.S. 516-1959.
- d. Comprehensive strength of concrete specimens will conform to I.S. 516-1959.

(A) Sampling Procedure and Frequency at A random sampling procedure shall be adopted to ensure that each concrete batch has a reasonable chance of being tested, i.e, the sampling should be spread over the entire period of concreting and should cover all mixing units.

b. Frequency

The minimum frequency sampling of concrete of each grade shall be in accordance with the following

Quantity of concrete in cum	Number of samples
1 to 5	1
6 to 15	2
16 to 30	3
31 to 50	4
51 to above	4 plus one additional sample for each additional 50 cum or part thereof.

Note : At least one sample shall be taken during each shift.

(C) Test Facilities

The Contractor shall furnish free of cost samples of all ingredients of concrete for testing. He should also supply free of cost, the samples of all the ingredients of concrete used in the work for the test to be conducted by the Engineer-in-Charge or any officer nominated by him. All testing of concrete including routine tests shall be carried out at the cost of the contractor by the Quality Control Division on representative samples taken of the site of laying concrete in accordance with relevant clauses of IS codes.

(D) Contractor or Furnish Drawings and Data

No less than 30 days prior to start of installation of the Contractor's plant and equipment for processing, handling transporting, storing and proportioning concrete, the Concrete, the Contractor shall submit drawings and data shall provide a description in sufficient details for an adequate review of the facilities and equipment the Contractor proposes to provide at site of work.

7.2.3 Cement

(A) General

Cement shall conform to clause 4 of I.S. 456-1978 for the purpose of specifications. Cement used shall be any of the following with the prior approval of the Engineer-in-Charge.

- a. Ordinary or low heat Portland cement conforming to I.S. 269-1976.
- b. Rapid hardening Portland cement conforming to I.S. 8041-1978.
- c. Portland slag cement conforming to I.S. 455-1976.
- d. Portland pozzolana cement conforming to I.S. 8112-1976.
- e. High strength ordinary Portland cement conforming to I.S. 8112-1976.
- f. Hydrophobic cement conforming to I.S. 8043 - 1918.

The provisions of this paragraph apply to cement for use in cast-in-place concrete required under these specifications Portland cement required for items such as concrete pipes, precast concrete structural members and other precast concrete products, for grout and mortar and for other items provided for under appropriate paragraph of these specifications covering items for which such Portland cement is required.

The Contractor shall make his own arrangements for the procurement of cement to required specification required for the works. Transpiration from the place of supplying to the batching plant shall be in weather tight rail cars, trucks, conveyors and other means which will protect the cement completely from exposure to moisture. Immediately upon receipt at the job site, bulk cement shall be stored in dry, weather tight. Properly ventilated bins until the cement is batched. The bins shall be emptied and cleaned by the Contractor when so directed by the Engineer-in-Charge. However the intervals between required cleaning will normally be not less than 6 months. Each shipment of bagged cement shall be stored separately so that it may readily be distinguished from other shipment and shall be stored in a dry enclosed area protected from moisture. storage of materials shall be as described in I.S. 4082-1977 (I.S. recommendation on the stacking and storage of construction materials at site). To prevent under aging of bagged cement after delivery, the Contractor shall use bags of cement in the chronological order in which they were delivered to the job site. All storage facilities shall be subject to approval of the Engineer-in-Charge.

7.2.3.1 Test Specimen :

Three test specimens shall be made from each sample for testing at 28 days. Additional cubes may be required for various purposes such as to determine the strength of concrete at 7 days or at the time of striking the form work, or to determine the duration of curing, or to check the testing error. Additional cubes may also be required for testing cubes cured by accelerated methods as described in I.S. 9013-1978. The specimen shall be tested as described in I.S. : 516-1959 !

Test Strength Sample :

The test strength of sample shall be the average of strength of three specimens. The individual variation should not be more than ± 15% of the average.

7.2.3.2 Standard Deviation :

Standard Deviation Based on Test Results

- (a) Number of test result. The total number of test results required to constitute an acceptable record for calculation of standard deviation shall be not less than 30. Attempts should be made to obtain the 30 test results, as possible , when a mix is use for the first time.
- (b) Standard deviation to be brought up to date – The calculation of the standard deviation shall be brought up to date after every change of mix design and at least once a month.

Determination of Standard Deviation :

- (a) Concrete of each grade shall be analysed separately to determine its standard deviation.
- (b) The standard deviation of concrete of given grade shall be calculated using the following formula from the results of individual tests of concrete of that grade obtained.

Esteemed Standard Deviation $s = \sqrt{\frac{\sum \Delta^2}{n-1}}$

Where

Δ = Deviation of the individual test strength from the average strength of n samples, and

n = Number of sample test result.

- (c) When significant changes are made in the production of concrete batch (for example changes in the materials used, mix design, equipment or technical control). the standard deviation value shall be separately calculated for such batches of concrete.

7.2.3.3 Assumed Standard Deviation :

Where sufficient test results for particular grade of concrete are not available, the value of standard deviation given in table 6 may be assumed.

Method of making, curing and determining compressive strength of accelerated-cured concrete test specimen.

Method of test for strength of concrete.

IS : 456-1978

TABLE 6 ASSUMED STANDARD DEVIATION
(Clause 14.5.3)

Grade of Concrete	Assumed Standard Deviation N/mm ²
M 10	2.3
M 15	3.5
M 20	4.6
M 25	5.3
M 30	6.0
M 35	6.3
M 40	6.6

However, when adequate past records for a similar grade exist and justify to the designer a value of standard deviation different from that shown in Table 6, it shall be permissible to use that value.

7.2.3.4 ACCEPTANCE CRITERIA

The Concrete shall be deemed to comply with the strength requirements if :

- a) Every sample has a test strength not less than the characteristic value : or
- b) the strength of one or more samples through less than the characteristic value, is in each case not less than the greater of :
 1. The characteristic strength minus 1.35 times the standard deviations; and
 2. 0.80 times the characteristic strength :

and the average strength of all the samples is not less than the characteristic strength minus $[1.65 - \frac{1.65}{\sqrt{\text{number of samples}}}]$ x times the standard deviation.

the concrete shall not to comply with the strength requirements if :

- a) the strength of any sample is less than the greater of :
 1. the characteristic of strength minus 1.35 times the standard deviations : and
 2. 0.80 times the characteristic strength

7.2.3.5 INSPECTION AND TESTING OF STRUCTURES

Inspection – Immediately after stripping the form work, all concrete shall be carefully inspected and any defective work or small defects either removed or made good before concrete has thoroughly hardened.

Incase of doubt regarding the grade of concrete used, either due to poor workmanship or based on results of cube strength test, compressive strength of concrete on the basis of 16.3 and /or load test may be carried out.

7.2.3.6 Core test

The points from which cores are to be taken and the number of cores required shall be at the discretion of the Engineer-in-Charge and shall be representative of the whole of concrete concerned. In no case, however, shall fewer than three cores be tested.

Cores shall be prepared and tested as described in IS : 516-1959 :

Concrete in the member represented by a core test shall be considered acceptable if the average equivalent cube strength of the cores is equal.

Method of strength for strength of concrete.

“The cement level of various grades of controlled concrete shall be considered as under for the purpose of working out the rates to be quoted in the schedule of quantities.

TABLE-A

Sl. No.	Grade of	Cement level required with coarse aggregate of maximum size (MSA)	
		40mm & downgraded	20mm & downgraded
1	M – 10	207 Kg/M ³	221 Kg/ M ³
2	M – 15	259 Kg/M ³	288 Kg/M ³
3	M – 20	329 Kg/M ³	366 Kg/M ³

Actual cement level required for the aggregates to be used shall be determined by laboratory tests. The mix shall be designed to produce the grade of cement having the required workability and characteristic strength stipulated in the following table.

TABLE-B

Sl. No.	Grade of	Compressive test strength in N/mm ² on 150mm cube conducted in accordance with IS : 456 – 1978	
		Minimum at 7 days	Minimum at 28 days
1	M – 10	7	10
2	M – 15	10	15
3	M – 20	13.5	20

In case of actual cement use being less than the cement level specified in Table –A, the Department shall deduct the cost of cement from the bill of Contractor at the prevailing Pre-determined price of cement for short consumption of cement. In case of actual cement used being more than that specified in Table-A, the Contractor shall be paid for extra cement used at the pre-determined price of cement. design Mix. and actual cement level required shall be communicated to the Contractor from time to time in writing by the Engineer-in-Charge.

(B) Acceptance of Cement

Portland cement shall be supplied by the Contractor according to clause 10.1 of I.S. 269-1976.

(C) Acceptance of Pozzillona

Pozzolana added to the concrete as an admixture shall be sampled and tested as per I.S. 9103-19789

(D) Recovery of Cost of Cement in Wasted Concrete etc.

The cost of cement used in wasted concrete, in replacement of damaged or defective concrete, in extra concrete required as a result of over excavation, and in concrete placed by the Contractor in excavations intentionally performed to facilitate the contractor's operations shall be borne by the Contractor himself. No extra payment shall be made to the contractor for such additional quantity.

7.2.4 Admixtures

The Contractor shall use Air entraining admixtures as directed by the Engineer-in-Charge.

Admixtures shall be of uniform consistency and quality shall be maintained at the job site at uniform strength of solution. Admixtures shall be batched separately in liquid form in containers capable of measuring at one time the full quantity of each admixture required for each batch. Chemical admixtures which harm the quality and strength of concrete shall not be used in concrete. Admixtures to be used in concrete shall confirm to I.S. 9103-1979 Indian standard Specifications for admixtures for concrete.

7.2.5 Water

the water used "in making and curing of concrete, mortar and grout shall be free from objectionable quantities of silt. organic matter. injurious amounts of oils. acids, salts and other impurities etc., as per I.S. specification No. 456-2000.

The Engineer-in-Charge will determine whether or not such quantities of impurities are objectionable.

Such determination will unusually be made by comparison of compressive strength, water requirement time of set and other properties of concrete made with distilled or very clean water and concrete made with the water proposed for use. Permissible

limits for solids when tested in accordance with I.S. 3025-1964 shall be as tabulated below.

Permissible limits for solids in Water

1	Organic	Maximum permissible limit 200 mg/liter
2	Inorganic	300 mg/liter
3	Sulphate (as SO ₄)	500 mg/liter
4.	Chlorides as (CL)	200mg/liter for plain concrete work and 100 mg/liter for RCC work
5.	Suspended matter	2000 mg/liter

7.2.6 Sand (Fine Aggregate)

(A) General

The term Sand is used to designate aggregate most of which passes 4.75 millimeter I.S. Sieve and contains only so much coarser materials as permitted in clause 4. of I.S. 383-1970. Sand shall be predominantly natural sand which may be supplemented with crushed sand to make up deficiencies in the natural sand gratings.

All sand shall be furnished by the Contractor from any approved sources specified in the contract. Sand as delivered to the batching plant, shall have a uniform and stable moisture content determination of moisture content shall be made as frequently as possible, the frequency for a given job being determined by the Engineer-in-Charge according to weather conditions (I.S.456-1978).

(B) Quality

The sand shall be consist of clean, dense durable uncoated rock fragments as per I.S. 383-1979.

Sand may be rejected if it fails to meet any of the following quality requirements.

(a) Organic Impurities in Sand

Colour no darker than the specified standard in clause 6.2.2 of I.S. 2386 (Part-II) 1963 (Indian standard method of test for aggregates for concrete, Part-II estimation of deleterious materials and organic impurities).

(b) Sodium Sulphate Test for Soundness

The sand to be used shall pass a Sodium or magnesium Sulphate accelerated test as specified in I.S. 2386 (Part-V) 1963 for limiting loss on weight.

(c) Specific Gravity

The sand to be used shall have minimum specific gravity of 2.6

(d) Deleterious Substances

The amount of deleterious substances in sand shall not exceed the maximum permissible limits prescribed in table 1 clause 3.2.1. of I.S. 383-1970 (Indian Standard Specification of coarse and fine aggregates form natural source for concrete) when tested in accordance with I.S. 2386-1963.

(C) Grading

The sand as batched shall be well graded and when tested by means of standard sieves shall confirm to the limits given in table 4 of I.S. 383-1970 and shall be described as fine aggregates. grading zones I,II,III and IV. Sand complying with the requirements of any of the four grading zone is suitable for concrete. But, sand confirming to the requirements of grading zone-IV shall not be used for reinforced cement concrete work.

7.2.7 Coarse Aggregate

(A) General

For the purposes of the specifications, the term "Coarse Aggregate" designate clean will graded aggregate must of which is retained on 4.75mm I.S. Sieve and containing only so much finer material as permitted for various types described under clause 2.2 of I.S. 383-1970. coarse Aggregate for concrete shall consist of uncrushed stone. or crushed stone and partially uncrushed and crushed stone.

Coarse Aggregate for concrete shall be furnished by the Contractor from the approved quarries specified in the contract documents. The Contractor shall, unless otherwise specified in the tender notice and subsequently on this basis in the contract, be responsible for payment of seignorages, quarry fees etc. on all materials.

Coarse Aggregate as delivered to the batching plant shall generally have uniform and stable moisture content. In case of variations clause of I.S. 456-2000 shall govern during batching.

(B) Quality

The coarse aggregate shall consist of naturally occurring (crushed or uncrushed) stones. and shall be hard, strong durable, clear and free from veins and adherent coating and free from injurious amounts of disintegrated pieces. alkali, vegetable matter and other deleterious materials. Coarse aggregate will be rejected if it fails to meet any of the following requirements.

a) Los Angeles Abrasion Test

The abrasion value of Aggregates when tested in accordance with the method specified in I.S. 2386 (Part-IV) using Los Angeles machine shall not exceed 30% for Aggregates to be in concrete for wearing surface and 50% for aggregate to be used in other concrete.

b) Aggregate crushing strength test

Aggregate crushing value, when determined in accordance with I.S. 2386 (Part-IV) 1963 shall not exceed 45% for aggregate used for concrete other than wearing surface and 30% for wearing surfaces. As an alternative to the crushing strength test, aggregate impact value shall be found out with the method specified in I.S. 2386 (Part-IV) 1963. The aggregate impact value shall not exceed 45% by weight for aggregates used for concrete for other than wearing surface 30% by weight for concrete for wearing surfaces such as runways roads and pavements.

c) Soundness Test

The coarse aggregate to be used for all concrete works shall pass a Sodium or Magnesium Sulphate accelerated soundness test specified in LS 2386 (Part-V) 1963 and the average loss of weight after 5 (five) cycles shall not exceed the limits specified in clause 3.6 of I.S. 383-1970.

d) Specific Gravity

The coarse aggregate shall have specific gravity of 2.60 minimum.

e) Deleterious Material

The maximum quantity of deleterious materials in coarse aggregates shall not exceed the limits specific in Table I of I.S. 383-1970 when tested in accordance with I.S. 2386-1963.

(C) Separation

The coarse aggregate shall be separated into nominal sizes during production of the aggregate. Just prior to batching, the coarse aggregate shall be rehashed by pressure spray and finished screened on multi deck vibration screen capable of simultaneously

removing undersized and oversized aggregate from each of the nominal aggregates entering the batches occur during intermittent batching then a dewatering screen will be required after the finish screens to remove the excess free moisture. Finish screens shall be mounted over the vibration of the screens will not be transmitted to the batching bins or scales and will not affect the accuracy of the weighing equipment in any other manner.

The method and rate of feed for finish screening shall be such that the screens will not be overloaded and will result in a finished product which meets the grading requirements of these specifications.

Coarse aggregate shall be fed to the finish screens in a combination of alternations of nominal sizes which will not cause noticeable accumulation of poorly graded coarse aggregates in any bin. The finish screened aggregate shall pass directly to the individual batching bin in such a manner as to minimize breakage. Below 2.36 mm materials passing through the finish screens shall be wasted unless it is routed back through a sand classifier in a manner which causes uniform blending with the natural sand being processed. Water from finish screening shall be drained in such a manner as to prevent aggregate wash water from entering the batching bins and weighing hoppers. Washing and finish screening requirements shall be subject to approval by the Engineer-in-Charge.

Coarse aggregate for concrete shall be separated into various nominal maximum sizes specified in the relevant paragraph. Separation of the coarse aggregate into the specified sizes after finish screening shall conform to the grading requirements specified in Table-2 of I.S. 383-1970, when tested in accordance with I.S. 2386 (Part-I) 1963 (Method of test for aggregates for concrete, part-I) practice size and shape.

Coarse aggregate for mass concrete may be separated as previously herein specified. Separation of the coarse aggregate into the various sizes shall be such that when tested in accordance with I.S. 2386 shall conform to the requirements specified in Table -3 of I.S. 383-1970.

Sieves used in grading tests shall be standard mesh sieves conforming to I.S. 460 (Part-I) 1978 (Specification for test sieves Part-I wire cloth test sieves).

7.2.8. Production of Sand and Coarse Aggregate

(A) General

Sand and coarse aggregate for concrete and sand for mortar and grout. Shall be obtained by the Contractor from the approved sources shown in the contract documents. The approval of deposits by the Engineer-in-Charge shall not be construed as consisting the approval of all or any specified materials taken from the deposits, and the Contractor will be responsible for the specified quality for all such materials used in the work.

Tests performed on samples of sand and coarse aggregate obtained from the approved sources mentioned in the contract documents indicates that they are generally suitable. Well in advance of their usage on the works, the Contractor shall have his own testing of materials and satisfy himself that they conform to the specification mentioned herein for use in the works.

No separate payment will be made for such tests. If sand and coarse aggregate are to be obtained from a deposit not previously tested and approved by the Engineer-in-Charge, the Contractor shall submit representative samples for pre-construction test and approval, not less than 60 days before the sand and coarse aggregates are required for use. Each sample shall approximately consist of 100kg of material. In addition to pre-construction test. the approval of deposits, the Engineer-in-Charge may test the aggregates for their suitability during their processing. The Contractor shall provide such facilities as may be necessary for procuring representative samples free of cost at the aggregate processing plant and at the batch plant. Final compliance

of aggregates will be based on the samples taken from the batch plant or mixing platform.

But use and development of any such deposit shall be subject to the approval by the Engineer-in-Charge. Any royalties (seigniorage or other charges) required for materials taken from deposits either owned by the State Government or controlled by the Department of Mines and Geology, Government of India or owned by any other person shall be paid by the Contractor.

(B) Developing aggregate Deposits

If the deposit is owned by the State Government and controlled by the department of Mines and Geology, the portion of the deposit used shall be located and operated so as not to detract the usefulness of the deposit or any other property of the Government and so as to preserve in so far as practicable, the future usefulness or value of the deposit. The Contractor shall carefully clear the area of deposit, from which the aggregates are to be produced, of trees, root, bush sod, solid, unsuitable sand and gravel and other objectionable matter. Materials including stripping, removed from deposits owned by the Government and controlled by the Director of Mines and Geology, Government of India and not used in the work covered by these specifications shall be disposed off as directed.

Due to the overall construction programme it is quite likely that more than one contractor may elect to use one of the sources named in the contract document. The Contractor shall be responsible for coordinating his work such that it does not interfere with the operations of other contractor who are also using any given source.

(C) Processing Raw materials

Processing of raw materials shall include screening and washing as necessary to produce sand and coarse aggregate conforming to the requirements of paragraphs 7.2.6 and 7.2.7 Processing of aggregates produced from any source owned by the State Government and controlled by the Department of Mines and Geology shall be done at an approved site. Water used for washing aggregate shall be free from objectionable quantities of salt, organic matter and other impurities. Oversize metal may be crushed to correct aggregate particle size, and excess material in individual coarse aggregate size fractions may be crushed to give the largest practical yield of usable concrete aggregate.

Suitable type of crushers shall be used with the prior approval of the Engineer-in-Charge for producing coarse aggregates. Crusher fines produced in the manufacture of coarse aggregates may be used in and Crushed stone, sand crushed gravel and crusher fines if used shall be predominantly cubical in shape and shall be blended uniformly with natural sand by routing them together through sand classifier. Crusher coarse aggregate shall be blended uniformly with natural coarse aggregate by routing both together through the classifying screens.

In the process of developing and producing aggregates from approved sources for work under these specifications, the provisions of environmental quality protection shall apply.

(D) Cost

This shall be included in the applicable prices bid in the schedule for concrete, filter and road works in which the aggregates are used, which prices shall include the cost of stripping producing and transporting and storing materials. The Contractor shall not be entitled to any additional compensation for materials wasted from a deposit, including crushed fines, excess materials of any of the sizes into which the aggregates are required to be separated by the Contractor, and materials which have been discarded by the reasons of being above the maximum sizes specified for use for any other reasons.

7.2.9 Batching

(A) General

The Contractor shall notify the Engineer-in-Charge 24 hours before batching concrete. Unless inspection is waived in each case, batching shall be performed only in the presence of an Engineer authorised by the Engineer-in-Charge.

The Contractor shall provide, maintain and operate the equipment as required to accurately determine and control the prescribed amounts of the various materials entering the concrete mixers. The quantities of cement sand and each size of coarse aggregate entering each batch of concrete shall be determined by the individual volume measurement or by weight as the case may be cement has to be weighed/ measured in volume separately from the aggregates. Sand and coarse aggregate may be weighed with separate scales and hoppers.

The grading of aggregates shall be controlled by obtaining the coarse aggregates in different sizes and blending them in the right proportions, the different size being stacked in separate stock piles, the material shall be stock piled a day before use. The grading of coarse and fine aggregates will be checked and frequently as directed by the Engineer-in-Charge. Water shall be added by weight or measured by volume in calibrated tanks. The amount of added water shall be adjusted to compensate for any observed variation in the moisture contents, Determinations of moisture content in the aggregate shall be in accordance with I.S. 2386 (part -III) 1963 (Indian Standard method of test for aggregate for concrete Part - III). The amount of surface water carried by aggregates will be determined in accordance with Table - 4 of I.S. 456-1978.

Cement and aggregates are hauled from a central hatching plant to the mixture each batch shall be protected during transit to prevent loss and to limit the prehydration of cement. Separate compartments with suitable covers shall be provided to protect the cements or they shall be completely enfolded in and covered by the aggregates to prevent wind loss. If cement are enfolded in moist aggregates or otherwise expressed to moisture and delays occur between hatching and mixing, extra cement shall be added to each batch. The extent of such extra cement will be so as to attain the required quality. No separate payment for this addition of extra cement shall be made.

7.2.10. Mixing

A) General

The concrete ingredients shall be thoroughly mixed in mechanical mixers designed to positively insure uniform distribution of all the component materials through out the concrete at the end of the mixing period. Mixing shall be done as per clause of clause 9 of I.S. 456-1978. The mixer should comply with I.S. 1791-1985 (I.S. Specifications for batch type concrete mixers).

The concrete as discharged from the mixer shall be uniform in composition and consistency from batch to batch. Workability shall be checked at frequent intervals as per I.S. 1199-1959. Mixer shall be examined regularly by the Engineer-in-Charge or his authorised Engineer for changes in condition due to accumulation hardened concrete or mortar or to wear of blades. The mixing shall be continued until there is a uniform in colour and consistency and to the satisfaction of the Engineer-in-Charge. If there is aggregation after unloading the concrete should be remixed. After mixer that any time produces unsatisfactory mix, shall not be used until repaired. If repair attempts are unsuccessful, a defective mixer shall be replaced batch capacity shall be at least 10% of but not in excess of the date capacity of the mixer unless otherwise authorised by the Engineer.

B. CENTRAL MIXERS

Water shall be admitted prior to and during charging of the mixer with all other concrete ingredients. After all materials are in the mixer each batch shall be mixed for not less than the time specified by the Engineer. The minimum mixing time shall be 2 minutes. The minimum mixing time specified is based on average mixer performance. The Engineer will adjust the minimum mixing time as required by the observations of the mix delivered from mixer. Excessive over mixing which require addition of water to maintain the required concrete consistency shall be not be permitted. In addition to I.S. 1791-1985, the mixing equipment shall conform to the following further requirements

- a. Plant configuration shall be such that the mixing of each mixer can be observed from a safe location which can be easily reached from the control station. Provisions shall be made so that the operator can observe the concrete in the receiving hopper or bucket as it is being dumped from the mixer.
- b. Each mixer shall be controlled with a timing device which will indicate the mixing period and assure compliance of the required period of mixing.
- c. The batch plant shall be equipped with an interlocking mechanism which will prevent concrete batches from entering mixers which are not empty.

C. TRUCK MIXER

Each truck mixers shall be equipped with accurate water meter located between the supply tank and mixers and having a dial or digital indicator and a reliable revolution counter, located near the water meter which can be readily reset to Zero for indicating the total number or revolutions of the drum from each batch. Each mixer shall have affixed thereto a metal plate on which the drum operations in terms of volume for both mixing and agitating and the maximum and minimum speeds of rotation of the drum are plainly marked.

Mixing shall be continued for the minimum period specified and may be increased and No of revolutions speed of the drum may be such that the mix as delivered from the mixer has uniform in colour and consistency to the satisfaction of Engineer. In no case shall be design water content be exceeded.

Concrete shall be discharge within half an hour after the introduction of the water and cement into the mixer. Each batch of concrete when delivered at the job site from commercial ready mix plants shall be accompanied by a written certificate of batch weights and time of batching.

7.2.11. TEMPERATURE OF CONCRETE:

Fresh structural concrete and fresh canal lining concrete shall be placed at temperature of between 15°C to 30°C. During hot or cold weather the concreting should be done as per the procedure set in I.S. 7861 (Part-I) - 1975 or I.S. 7861 (Part-II).

The temperature will be determined by placing at thermometer in the concrete immediately after sampling at the site of placement. The temperature of concrete at the batch plant shall be adjusted to assure that the specified concrete temperature is attained at the placement.

In case of concrete in hot weather condition the contractor shall employ effective means such as pre-cooling of aggregates and mixing water and placing at nights as necessary to maintain the temperature of the concrete as it is placed at the specified limit. The methods of pre-cooling shall be subject to approval by the Engineer-in-Charge.

The contractor shall not be entitled for any additional compensation due to the foregoing requirements.

7.2.12. FORMS

A. GENERAL

Form shall be used wherever necessary to confine the concrete and shaping it to the required lines. If a type of form does not consistently perform in an acceptable manner as determined by the Engineer the type of form shall be changed and method of erection shall be modified by the Contractor subject to approval of the Engineer.

Plumb and string lines shall be installed before and maintained during concrete placement. Such lines shall be used by the Contractor's personnel and by the Engineer and shall be in sufficient number and property installed as determined by the Engineer. During concrete placement the contractor shall continuously monitor plumb and string line form positions and immediately correct deficiencies.

Forms shall have sufficient strength to withstand the pressure resulting from placement and vibration of the concrete and shall be maintained rigidly in position. Where form vibrators are to be used forms shall be sufficiently rigid to effectively transmit energy from the form vibrators to the concrete while not damaging or altering the positions of forms. Forms shall be sufficiently tight to prevent loss of mortar from the concrete. Chamfer strips shall be placed to produce beveled edges on permanently exposed concrete surfaces. Interior angle of intersecting concrete surfaces and edges of construction joints shall not beveled except where indicated on the drawings.

Suitable struts or stiffeners or ties shall be used for the form work wherever necessary. All supports shall be braced and cross braced and cross braced into two directions. All splices and braces shall be secured by bolting unless specially intended otherwise. All struts shall be firmly supported against settlement and slipping by suitable means as directed. All supports shall be cut square at both ends and firmly supported against settlement and slipping. When the form work is supported on soils sleepers etc., shall be used to properly disperse the loads in case the supports rest on already completed beam or slab suitable props shall be provided under the latter.

- (B) The form work shall be of well seasoned timber or steel. When timber forms are used they shall be used with M.S. Sheet or other suitable smooth faced non-absorbent materials as specified. Supports may be of timber or steel Suitable wedges in pairs to facilitate adjustment and subsequent releasing of forms shall be provided preferably at the upper end of the supports. The details of the proposed form work and supports shall be submitted to the Engineer and got approved before erection.
- (C) In case of columns retaining walls or deep vertical component the height of the column shall facilitate placement and compaction of concrete and suitable arrangement may be made for securing the forms to the already poured concrete for placing the subsequent lifts. No steel ties or wires used for securing this form work shall be left exposed on the face of the finished work.
- (D) Suitable inserts for blockouts for electrical and other service fixtures where necessary shall be provided in the required location as specified.

(E) Cleaning and Oiling forms:

At the time the concrete is placed the surfaces of the forms shall be free from encrustation of mortar grout or other foreign material. Before concrete is placed the surface of the forms shall be oiled with a commercial form oil.

(F) Removal of Forms:

The stripping of form work shall conform to clause 10.3 of I.S. 456-1978. The Contractor shall be liable for damage and injury caused by removing forms before the concrete has gained sufficient strength. Forms on upper sloping faced of concrete such as forms on

the water sides of warped transitions, shall be removed as soon as the concrete has attained sufficient stiffness to prevent sagging. Any needed repairs or treatment required on such sloping surfaces shall be performed at once and be followed immediately by the permitted curing.

To avoid increasing appearance in concrete that might result from swelling of forms, wood forms for wall openings shall be loosened as soon as the loosening can be accomplished without damages to the concrete. Forms for the opening shall be constructed as to facilitate such loosening. Forms shall be removed with care so as to avoid injury to concrete and any concrete so damaged shall be repaired in accordance with paragraph 7.2.20.

(G) COST

The cost of furnishing all materials and performing all work for constructing forms, including and necessary treatment or coating of forms is included in the item of form work made at the unit price of bid thereof in the bill of quantities.

7.2.13 Tolerance for concrete construction.

A. GENERAL

Tolerances are defined as allowable variations from specified lines grades and dimensions and as the allowable magnitude of the surface irregularities. Allowable variations from specified lines grades and dimensions are listed as given under sub paragraph (b) below.

The intent of this paragraph is to establish tolerances that are consistent with modern construction practice that is governed by the effect that permissible variations may have upon a structure. The government reserves the right to diminish the tolerances set-forth herein if such tolerance impair the structural action. Operational function of architectural appearance of a structure or position thereof.

Concrete shall be within all stated tolerances even though more than one tolerance may be specified for a particular concrete structure. Provided that the specified variation for one element of the structure shall not apply when it will permit another element of the structure to exceed its alterable variation. Where tolerances are not specified for particular structure tolerances shall be those specified for a similar work. As an exception to clause 2 of the general provisions specific tolerances shown herein in connection with any dimension shall govern. The contractor shall be responsible for finishing the concrete forms within the limits necessary to insure that the completed work will be within the tolerance limits specified. The defective work where the tolerance limit is exceeded shall be remedied in accordance with the sub paragraphs B and C.

(B) Variations from Specified Lines, Grades and Diminution.

Hardened concrete structure shall be checked by the Contractor and will be subject to such inspection and measurement as needed to determine that the structures are within the tolerance specified in the table below.

Variation is defined as the distance between the actual position of the structure or any element of the structure and the specified position in plan for the structure or the particular element. Plus minus variation shown (1) as indicate a permitted actual position up or down and in or out from the specified portion in plan. Variations not designated as plus or minus indicate the maximum deviation permitted between designated successive points on the complete element of construction.

Specified position in plan is defined as the lines, grades and dimensions described in those specifications or shown on the drawings or as otherwise prescribed by the Engineer-in-Charge.

TABLE VARIATION – FROM SPECIFIED LINES, GRADES AND DIMENSIONS

- A. Tolerance for canal lining, excavation
 - 1. Excavations
 - a. Departure from established alignment
 - 20mm on straight sections.
 - 50mm on tangents, and
 - 100mm on curves
 - b. Departure from established grade
 - 20mm
 - 2. Lining
 - a. Departure from established alignment
 - 20mm on straight reaches
 - 50mm on partial curves on tangents
 - b. Departure from established grade □□ 20mm
 - B. Tolerance for canal structures
 - 1. Deviations from specified dimensions of cross section of columns, beams, piers and slabs [(-) 6 mm to (+) 12 mm]
 - 2. Deviations from dimensions of footing
 - a. Dimensions from plan = (-) 12mm to (+) 50mm.
 - b. Eccentricity (□) 0.02 times width of footing in the direction of deviation out not more than 50mm Thickness = (□) 0.05 times the specified thickness.
-

Note : Tolerance apply to concrete dimensions only but not for positioning of vertical reinforcing bar or dowels.

(C) Concrete Surface Irregularities

a. General

Bulges, depressions and offsets are defined as concrete surface irregularities concrete surface irregularities are classified as “abrupt” or “gradual” and are measured relative to the actual concrete surface.

b. Abrupt Surface Irregularities

Abrupt surface irregularities are defined here in as offsets such as those caused by misplaced or loose forms, loose knots in form Lumber, or other similar forming faults. Abrupt surface irregularities are measured using a straight edges held firmly against the concrete surface over the irregularity and the magnitude of the offset is determined by the direct measurement.

C. GRADUAL SURFACE IRREGULARITIES :

Gradual surface irregularities are defined herein as bulges and depressions resulting in gradual changes on the concrete surface. Gradual surface irregularities are measured using a suitable template conforming to the design profile of the concrete surface being examined. The magnitude of the gradual surface irregularities is defined herein as measures of the rate of change in slopes of the concrete surface.

The Surface irregularities shall not exceed 6 mm for bottom slab and 12 mm for side slopes when tested with a straight edge of 1.5 metre in length.

The magnitude of gradual surface irregularities on concrete shall be checked by the contractor to ensure that the surfaces are within the specified tolerances. The Engineer-in-Charge will also make such checks of hardened concrete surfaces as determined necessary to insure compliance with such specifications.

D. REPAIR OF HARDENED CONCRETE NOT WITHIN SPECIFIED TOLERANCES.

Hardened concrete which is not within specified tolerances shall be repaired to bring it within those tolerances. Such repair shall be in accordance with paragraph 7.2.20. and

shall be accomplished in a manner approved by the Engineer-in-Charge. Concrete repair to bring concrete with the tolerances shall be done only after consultation with a representative of Engineer regarding the method of repair. The engineer shall be notified as to the time when repair will be performed.

Concrete shall be finished in a manner which will result in concrete surface with a uniform appearance. The fins and any rough projections can then be rubbed down and the whole surface brought to an even finish by rubbing with a wooden float using a mortar of one part cement by two parts of coarse sand as an abrasive the mortar at the same time filling the voids. A neat cement work shall than be applied to give a smooth surface. If the concrete has set hard the fins and rough projections if any shall be removed by using corborandum brick or a paved grinding machine by chipping before finishing off with the smoothing wash. If the work of chipping is not done with care or if the surface exposed after removal of the forms can not be satisfactorily dealt with in this manner due to bad work or for other reasons a coat of cement plaster of 1:2 of thickness as ordered by the Engineer-in-Charge shall be applied. No extra payment will be given for finishing concrete surface as instructed above in this clause.

E. PREVENTION OF REPEATED FAILURE TO MEET TOLERANCES :

When concrete placements result in hardened concrete that does not meet the specified tolerances the contractor shall submit to the Engineer -in-Charge an outline of all prevention actions such as modification to form modified procedure for setting screeds and different finishing techniques to be implemented by the contractor to avoid repeated failure.

The Engineer reserves the right to delay concrete placement until the contractor implements such preventive actions which are approved by the Engineer-in-Charge

7.2.14. REINFORCING BARS

A. GENERAL :

Reinforcing bars shall be placed in the concrete as shown in the drawings or as directed. For concrete canal lining the reinforcement rods as provided for in the drawing shall be placed. For anchoring the concrete canal lining to the Hard rock provision of anchor rods is made in the drawing and contractor shall place these anchor rods to the spacing and depth shown in the drawings.

B. MATERIALS :

Unless shown otherwise on the drawings the reinforcement to be used shall be High yield strength deformed bars of grade FE 415 conforming to I.S. 1789-1985 specification for high yield strength deformed steel bars and wire for concrete reinforcement.

C. PLACING :

Reinforcement shall be bent and fixed in accordance with the procedure specified in I.S. 2502-1963 (code of practice for bending and fixing of bars for concrete reinforcement). All reinforcement shall be placed and maintained in the position shown in the drawings splices shall be located where shown in the drawings provided that the location of the splice may altered subject to written approval of the Engineer-in-Charge.

Subject to the written approval the Engineer-in-Charge the contractor may for his convenience use splice bars at additional locations other than those shown on the drawings. All additional splices allowed shall be at the expense of the contractor. In order to meet design and space limitation on splicing some bent bars may exceeded usual clearance cutting and bending of such bars from stock lengths may be required at the site.

Unless otherwise prescribed placement dimensions shall be to the centre line of the bars. Reinforcement will be inspected for compliance with requirement as to size,

shape, length, splicing, position and amount after it has been placed but before being embedded with concrete.

Before reinforcement is embedded in concrete the surface of the bars shall be cleaned of heavy flaky rust, loose scale, dirt grease or other foreign substances which in the opinion of the Engineer-in-Charge are objectionable. Heavy flaky rust that can be removed by firm rubbing with burlap or equivalent treatment is considered objectionable.

As specified in clause 11.3 of I.S. 456 I.S. 1978 unless otherwise specified by the Engineer reinforcement shall be placed with the following tolerances

- a. For effective depth 200 mm or less ± 10 mm
- b. For effective depth more than 200 mm ± 15 mm

The cover in no case be reduced by more than one third of specified cover or 5mm which ever is less.

Reinforcement shall be securely held in position so that it will not be displaced during the placing of the concrete and special care shall be exercised to prevent any disturbances of the reinforcement in concrete that has already been placed. Welding of bars shall be done as directed by the Engineer-in-Charge and in conformity with the requirements of clause 11.4 of I.S. 456-1978. Chairs, hangers, spacers and other supports for reinforcement shall be concrete, metal or other approved material. Concrete cover shall be as shown on the drawings.

(D) Splicing

- a. Where it is necessary to splice reinforcement the splices shall be made by lapping, by welding, or by mechanical means.

Where permitted or specified on the drawings, joints of reinforcement bars shall be butt welded so as to transmit their full strength. Welding of bars shall be done as directed by Engineer and confirming with requirement of Clause 11.4 of IS. 456-1978.

If it is proposed to use welded splices in reinforcing bars, the equipment, the material and all welding and testing procedures shall be subject to the approval of the Engineer. The Contractor shall also carryout test welds as required by the Engineer. No extra rate will be paid for welding reinforcement test-welds as bid rate in bill of quantities is inclusive of this item. For welded splices for reinforcing bars conforming to I.S. : 1786 - 1985, welding shall be done in accordance with IS 9417-1979. For reinforcing bars conforming to IS: 432 (Part I) - 1982, welding shall be done in accordance with IS : 2751 - 1979. Electrodes for manual metal arc welding shall confirm to IS: 814 (Part - I) 1974 and IS : 814 (Part - II) 1974. Mild steel filler rods for Oxyacetylene welding shall confirm to IS: 1278-1972 provided they are capable of giving a minimum butt weld tensile strength of 41 KG/mm².

Only electric arc welding using process which excludes air from the molten metal and conforms to any or all other special provisions for the work shall be accepted. Suitable means shall be provided for holding the bars securely in position during welding. It must be ensured that no voids are left in welding and when welding is done in two or three steps, previous surfaces shall be cleaned well. Ends of bars shall be cleaned of all Iron, scale, rust paint and other foreign matter before welding.

- b. Reinforcing bars of 28mm in diameter and larger may be connected by butt welding provided that lapped splices will be permitted if found to be more practical than butt welding and if lapping does not encroach on cover limitation or hinder concrete or reinforcement placing.
- c. Reinforcing bars 25mm in diameter and less may be either, lapped or butt welded which ever is the most practicable.

Butt welding of reinforcing bars shall be performed either by the gas pressure or flash pressure welding process or by the electric arc methods under cover from weather.

Welded pieces of reinforcement shall be tested at the rate 5% of total number of joints welded. Specimen shall be taken from the actual site of work. Strength of the weld provided shall be at least 25% higher than the strength of bar.

- d. Welded joints or splices shall preferably be located at points where steel will not be subject to more than 75% of the maximum permissible stresses and welds so staggered that at any section not more than 20% of rods are welded.

(E) Reinforcement Drawings

The Engineer-in-Charge will supply drawings of reinforcement details and bar bending schedules for adoption.

(F) Measurement and Payment

Measurement for payment of reinforcement bars will be based on the weight of the bars placed in the concrete in accordance with the drawings supplied by the Engineer-in-Charge when conformance with these specifications drawings has been determined at the time of embedment Except as otherwise provided below payment for furnishing and placing reinforcing bars will be made at the unit price bid in the bill of quantities for furnishing and placing reinforcement bars which unit price shall include the cost of reinforcing bars, attaching wire, covering blocks and of cutting, bending, cleaning securing in position reinforcing bars as should on the drawings. Chairs, spacer bars and lappings shall be considered for payment at unit price as provided in BOQ.

The total weight of bars placed as reinforcement in concrete shall be arrived at by adding the product of lengths of each size and mass parameter (vide table 1 and paragraph 6.2.1 of I.S. 1786-1985) of that size of rod.

7.2.15 Dowels

The dowels shall be of same HYSD bars of grade FE 415 confirming to I.S. 1786-1985 as used for reinforcement.

Details for dowels shall be as shown on the drawings or as directed by the Engineer-in-Charge.

Dowels shall be placed in the concrete where shown on drawings or where directed and will be inspected for compliance with requirements as to size, shape, length, position, and amount after they have been placed but before being covered by concrete.

Before the dowels are embedded in concrete, the surfaces of dowels be cleaned of all dirt, grease or other foreign substances which in the opinion of the Engineer-in-Charge are objectionable.

The dowels shall be accurately placed and secured in position so that they will not be placed during the placing of the concrete.

Measurement for payment of dowels will be made only on the weight of dowels placed in the concrete in accordance with the drawings or as directed by Engineering-in-Charge. Payment for furnished and placing of dowels will be made at the unit price bid in the bill of quantities for furnishing and placing of reinforcing bars which unit price shall included the cost of furnishing all the materials and for placing the dowels as required.

7.2.16 Preparation for Placing :

(A) General

No concrete shall be placed until all form work installation of items to be embedded and preparation of surface involved in the placement have been approved.

- b. The Contractor shall supply concrete placement checkout cards (Placement Register) satisfactory to the Engineer-in-Charge and shall provide a water tight container to such

cards at the convenient location near the individual concrete placement site. The cards shall list all the various work items for example clean up and embedded items required prior to placement of concrete. After each work item for an individual placement has been completed that item on the cards shall be signed by the Contractor or his representative signifying completion of the required work. Engineer authorised by the Engineer-in-Charge will inspect the work during and after completion of each phase of preparation and if the work is satisfactory will sign the check-out card (placement register). Approval of preparation for placement will not be complete until the Contractor or his representative and above authorised Engineer have approved by the signature all applicable, items for the placement.

All surfaces of forms and embedded materials shall be free from curing compound, dried mortar from previous placements and other foreign substance before the adjacent or surrounding concrete placement is begun.

Prior to beginning concrete placement, the Contractor shall make ready a sufficient number of properly operating vibrators and operators and shall have readily available additional vibrators to replace defective one during the progress of the placement. The Engineer's representative at the placement may be delay the start of the concrete placement until the number of working vibrators available is acceptable.

(B) Foundation Surfaces

All surfaces upon or against which concrete is to be placed shall be free from frost, ice, water, mud and debris.

- (a) Rock surface shall be free from oil, objectionable coatings, and loose semi-detached and unsound fragments. Immediately prior to placement of concrete, surface of rock shall be washed with an air water jet and shall be brought to uniform surface dry condition.
- (b) Earth foundation surfaces shall be wet to a depth of 15cm or to impermeable material whichever is less concrete placement.

(C) Construction Joints

Construction joints are defined as concrete surfaces upon or against which concrete to be placed and to which new concrete is to adhere but which have become so rigid that the new concrete can not be incorporated integral with that previously placed. The provision of construction joints shall conform to clauses 12.4.1 and 12.4.2 of I.S. 456-4978.

When the work has to be resumed on a surface which has hardened such surface shall be roughened. It shall then be swept clean thoroughly wetted. For vertical joints neat cement slurry shall be applied on the surface before it is dry. For horizontal joints the surface shall be covered with a layer of mortar about 10 to 15mm thick composed of cement and sand in the same ratio as the cement and sand in concrete mix. This layer of cement slurry or mortar shall be freshly mixed and applied immediately before placing of the concrete.

Where the concrete has not fully hardened all laitance shall be removed by scrubbing the wet surface with wire of bristle brushes, care being taken to avoid dislodgment of particles or aggregate. The surface shall be thoroughly wetted and all free water removed. The surface shall then be coated with neat cement slurry. On this surface, a layer of concrete not exceeding 150mm in thickness shall first be placed and shall be well rammed against old work, particular attention being paid to corners and close spots, and work thereafter shall proceed in the normal way.

(D) Construction Joints

Construction joints serves to provide for volumetric shrinkage of monolithic concrete and or movement between monolithic unit a established joints, thus preventing formation of objectionable shrinkage cracks elsewhere in concrete. Prior to application of wax based

curing compound to contraction joints, the surface of all joints shall be cleaned thoroughly of accretion of concrete or other foreign material by scraping chipping or other means approved by the Engineer. Water stops reinforcing bars and other embedded items shall be free of curing compound when adjoining concrete is placed.

7.2.17 PLACING

A. GENERAL

The contractor shall notify the Engineer-in-charge before batching begins for placement shall not begin until after preparation are complete and the concrete. Placing shall be performed only on the presence of an authorised Engineer's representative. Placement shall not begin until after preparations are complete and the concrete placement check out card has been signed by the Contractor or his representative and the authorised representative of the Engineer-in-Charge substantiating completion of all preparation for that placement.

All surface upon or against which concrete is to be placed shall be prepared in accordance with paragraph 7.2.16.

Retempering of concrete will not be permitted. Any concrete which has become so stiff that proper placing cannot be assured shall be wasted.

Concrete shall not be placed in standing water except with written permission of the Engineer-in-Charge and the method of placing shall be subjected to approval concrete shall not be placed in running water until after the concrete has hardened.

Concrete shall be deposited as nearly as practical in its final position and shall not be allowed to flowing such a manner that the lateral movement will cause segregation of the coarse aggregate from the concrete mass. Methods and equipment employed in depositing concrete in forms shall minimize clusters of coarse aggregates, clusters that occur shall be scattered before the concrete is vibrated.

Forms shall be constantly monitored and their position adjusted as necessary during concrete placement in accordance with paragraph 7.2.12 and 7.2.13.

All concrete except canal lining shall be placed in approximately horizontal layers. The depth of layers shall not exceed 15cm. The engineer. reserves the right to require lesser depths of layers where concrete cannot otherwise be placed and consolidated in accordance with the requirements of the these specification. All construction joints which interest exposed concrete surface shall be made straight and level to plumb except as shown otherwise on the drawings.

The placing of concrete shall be in accordance with clause 12.2. of I.S. 456-1978.

If concrete is placed monolithically around openings having vertical dimensions greater than 60 cm or if concrete in decks, floor slabs or other similar parts of structure is placed monolithically with supporting concrete the following requirements shall be strictly observed.

- (a) Concrete shall be placed up to the top of the formed opening at which point further placement will be delayed to accommodate settlement of fresh concrete. If levels are specified beneath nearly horizontal structural members such as decks floor slabs, beams and girders or the levels being between nearly horizontal members and vertical supporting concrete below, concrete shall be placed to the bottom of the bevels delay of placement.
- (b) The last 60 cm or more of concrete placed below horizontal members of bevels shall be placed with a 50mm or less slumps and shall be thoroughly consolidated.

In placing concrete on unformed slopes so steep as to make internal vibration of the concrete impractical without footing, the concrete shall be placed ahead of non vibrating slip from screed extending approximately 0.75m back from its leading edge. Concrete

ahead of slip from screed shall be consolidated by internal vibration so as to ensure complete filling under the slip form.

A cold joint is an unplanned joints resulting when a concrete surface hardens before the next batch is placed against it, cold joints would be allowed only in the event of equipment breakdown or other unavoidable prolonged interruption of continuous placing. If such unavoidable delays in placing occur which make it appear that unconsolidated concrete may harden to the extent that later vibration will not fully consolidate it, the contractor shall immediately consolidate such concrete to a stable and uniform slope. If delay of placement is then sort enough to permit penetration of underlying concrete placement shall r resume with particular care being taken to thoroughly penetrated and vibrate concrete surface placed before the delay. If concrete cannot be penetrated with vibrator, the cold shall be then treated as a construction joint.

Care shall taken to prevent cold joints when placing concrete in any part of the work. The concrete placing rate shall ensure concrete is placed while the previously placed adjacent concrete is plastic so that the concrete can be made monolithic by normal of vibrators/tamping.

Concrete shall not be placed in placed in rain sufficiently heavy or prolonged to wash mortar from concrete. A cold joints may necessarily result from prolonged heavy rainfall.

The Contractor shall not be entitled to any additional payment, ever the unit price bid in the scheduled for concrete by reason of any limitation in the placing of concrete, required under the provisions of this paragraph.

(B) Transportation

The transportation of concrete shall conform to clause 12.1 of I.S. 456-1978.

The methods of equipment used for transporting concert from the batch plant to its final position in the placement and the time the elapsed during transportation shall not cause measurable segregation of coarse aggregate or slump loss during transportation exceeding 5 centimeters.

Concrete shall be deposited as near as particular to its final position. The use of Aluminium Pipe or Aluminium Chutes for delivery of concrete will not be permitted. Concrete buckets shall be capable of promptly discharging concrete of the specified mix design and the dumping mechanism shall be capable of discharging at one location, small portions of concrete from a full bucket.

If used to transport concrete, the truck mixers shall meet the applicable requirements of paragraph 7.2.10.

The transporting equipment for placing concrete shall readily handle the place concrete of the specified slump. The contractor shall when directed, replace in adequate transporting equipment with acceptable equipment.

(C) Compaction : The compaction of concrete shall conform to clause 12.3 of 1.5.456-1978

Concrete shall be consolidated by the vibrators/tampers. The vibrations shall be sufficient to remove all undesirable air voids from the concrete, including the air voids trapped against the forms. After consolidation, the concrete shall be free of rock pockets and honey comb areas and shall be closed snugly against all surfaces of forms and embedded materials. All concrete shall be properly consolidated before it hardens.

Except as herein after provided, consolidation of all concrete shall be by immersion type vibrators. Immersion type vibrators shall be operated in nearly vertical position and the vibrating head shall penetrate and vibrate the concrete in the upper portion of the underlying layer. Care shall be exercise to avoid contact of the vibrating head with embedded items and with formed surfaces which will later be exposed to view.

Concrete shall not be placed upon either plastic concrete until the previously placed concrete has been thoroughly consolidate.

Form vibrators shall be used in conjunction with slip form lining machines to consolidate concrete in canal lining. Such vibrators shall be arranged for effective uniform consolidation of the concrete. The Engineer-in-Charge or his representative may remove samples of hardened concerns for testing and examination, and the Contractor shall pair, at no cost to the Government, concrete from which such samples are removed.

Immersion type vibrators shall be operated at speeds of at least 7000 revolutions per minute when immersed in concrete. Form vibrators shall operate at speed of at least 8000 revolutions per minute when being used to consolidate concrete. The Contractor shall immediately replace improperly operating vibrators with acceptable vibrators.

7.2.18 Finishes and finishing

The requirements of finishing of concrete surface shall be as specified in this paragraph, paragraph 7.2.12 and 7.2.13, or otherwise indicated in the drawings. The Contractor shall notify till Engineer-in-Charge before finishing concrete. Unless inspection is waived, in each specific case, finishing of concrete shall be performed only when a Engineer's representative is present. Concrete surface will be tested by the Engineer-in-Charge in accordance with paragraph 7.2.13 where necessary to determine where the concrete surface is within the specified tolerances. Finished concrete which is not within the specified tolerances shall be repaired in accordance with paragraph 7.2.21.

Interior surface shall be sloped for drainage where shown on the drawings or as directed. Surfaces which will be exposed to the weather and which would normally be level, shall be sloped for drainage.

Floating may be performed by use of hand of power driven equipment. Floating shall be started as soon as screened surface has stiffened sufficiently and shall be minimum necessary to produce a surface that is free from screened marks and is uniform in texture. Joints and edges shall be tooled where shown on drawing or as directed.

After the surface of road way slabs of concrete bridges, have been wooden floated, the surfaces shall be given a broom finish. The finish shall be applied when the water sheet has practically disappeared. The broom shall be drawn transversely across the pavement with adjacent strokes slightly overlapping. The brooming shall be completed before the concrete is in such condition that the surface will be torn or unduly roughened by the operation. The finished surfaces shall have a uniform appearance and shall be free of corrugations exceeding 1.5 millimeters in depth. Broom shall be of a quality, size and construction and be so operated as to produce a surface finish satisfactory to the Engineer-in-Charge.

The finishing in lining shall be in accordance with clause 5.7 of I.S. 3873-1978. The finished surface shall be equivalent in evenness, smoothness and free from rock pockets and surface produced by a lining machine meets the specified requirements, no further finishing operations will be required.

The top portion of the side slopes of the canal lining extending 0.5 to 1.0 meter vertical below the top of tile lining shall receive a nonskid, longitudinal brisk finish as approved by the Engineer-in-Charge .

7.2.19 Protection

The contractor shall protect all concrete against damage until final acceptance by the Engineer-in-Charge.

The Contractor shall provide protection to prevent erosion to fresh concrete whenever precipitation either periodic or sustaining is imminent or occurring.

When precipitation appears imminent the Contractor shall immediately make ready at the placement site all materials which may be required for protection of fresh concrete. The Engineer-in-Charge may delay placement concrete until adequate provisions for protection against weather are made.

All fresh concrete surfaces concrete surfaces shall protected from contamination and from foot traffic until the concrete has hardened. Hardened concrete surfaces which have to receive finish shall be protected against damage from foot traffic and

construction activity by covering with protective mats, plywood, or by other effective means. Method of protection shall be subject to approval by the Engineer-in-Charge.

**(A) Curing
General**

The Contractor shall furnish all materials and perform all work required for curing concrete.

All concrete including bed and sides of canal lining shall be cured by water curing.

The precast slab for canal lining shall be cured by keeping them immersed in water for even days and by sprinkling water for another 21 days will straw canvass, hessian or similar materials cover.

The uniformed top surfaces of bridges deck shall be cured for 28 days with a damp sand cover or curing mat cover, the sand or curing mats shall be not be kept so wet as to allow water to drain from them stain other concrete. The sand or curing mats shall be removed after the expire of the curing period.

All concrete surfaces shall be treated as specified to prevent loss of moisture from the concrete until the required curing period elapsed or until immediately prior to placement of other concrete or backfill against those surfaces. Only sufficient time to prepare construction joint surfaces and to bring them to a surface dry condition shall be allowed between discontinuance of curing and placement of adjacent concrete. Forms shall be removed within 24 hours after the concrete has hardened sufficiently conforming to clause 10.3 of I.S. 456-1978 to prevent structural collapse or other damage by careful form removal. Where required, repair of all minor surface imperfection shall be made immediately after form removal and prior to curing, minor surface repair shall be completed within 2 hours after from removal and shall be immediately followed by the initiation of curing by the applicable method specified herein, Concrete surfaces shall be kept continuously moist after form removal, until initiation of curing.

(B) Materials

Concrete cured with water shall be kept wet for at least 28 days from the time the concrete has attained sufficient set to prevent detrimental efforts to the concrete surfaces. The concrete surface to be cured shall be kept wet covering them with water saturated materials by using a system of perforated pipes, mechanical sprinklers or porous hose, or by other methods which will keep all surface continuously (not periodically) wet, All curing methods are subject to approval of the Engineer-in-Charge.

(C) Cost

The cost of furnishing all materials and performing all work for curing concrete shall be included in the price bid in the bill of quantities for the concrete on which the particular curing methods are require.

7.2.20 Repair Concrete

Concrete shall be repaired in accordance with clause 5.7 of I.S. 3873-1978. Imperfections and irregularities on concrete surface shall be corrected in accordance with paragraph 7.3.13 and clause 5.7 of I.S. 3873-1978.

(A) Types of repair

All repair shall be made with concrete. Repairs to concrete surfaces and addition where required shall be made by cutting regular opening into the concrete and placing fresh concrete to the required lines. The chipped openings shall be sharp and shall not be less than 70mm in depth. The fresh concrete shall be reinforced and chipped and trowelled to the surface of the opening. The mortar shall be placed in layers not more than 20 mm in thickness after being completed and each layer shall be compacted thoroughly. All exposed concrete surfaces shall be cleaned of impurities lumps of mortar or grout and unsightly stains.

(B) Cost

The cost of furnishing all materials and performing all work required in the repair of concrete shall be borne by the contractor.

7.2.21 **Measurement of concrete** : Measurement for payment of concrete required to be placed directly upon or against surfaces of excavation will be made to the lines for which payment for excavation is made.

Measurement for payment of concrete in canal lining shall be made to the lines shown.

On the drawing. The unit of measurement will be in square meter to the thickness shown in the drawing measurement for payment of all other concrete will be made to the neat lines of structures, unless otherwise specifically shown on the drawing prescribed in the specification. The unit measurement will be cubic meter in measuring concrete for payment, the volume of all opening, fixtures. Embedded pipes and metal work, each of which is larger than 0.1 square meter in cross section will be deducted.

7.2.22 Payment for concrete

Payment for concrete in the various parts the work shall be made at the applicable unit price in there for in bill of quantities, which unit price shall include the cost of furnishing all materials and performing all works required for the concrete construction, except that payment for furnishing and placing reinforcement bars and form work shall be made at the respective unit prices bid therefore in the schedule.

Section 7.3 Special Requirements for Concrete Structures

7.3.1. P.V.C. Strips

The finished P.V.C. strips shall be manufactured with shapes conforming to dimensions shown on the drawing and shall be extruded from virgin, pigmented, plasticized P.V.C. the finished P.V.C. strip shall meet the requirement of table I and II of I.S. 9766-1981.

The P.V.C. water stops conforming to the above requirements shall be placed in the joint where shown in the drawings. The Contractor shall furnish and I.S.I. Test certificate for the P.V.C. he proposes to use.

7.3.2. Elastomeric Bearing Pads

The Contractor shall furnish and place elastomeric bearing pads at the location shown on the drawings and in accordance with this paragraph. Elastomeric bearing pads shall be fastened to one concrete surface with rubber cement recommended by the manufacturer of the elastomeric bearing pads. Elastomeric bearing pads shall be stored at 75° F or less. Elastomeric bearing pads shall not be stored in open place or where they will be opened to the direct rays of the sun.

The elastomeric compound shall be 100 percent virgin polychloroprene (neoprene).

The Contractor shall furnish an I.S.I. Test certificate for the elastomeric bearing pads he proposes to use.

7.3.3 Placement of Kraft Paper

The top surface of masonry piers and abutments should be levelled and painted with brush, with asphaltic emulsion of 20/30 grade, such that the bearing surface is perfectly smooth and uniform. Over this surface, kraft paper of approved quality should be placed and the top painted with asphaltic emulsion of 20/30 grade. The unit price bid in the bill of quantities for this item shall include the cost of all materials and labour involved in the operations.

7.3.4 Embedment in Concrete

In some of the locations of structures as shown on the relevant drawings a few conduits or openings shall have to be provided through RCC/PCC/Masonry work. Construction of the surface for either placement of concrete or for laying of masonry shall have to be suitably carried out so as to meet with the placement of such conduits or openings. No extra claim for such improvidence in construction shall be entertained.

7.3.5 Providing the Fixing R.C.C. Non-Pressure NP₂/NP₃ Pipes as per Drawings with Spigot and Socket ends.

(A) Supply of Pipes

Pipes shall be of specified diameter, non-pressure type conforming to I.S. 458-1971. Maximum length of the pipe shall not be less than 2.5 m. or otherwise directed by the Engineer-in-Charge. The Contractor shall order the pipes required for the work on the basis of the construction drawing supplied to him by the Engineer-in-Charge. Pipe marked with the following information on each type shall only be accepted for work.

- (a) Class of pipe
- (b) Date of manufacture
- (c) Name of manufacturers or his trade mark or both
- (d) IS Specification mark

(B) Handling and Laying of Pipes

Work shall be done as per I.S. 783-1959 or its latest edition. Reasonable care shall be exercised in loading transporting and unloading of concrete pipes. Handling shall be such as to avoid impact. All pipes shall be inspected thoroughly before being laid. Broken or defective pipe shall not be used. Trench shall be of sufficient width to provide for free working space in minimum 30 cm. on either side of the pipe. Pipes shall be lowered into the trenches by use of standard appliance. Pipe shall be laid true to line and as specified on the construction drawings. Laying of pipes shall be along proposed grade of the slope. The socket ends of pipe shall face upstream. The connections of the pipes shall be jointed together in such a manner that these shall produce perfect even surface along the inside of the pipe. In no case pipes shall be laid directly on rock or other hard material.

(C) Joining Pipes

Semi flexible type spigot and the joint as per I.S. 783-1959 and as shown on the construction drawing shall be provided. The rubber sealing rings used in the joining shall conform to paragraph I.A. of I.S. 382-1962. A rubber ring shall be placed on the spigot which shall be forced into the socket of the pipe already laid. This shall compress the rubber ring as it fills into the annular space formed between the two surfaces of the spigot and socket so as to form a flexible and water tight joint. The recess at the end of pipes shall be filled with cement mortar 1:2. Every joint be kept wet for about fourteen days.

(D) Backfilling Trenches

- a. Trenches shall be kept free from water until the material in the joints has hardened. Walking or working on the completed pipe shall not be permitted until the trench has been backfilled to a height of at least 45cm. over the pipe except as may be necessary for backfilling and compaction.
- b. Trenches shall be backfilled after pipe has been laid subject to the condition that jointing material has hardened. Only selected materials shall be used for backfilling. Filling of the trench shall be carried out simultaneously on both sides of pipe in such a manner that unequal pressure does not occur.

(E) Measurement and Payment

Measurement for payment shall be on running meter basis on the pipe line laid including joints. The rate per pipe in bill of quantities shall include the cost of pipes including loading unloading hauling. Handling, storing laying in position, cost of rubber rings jointing and curing including backfilling and other operations to complete the work as per the specification.

SECTION – 6
BILL OF QUANTITY

Bill of Quantity

NAME OF WORK : Protection to scoured bank on Budha right near Ramaraja Temple.

BID IDENTIFICATION NO: - JJPR-61/26-27

Sl. No.	Description of Item of Work	Quantity	Unit	Rate in Rs.	Amount in Rs.
1	Earth work excavation, loading, unloading and carriage by mechanical means of sand and sandy soil, including stoney earth, gravel and moorum etc. interspread with boulders upto 1/2cum size with all leads, lifts and delifts including trimming of bank slopes and bed to design section and depositing excavated materials away from the work site by mechanical means with an initial lead of 1.00Km, cess etc complete as per direction of the Engineer-in-Charge.	492.50	One Cum	81.90	40335.75
2	Quarrying, collecting and supplying hard granite stone boulders of at least 0.028m ³ in volume, free from weathered skin surface and other deleterious materials for slope protection works in river embankments by stone dumping and providing rock toe, rip rap, spurs etc. and surface packing in all heights and depths to proper line and level including filling the interstices with small stones, wedging and hammering etc. including cost, conveyance, royalty, labour cess, and transportation of all materials of approved quality with uniform colour and texture from approved quarry with all leads, lifts, delifts etc. and all other incidental charges with quality control tests required to complete the work as per specification and direction of the Engineer-in-Charge.	1887.50	One Cum	2038.65	3847951.88

Sl. No.	Description of Item of Work	Quantity	Unit	Rate in Rs.	Amount in Rs.
3	Quarrying, collecting and supplying hard granite stone boulders of 15cm to 30cm in size, free from weathered skin surface and other deleterious materials dry packing for slope protection works in river embankments including surface packing in all heights and depths including filling the interstices with small stones, wedging and hammering etc. including cost, conveyance, royalty, labour cess, and transportation of all materials of approved quality with uniform colour and texture from approved quarry with all leads, lifts, delifts etc. and all other incidental charges with quality control tests required to complete the work as per specification and direction of the Engineer-in-Charge.	273.80	One Cum	2570.05	703679.69
				Total Rs. :	4591967.32
				SAY: Rs. :	4591967.00

**Superintending Engineer
Jajpur Irrigation Division, Jajpur**

Procedure to participate in online bidding e-procurement

1. PARTICIPATING IN THE BID IN THE E-PROCUREMENT PORTAL: The Contractor/Bidder intending to participate in the bid is required to register in the Portal using his /her active personal/ official e-mail ID as his Login ID and attach his/her valid Digital Signature Certificate (DSC) to his/her unique Login ID. The DSC used must be of appropriate class (Class II or Class III) issued from a registered Certifying Authority such as n-Code, Sify, TCS, MTNL etc. He/ She has to submit the relevant information as asked for about the firm/ contractor. The portal registration of the bidder/ firm is to be authenticated by the State Procurement Cell after verification of original valid certificates/ documents such as (i) PAN and (II) Registration Certificate (RC)/ GST Registration Certificate and GSTIN (for procurement of goods) of the concerned bidder. The time period of validity in the portal is at par with validity of RC/ GST Registration Certificate and GSTIN. Any change of information by the bidder is to be re-authenticated by the State Procurement Cell. After successful authentication bidder can participated in the online bidding process.

Contractor not registered with Government of Odisha, can participate in the e-procurement after necessary enrollment in the portal but have to subsequently register themselves with the appropriate registering authority of the Sate Government before award of the work as per prevalent registration norms of the State.

- a. To log on to the portal the Contractor/Bidder is required to type his/her *username* and password. *The system will again ask to* select the DSC and confirm it with the password of DSC. For each login, a user's DSC will be validated against its date of validity and also against the Certificate Revocation List (CRL) of respective CAs stored in system database. The system checks the unique ID, password and DSC combination and authenticates the login process for use of portal.
- b. The bidder can download the tender of his choice and save it in his system and undertake the necessary preparatory work off-line and upload the completed tender at his convenience before the closing date and time of submission.
- c. The tender documents uploaded by the Tender Inviting Officer in the website <https://tendersodisha.gov.in> will appear in the section of "Upcoming Tender" before the due date of tender sale. Once the due date has arrived, the tender will move to "Active Tender" Section of the *homepage*. Only a small notification will be published in the newspaper specifying the work details along with *mention* of the specific website for details. The publication of the tender will be for specific period of time till the last date of submission of bids as mentioned in the 'Invitation for Bid' after which the same will be removed from the list of Active tenders. Any bidder can view or down load the bid documents from the web site.
- d. Contractor exempted from payment of EMD will be able to participate in the tender directly by uploading documentary evidences towards his eligibility for such exemption.

- e. The *software* application has the provision of payment of cost of tender document through payment gateways of *authorized* bankers by directly debiting the account of the bidders.
- 1.1. Bidders participating through Joint Venture shall declare the authorized signatory through Memorandum of Understanding duly registered and enroll in the portal in the name and style of the joint venture company. It is mandatory that the DSC issued in the name of the authorized signatory is used in the portal.
 - 1.2. In the case of any failure, malfunction, or breakdown of the electronic system used during the e-procurement process, the tender inviting officer shall not accept any responsibility for failures or breakdowns other than in those systems strictly within their own control.
 - 1.3. Any third party/company/person under a service contract for operation of e-procurement system in the State or his/their subsidiaries or their parent companies shall be ineligible to participate in the procurement processes that are undertaken through the e-procurement system irrespective of who operates the system.
 - 1.4. For submission of Bids through the E-Procurement Portal, the bidder shall up load the scanned copy/copies of document in prescribed format wherever warranted in support of eligibility criteria and qualification information. The on line bidder shall have to produce the original documents in support of the scanned copies and statements uploaded in the portal before the specified date as per DTCN.
 - 1.5. Each bidder shall submit only one bid for one package. A bid is said to be complete if accompanied by cost of bid document and appropriate bid security. The system shall consider only the last bid submitted through the E-Procurement portal.
 - 1.6. The bidder may ask question related to tender online in the e-procurement portal using his/her DSC, provided the questions are raised within the period of seeking clarification as mentioned in tender call notice/Bid. The Officer inviting the Bid/ Procurement Officer-Publisher will clarify queries related to the tender.
 - 1.7. The details of drawings and documents pertaining to the works available with the officer inviting the Bid as well as in the office of the Executive Engineer as mentioned in the Contract Data will be open for inspection by the bidders. The bidder is required to download all the documents for preparation of his bid. It is not necessary for the part of the Bidder to up-load other Bid documents (after signing) while up-loading his bid. He is required to up load documents related to his eligibility criteria and qualification information and Bill of Quantities duly filled in. It is assumed that while participating in the bid, the bidder has referred all the drawings and documents. Seeking any revision of rates or backing out of the bid claiming for not having referred to any or all documents provided in the Bid by the Officer Inviting the Bid will be construed as plea to disrupt the bidding process and in such cases the bid security shall be forfeited.
 - 1.8. Any addendum / corrigendum/ cancellation of tender shall be published in the website <https://tendersodisha.gov.in> , notice board Only, and such notice shall form part of the bidding documents.
 - 1.8.1. The system generates a mail to those bidders who have already uploaded their tenders and those bidders if they wish can modify their tenders. The bidders are required to which the website till last date and time of bid submission for any addendum/ corrigendum/

cancellation thereof. Tender inviting authority is not responsible for communication failure of system generated mail.

All the volumes/documents shall be uploaded / provided in the portal by the Officer inviting the bid. The bidder shall carefully go through the document and prepare the required documents and up load the scanned documents in Portable Document Format to the portal in the designated locations of Technical Bid. He will fill up the rates of items or percentage in the BOQ down loaded for the work in designated Cell and up loads the same in designated locations of Financial Bid. Bidders are to submit only the original BoQ uploaded by publisher after entering the relevant fields without any alteration/deletion/modification. Multiple BoQ submission shall lead to cancellation of bid. In case of item rate tender, bidders shall fill in their rates other than Zero value in the specified cells. In the percentage rate tender, the bidder quoting Zero value is valid and will be taken as Schedule of Rates. Submission of document shall be effected by using DSC of appropriate class.

2. PAYMENT OF EMD/ BID SECURITY AND COST OF BID DOCUMENTS: The Bidder shall furnish, as part of his Bid, a Bid security for the amount mentioned under DTCN in online mode. Non-submission of bid security within the designated period shall debar the bidder from participating in the on-line bidding system.
 - 2.1 The EMD or Bid Security payable along with the bid is 1% of the estimated contract value (ECV) or as mentioned in the bid document.
 - 2.2 The tender accepting authority will verify the originals of all the scanned documents of the successful lowest bidder only within 5 days of opening of the tender (price bid). In the eventuality of failure on the part of the lowest successful bidder to procedure the original documents, he will be debarred in future from participating in tender for 3 years and will be black listed by the competent authority. In such as situation, successful L-2 bidder will be required to produce his original documents for consideration of his tender at the negotiated rate equal to L1 bidder.
 - 2.3 Contractor exempted from payment of EMD will be able to participate in the tender directly by uploading documentary evidences towards his eligibility for such exemption.
 - 2.4 Government of Odisha has introduced e-payment gateway in to the portal for payment of cost of Bid and Bid Security/ Earnest Money Deposit. The process of using e-payment gateway is mentioned in the **“Procedure for Electronic receipt, accounting and reporting of Cost of Tender Paper and Earnest Money Deposit on submission of bids”** . .
3. FORMAT AND SIGNING OF BID: (Logging to the Portal)-The Contractor/ Bidder is required to type his/her Login ID and Password. The system will again ask to select the DSC and confirm it with the password of DSC as a second stage authentication. For each login, a user’s DSC will be validated against its date of validity and also against the Certificate Revocation List (CRL) of respective CAs stored in system database. The system checks the unique Login ID, Password and DSC combination and authenticates the login process for use of portal.

The bidder can download the tender of his choice and save it in his system and undertake the necessary preparatory work off-line and upload the completed tender at his convenience within the final date and time of submission. The bidder shall only submit

single copy of the required documents and Price Bid in the portal. In the Financial bid, the bidder can not leave any figure blank. He has to only write the figures, the words will be self generated. The Bidders are advised to up load the completed Bid document well ahead of the last date & time of receipt to avoid any last moment problem of power failures etc.

- 3.1. The Bidder shall go through the Bid carefully and list the documents those are asked for submission. He shall prepare all documents including Declaration form, price bid etc and store in the system.
- 3.2. The bidder shall log on to the portal with his DSC and move to the desired tender for up loading the documents in appropriate place one by one simultaneously checking the documents. Once the Bidder makes sure that all the documents have been up-loaded in appropriate place he clicks the submit button to submit the bid to the portal.
 - 3.2.1. The bids once submitted can not be retrieved or corrected. Tender cannot be pre-opened and cannot be submitted after due date and time. Therefore only after satisfying that all the documents have been uploaded, the Bidder should activate submit button.
 - 3.2.2. In the e-procurement process each processes are time stamped. The system can identify each individual who has entered in to the portal for any bid and the time of entering in to the portal.
 - 3.2.3. The Bidder should ensure clarity of the document up loaded by him to the portal especially the scanned documents by taking out sample printing. Non-submission of legible documents may render the bid non-responsive. However, the Officer inviting the Bid if so desires can ask for legible copies or original copies for verification with in a stipulated period provided such document in no way alters the Bidder's price bid. If the Bidder fails to submit the original documents with in the stipulated date, his bid security shall be forfeited.

SUBMISSION OF BIDS:-

- 3.3. The bidder shall carefully go through the tender and prepare the required documents. The bid shall have a Technical Bid and a Financial Bid. The Technical bid generally consists of GSTIN, PAN, Registration Certificate, Affidavits, Profit Loss statement, Joint venture agreement, List of similar nature of works, work in hand , list of machineries and any other information required by OIT. The Financial Bid shall consist of the Bill of Quantities (BOQ) and any other price related information/ undertaking including rebates.
- 3.4. Bidders are to submit only the original BOQ (in .xls format) uploaded by Procurement Officer Publisher (Officer Inviting Tender) after entering the relevant fields without any alteration/ deletion/ modification. Multiple BOQ submission by bidder shall lead to cancellation of bid. In case of items rate tender , bidders shall fill in their rates other than zero value in the specified cells without keeping it blank. In the percentage rate tender the bidder quoting zero percentage is valid and will be taken at par with the estimated rate of the work put to tender.
- 3.5. The bidder shall upload the scanned copy/ copies of document in support of eligibility criteria and qualification information in prescribed format in Portable Document Format (PDF) to the portal in the designated locations of Technical Bid.

- 3.6. The bidder shall write his name in the space provided in the specified location in the Protected Bill of Quantities (BOQ) published by the Officer Inviting Tender. The bidder shall type rates in figure only in the rate column of respective items(s) without any blank cell in the rate column in case of item rate tender and type percentage excess or less up to two decimal place only in case of percentage rate tender.
- 3.7. The bidder shall log to the portal with his/ her DSC and move to the desired tender for uploading the documents in appropriate place one by one simultaneously checking the documents.
- 3.8. Bids cannot be submitted after due date and time. The bids once submitted can not be viewed, retrieved or corrected. The Bidder should ensure correctness of the Bid prior to uploading and take print out of the system generated summary of submission to confirm successful uploading of bid. The bids can not be opened even by the OIT or the Procurement Officer Publisher/ opener before the due date and time of opening.
- 3.9. Each process in the e-procurement is time stamped and the system can defect the time of log in of each user including the Bidder.
- 3.10. The Bidder should ensure clarity/ legibility of the document uploaded by him to the portal.
- 3.11. The system shall require all the mandatory forms and fields filled up by the contractor during the process of submission of the bid/ tender.
- 3.12. The bidder should check the system generated confirmation statement on the status of the submission.
- 3.13. The bidder should upload sufficiently ahead of the bid closure time to avoid traffic rush and failure in the network.
- 3.14. The Tender Inviting Officer is not responsible for any failure, malfunction or breakdown of the electronic system used during the e-procurement process.
- 3.15. The Bidder is required to upload documents related to his eligibility criteria and qualification information and Bill of Quantity duly filled in. It is not necessary for the part of the bidder to upload the drawing and the other Bid documents (after signing) while uploading his bid. It is assumed that the bidder has referred all the drawings and documents uploaded by the Officer Inviting the Bid.
- 3.16. The Bidder will not be able to submit his bid after expiry of the date and time of submission of bid (server time). The date and time of bid submission shall remain unaltered even if the specified date for the submission of bids declared as a holiday for the Officer Inviting the Bid.
- 3.17. Seeking any revision of rates for backing out of the bid claiming for not having referred to any or all documents provided in the bid by the officer inviting the bid will be construed as plea to disrupt the bidding process and in such cases the bid security shall be forfeited.
- 3.18. The 'Online bidder' shall digitally sign on all statements documents, certificates uploaded by him, owning responsibility for their correctness/ authenticity as per IT ACT 2000. If any of the information furnished by the bidder is found to be false/ fabricated/ bogus, his EMD/BID Security shall stand forfeited and his registration in the portal shall be blocked and the bidder is liable to be blacklisted.

4. SECURITY OF BID SUBMISSION:

- 4.1. All bid data uploaded by the Bidder to the portal will be encrypted by the DSC of the opener(s). The system shall require all the mandatory forms and fields filled up by the contractor during the process of submission of the bid/tender.
- 4.2. The Bid shall be received in encrypted format by the system which can only be decrypted / opened by the authorized openers only on or after the due date and time.
5. DEADLINE FOR SUBMISSION OF THE BIDS :
- 5.1. The online bidding will remain active till the last date and time of the bid submission. Once the date and time (Server date and time) is over, the bidder will not be able to submit the bid. The date & time of bid submission shall remain unaltered even if the specified date for the submission of bids declared as a holiday for the Officer inviting the Bid.

RESUBMISSION AND WITHDRAWAL OF BIDS :

- 5.2. Resubmission of bid by the Bidders for any number of times before the final date and time of submission is allowed.
- 5.3. Resubmission of bid shall require uploading of all documents including price bid afresh.
- 5.4. If the bidder fails to submit his modified bids within the pre-defined time of receipt, the system shall consider only the last bid submitted.
- 5.5. The bidder should avoid submission of bid at the last moment to avoid system failure or malfunction of Internet of traffic jam of power failure etc.
- 5.6. The Bidder can withdraw his bid before the closure date and time of receipt of the bid by uploading scanned copy of a letter addressing to the Procurement Officer Publisher (Officer Inviting Tender) citing reasons for withdrawal. The system shall not allow any withdrawal after expiry of the closure time of the bid.
6. LATE BIDS :
- 6.1. The system shall reject submission of any bid through portal after closure of the receipt time. For all purpose the server time displayed in the e-procurement portal shall be the time to be followed by the bidder and concerned officers.

7. MODIFICATION AND WITHDRAWAL OF BIDS :

- 7.1. In the E-Procurement Portal, it is allowed to modify the bid any number of times before the final date and time of submission. The bidder shall have to log on to the system and resubmit the documents as asked for by the system including the price bid. In doing so, the bids already submitted by the bidder will be removed automatically from the system and the latest bid only will be admitted. But the bidder should avoid modification of bid at the last moment to avoid system failure or malfunction of internet or traffic jam or power failure. If the bidder fails to submit his modified bids with in the designated time of receipt, the bid already in the system shall be taken for evaluation.
- 7.2. In the E-Procurement Portal, withdrawal of bid is allowed. But in such case he has to write a letter with appropriate reasons for his withdrawal addressed to the Officer inviting the bid and up load the scanned document to portal in the respective bid before the closure date and time of receipt of the bid. The system shall not allow any withdrawal after expiry of the closure time of the bid.

8. OPENING OF THE BID:

- 8.1. Bid opening date is specified during tender creation or can be extended with corrigendum. This date is available in IFB, tender document as well as the home page of portal. Bid opening can be done by the authorized users which are defined during the tender publication / approval stage. The bids are encrypted using their public keys and can be decrypted only on or after the Bid Opening due date and time. The bid opener's private key will be required to open the bids and all the openers have to log on to the portal during that time.
 - 8.1.1. The bidders who participated in the on line bidding can witness opening of the bid from any system logging on to the portal with the DSC away from opening place. Contractors are not required to be present during the bid opening at the opening location if they so desire.
 - 8.1.2. Each activity is date and time stamped with user details. For time stamping, server time is taken as the reference.
- 8.2. In the event of the specified date of bid opening being declared a holiday for the Officer inviting the Bid/Engineer-in-Charge, the bids will be opened at the appointed time on the next working day.
 - 8.2(a) Combined bid security for more than one work is not acceptable.
- 8.3. In case bids are invited for more than one package, the order for opening of the "Bid" shall be that in which they appear in the "Invitation for Bid".
- 8.4. The Bid openers; who have been pre-defined shall log on to the portal with their respective DSC. Unless all the Officers who have been declared as Opening officers, log on to the portal with their DSC the Tender cannot be opened.
- 8.5. In case of non-responsive tender the officer Inviting tender should complete the e-Procurement process by uploading the official letter for cancellation/ re-tender.

EVALUATION OF BIDS:-

- All the opened bids shall be downloaded and printed for taking up evaluation. The officer authorized to open the tender shall sign and number on each page of the documents downloaded and furnish a certificate that "the documents as available in the portal containing..... nos. of pages".
- 8.5.1. After opening of technical bid, the bidder may be asked in writing / online (in their registered e-mail ID) to clarify on the uploaded documents provided in the Technical Bid, if necessary, with respect to any doubts or illegible documents required for Technical Evaluation. The Officer Inviting Tender may ask for any other document of historical nature during Technical Evaluation of the tender. Provided in all such cases, furnishing of any document in no way alters the bidder's price bid. Non submission of legible documents may render the bid non-responsive. The authority inviting bid may reserve the right to accept any additional document.
 - 8.5.2. The bidders will respond in not more than 7 days of issue of the clarification letter, failing which the bid of the bidder will be evaluated on its own merit.
 - 8.5.3. The Technical evaluation of all the bids shall be carried out as per information furnished by Bidders.

- 8.5.4. Immediately, on receipt of these clarifications, the Evaluating Officers; predefined in the system for the bid, will finalize the list of responsive bidders. They will log on to the site with their DSC and record their comments on the Technical evaluation page in the system. The Officer Inviting the Bid if also the accepting authority, shall log on to the system with his digital signature and check the technical evaluation. He can either accept or pass on to the evaluating officers for re-evaluation. Upon acceptance of technical evaluation by the Accepting authority in the system, the system shall automatically generate letter to all the responsive bidders and the system shall forward the letter to all the responsive bidder that their technical bid has been evaluated responsive with respect to the data/information furnished by him and the letter shall also intimate him the date & time of opening of financial bid. The system shall also inform the non-responsive bidders in their e-mail ID that their bid has been found non-responsive.
- 8.6. The Technical evaluation of all the bids shall be carried out up as per the information furnished by the Bidders. But evaluation of the bid does not exonerate the bidders from checking their original documents and if at a later date the bidder is found to have misled the evaluation through wrong information, action as per relevant clause of DTCN shall be taken against the bidder/contractor.
- 8.7 The Procurement officer-Evaluators will evaluate bid and finalized list of responsive bidders. Opening of price bid and evaluation of lowest bidder is subject to satisfaction of other qualification information.
- 8.7.1 The financial bids of the technically responsive bidders shall be opened on the due date of opening. The Procurement Officer-Openers shall log on to the system in sequence and open the financial bids.
- 8.7.2 The Financial Bid will be opened on the notified date & time in the presence of bidders or their authorised representative who wish to be present.
- 8.7.3 At the time of opening of "Financial Bid", the names of the bidders whose technical bids were found responsive will be announced and the bids of only those bidders will be opened. The remaining bids will be rejected.
- 8.7.4 The responsive bidders' name, the bid prices, the item wise rates, the total amount of each item in case the item rate tender and percentage above or less in case of percentage rate tenders will be announced. any discounts and withdrawals, and such other details as the officer inviting the tender may consider appropriate, will be announced by him or his authorized representatives at the time of opening.
- 8.7.5 The Financial bid of the bidders shall be opened one by one by the designated officers. The system shall auto-generate the Comparative statement.
- 8.7.6 The Bidder can witness the principal activities and view the documents/summary reports for that particular work by logging on to the portal with his DSC from anywhere.
- 8.7.7 Procurement Officer-Openers shall sign on each page of the download BOQ and the Comparative Statement and furnish a certificate to that respect.
- 8.7.8 System provides an option to Procurement Officer Publisher for reconsidering the rejected bid with the approval of concern Chief Engineer/ Head of Department.
9. CLARIFICATION AND NEGOTIATION OF BIDS:

- 9.1. For examination, evaluation, and comparison of bids, the officer inviting the bid may, at his discretion, ask the lowest bidder for clarification of his rates including reduction of rate on negotiation and breakdowns of unit rates.
- 9.2. On opening of the price bid the system shall arrange the financial bids in order of their value (L1 first, followed by L2, L3) for subsequent evaluation. The evaluation status (Sheet) will be visible to all the participating bidders after opening on their respective logins. Each activity is recorded in the system with date and time stamping.
10. NOTIFICATION OF AWARD AND SIGNING OF AGREEMENT:
- 10.1. In the E-Procurement Portal, the system shall generate the template of award letter and the Officer Inviting the Bid shall mention the amount of Performance Security and additional security required to be furnished in the letter and intimate the bidders in his e-mail ID.
- 10.2. The Employer/ Engineer-in-Charge shall notify acceptance of the work prior to expiry of the validity period by cable, telex or facsimile or e-mail confirmed by registered letter. This letter of Acceptance will state the sum that the Engineer-in-Charge will pay the contractor in consideration of execution and completion of the works by the contractor as prescribed by the contract and the amount of performance security and Additional Performance Security required to be furnished. The issue of the letter of Acceptance shall be treated as closure of the Bid process and commencement of the contract.
- 10.3. The Contractor after furnishing the required acceptable Performance Security and Additional Performance Security, " Letter of Proceed" or "Work Order" shall be issued by the Engineer-in-Charge with copy thereof to the Procurement Officer-Publisher. The Procurement Officer-Publisher shall up load the summery and declare the process as complete.
- 10.4. If the L1 bidder does not turn up for agreement after finalisation of the tender then he shall be debarred from participation in bidding for three years and action will be taken to blacklist the contractor. Besides the consortium/ JV/firm where such an agency/ firm already happens to be or is going to be a partner/ member/ proprietor, he/ they shall neither be allowed for participation in bidding for three years nor his/ their application will be considered for registration and action will be initiated to blacklist him/ them. In that case, the L2 bidder, if fulfils other required criteria would be called for drawing agreement for execution of work subject to condition that the L2 bidder negotiates at par with the quoted by the L1 bidder, otherwise the tender will be cancelled.
11. BLOCKING OF PORTAL REGISTRATION
- 11.1. If the registration Certificate of the contractor is cancelled/ suspended by the registering authority/ blacklisted by the competent authority his portal registration shall be blocked automatically on receipt of information to that effect.
- 11.2. The portal registration blocked in the ground mentioned in the above Para- 11.1 shall be unblocked automatically in receipt of revocation order of cancellation/ suspension/ blacklisting from the concerned authority.

- 11.3 The Officer Inviting Tender shall make due inquiry and issue show cause notice to the concerned contractor who in turn shall furnish his reply, if any, within a fortnight from the date of issue of show cause notice. Thereafter the Officer Inviting Tender is required to issue an intimation to the defaulting bidder about his unsatisfactory reply and recommend to the Chief Manager (Tech) for blocking of portal registration within 10 days of intimation to the defaulting bidder regarding his unsatisfactory reply with intimation to the Registering Authority and concerned Chief Engineer/ Heads of Office if any of the following provisions are violated.
- 11.3.1 Fails to furnish original Technical Documents before the designated officer within the stipulated date and time.
- 11.3.2 Backs out from the bid on any day after the last date of receipt of tender till expiry of the bid validity period (including till the extended bid validity period)
- 11.3.3 Fails to execute the agreement within the stipulated date.
- 11.3.4 If any of the information furnished by the bidder is found to be false/ fabricated/ bogus. Accordingly the officer Inviting Tender shall recommended to the Chief Manager (Tech) State Procurement Cell, Odisha for blocking of portal registration of bidder and simultaneously action shall also be initiated by OFFICER INVITING TENDER for blacklisting as per Appendix-XXXIV of OPWD code Volume-II.

The minimum period of blocking of Portal Registration shall in no case be less than 180 days.

**GOVERNMENT OF ODISHA
WORKS DEPARTMENT**

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OFFICE MEMORANDUM

File No.07556900012016- 17254 /W, dated, 05.12.2017

Sub: Electronic Receipt, Accounting and Reporting of Cost of Tender Paper and Earnest Money Deposit on submission of bids.

1. The State Government have been working on formulation of rules and procedures for Electronic receipt, accounting and reporting of the receipt of Cost of Tender Paper and Earnest Money Deposit on submission of bids through the e-procurement portal of Government of Odisha i.e. <https://tendersodisha.gov.in> for some time past.
2. Electronic receipt of cost of tender paper has been successfully tested through SBI payment gateway. Now it has been decided to introduce electronic receipt of **Cost of Tender Paper and Earnest Money Deposit on submission of bids** through payment gateway of designated banks such as SBI/ICICI Bank/HDFC Bank for all Government Departments, State PSUs, Statutory Corporations, Autonomous Bodies and Local Bodies etc. in phases (ANNEXURE-I). The process outline as well as accounting and reporting structure are indicated below :
 - a) It will be carried out through a single banking transaction by the bidder for multiple payments like **Cost of Tender Paper and Earnest Money Deposit on submission of bids**.
 - b) Various payment modes like Internet banking/ NEFT/RTGS of Designated Banks and their Aggregator Banks as well can be accessed by the intending bidders.
 - c) Reporting and accounting of the e-receipts will be made from a single source.
 - d) Credit of receipts into the Government accounts and to the designated Bank account of the participating entities indicated in Para 2 above would be faster.
3. Only those bidders who successfully remit their **Cost of Tender Paper and Earnest Money Deposit on submission of bids would be eligible to** participate in the tender/bid process. The bidders with pending or failure payment status shall not be able to submit their bid. Tender inviting authority, State Procurement Cell, NIC, the designated Banks shall not be held responsible for such pendency or failure.
4. **Banking arrangement:**

- a) Designated Banks (SBI/ICICI Bank/HDFC Bank) payment gateway are being integrated with e-Procurement portal of Government of Odisha (<https://tendersodisha.gov.in>)
- b) The Designated Banks participating in **Electronic receipt, accounting and reporting of Cost of Tender Paper and Earnest Money Deposit on submission of bids** will nominate a Focal Point Branch called e-FPB, who is authorized to collect and collate all e-Receipts. Each such branch will act as the Receiving branch and Focal Point Branch notwithstanding the fact that the bidder might have debited his account in any of the bank's branches while making payment.

5. Procedures of bid submission using electronic payment of tender paper cost and EMD by bidder:

- a) The bidders have to log onto the Odisha e-Procurement portal (<https://tendersodisha.gov.in>) using his/her digital signature certificate and then search and then select the required active tender from the "Search Active Tender" option. Now, submit button can be clicked against the selected tender so that it comes to the "My Tenders" section.
- b) **Uploading of Prequalification/Technical/Financial bid:** The bidders have to upload the required Prequalification /Technical/Financial bid, as mentioned in the bidding document and in line with Works Department office memorandum no.7885/W, dt.23.07.2013.
- c) **Electronic payment of tender paper cost and EMD:** Then the bidders have to select and submit the bank name as available in the payment options.
 - i. A bidder shall make electronic payment using his/her internet banking enabled account with designated Banks or their aggregator banks.
 - ii. A bidder having account in other Banks can make payment using NEFT/RTGS facility of designated Banks.
 - Online NEFT/RTGS payment using internet banking of the bank in which the bidder holds his account, by adding the account number as mentioned in the challan as an interbank beneficiary.
- d) **Bid submission:** Only after receipt of intimation at the e-Procurement portal regarding successful transaction by bidder the system will activate the 'Freeze Bid Submission' button to conclude the bid submission process.
- e) **System generated acknowledgement receipt for successful bid submission:** System will generate an acknowledgement receipt for successful bid submission. The

bidder should make a note of '**Bid ID**' generated in the acknowledgement receipt for tracking their bid status.

6. Settlement of Cost of Tender Paper ;

- a) **Cost of Tender Paper:** In respect of Government receipts on account of **Cost of Tender Paper**, the e-Procurement portal shall generate a MIS for the State Procurement Cell (SPC). The MIS will contain an abstract of the cost of tender paper collected with reference to **Bid Identification Number**. The State Procurement Cell shall generate Bank-wise challans under the Head of Account for **Cost of Tender Paper** and instruct the designated Banks to remit the money to the proper Head of Account of State Government. In respect of the cost of tender paper received through the e-procurement portal, the remittance to the Cyber Treasury account will be made to the Head of Account 0075-Misc, General Services-800-Other Receipts -0097-Misc. Receipts-02237-Cost of Tender Paper.
- b) For the time being, the State Procurement Cell (SPC) will use over the counter payment facility of the Odisha Treasury portal. Thereafter, remittance through NEFT & RTGS will be facilitated through the Odisha Treasury portal.
- c) Similarly, in case of State PSUs, Statutory Corporations, Autonomous Bodies and Local Bodies etc., **Cost of Tender Paper**, the e-Procurement portal shall generate a MIS for the State Procurement Cell (SPC). The MIS will contain an abstract of the cost of tender paper collected with reference to **Bid Identification Number**. The cost of tender papers will be credited to the registered Bank account of the concerned State PSUs, Statutory Corporations, Autonomous Bodies and Local Bodies etc.
- d) Bank will refund (in case the Tender Inviting Authority (TIA) issues such instructions) the tender fee and EMD to the bidder, in case the tender is cancelled before opening of Bid as per direction received from TIA through e-procurement system.
- e) Back-end Transaction Matrix of Electronic receipt of Cost of Tender Paper and Earnest Money Deposit on submission of bids is enclosed in the Annexure-I.

7. Settlement of Earnest Money Deposit on submission of bids:

- a) The Bank will remit the **Earnest Money Deposit on submission/cancellation of bids** to respective bidders accounts as per direction received from TIA through e-procurement system.

8. Forfeiture of EMD :

Forfeiture of **Earnest Money Deposit on submission of bid** of defaulting bidder is occasioned for various reasons.

- a) In case the **Earnest Money Deposit on submission of bid** is forfeited, the e-Procurement portal will direct the Bank to transfer the EMD value from the Pooling Account of SPC to the registered account of the tender inviting authority.
- b) The Tender inviting authorities of the Government Departments will deposit the forfeited **Earnest Money Deposit on submission of bid**, in the State Government Treasury under the appropriate head (8782-Cash Remittances and Adjustments between the officers rendering accounts to the same Accounts Officer-102-P.W.Remittances-1683-Remittances-91028-Remittances into Treasury) after taking the amount as a revenue receipt in their Cash Book under the head 0075-Misc. General Services-00-101 -Unclaimed Deposits-0097-Misc, Receipts-02080-Misc. Deposits and submit the detail account to DAG (Puri) as a deposit of the Division.
- c) By clicking submit button, system will initiate the forfeiture of EMD. System will not allow the evaluator to edit the initiation after clicking the submit button. Forfeiture option can be carried out in phased manner like one bidder at a time.

9. Role of the Banks:

- a) Make necessary provision / customizations at their end to enable the provision for online payments / refunds as per this document.
- b) Provide necessary real-time message to bidders regarding successful or unsuccessful transactions during online payment processes and redirect them to e-Procurement website with necessary transaction reference details enabling them to submit their bids.
- c) The bank shall ensure transfer of funds from the pooling account to the Government Head/current account of PSUs/ULBs within the next bank working day as per the directions generated from e-Procurement portal.
- d) Bank should provide timely reports and reference details to NIC enabling them to carry out their role as stated below.
- e) Refund of amount to bidders as per the XML file provided by e-Procurement system on the next bank working day from the date of generation of the XML file and also provide a confirmation to NIC on the same.

10. Role of State Procurement Cell:

- a) Communicate requirements of Government departments/ State PSUs/ Autonomous Bodies/ ULBs online payment requirements to National Informatics Centre / the authorised Banks for mapping/ customization.
- b) In every working day, the State Procurement Cell shall generate MIS from the e-Procurement portal to ascertain the tender paper cost received in the e-Tendering

- process separately bank-wise for the Government Department and the PSUs/ULBs. The SPC shall generate bank-wise separate online challans from the Odisha Treasury portal and make the remittance through over the counter facility or NEFT/RTGS (as and when this functionality is available in Treasury portal) and issue instruction to the bank for remittance of the receipt to the State Government account.
- c) The State Procurement Cell shall be responsible for providing challan details and MIS in respect of the remittance towards tender paper cost to the Tender inviting authorities for their record.
 - d) State Procurement Cell shall monitor the progress of e-Tendering by different Government departments / State PSUs/ Autonomous Bodies / ULBs through an MIS. State Procurement Cell shall monitor and send monthly progress reports to the Government.
 - e) The e-Procurement system will generate a consolidated refund & settlement XML file as an end of the day activity.
 - f) e-procurement system will provide a web service for payment gateway (PG) provider to pull the encrypted refund and settlement details in XML file against a day.
 - g) Similarly, payment gateway (PG) provider will provide a web service to pull the refund and settlement status against a day.
 - h) e-procurement system will update the status accordingly for reconciliation report.

11. Role of National Informatics Centre :

- a) Customize e-Procurement software and web-pages of Government of Odisha (<https://tendersodisha.gov.in>) to enable the provision for electronic payment.
- b) The NIC, Odisha will modify / rectify the errors in electronic data relating to the Chart of Account.
- c) NIC will provide an interface to organisations to download the electronic receipt data.
- d) Enable automatic generation of daily XML files from e-Procurement system and ensure delivery of the same to the authorised Banks for enabling automatic refund/settlement of funds.
- e) NIC shall enable the e-Procurement portal to generate MIS as required for the State Procurement Cell in order to make remittance of the tender paper cost to the State Government account using the Odisha Treasury portal.

12. Role of Cyber Treasury :

- a) The cost of the tender paper deposited by the SPC using the Odisha Treasury Portal which will be accounted for by the Cyber Treasury and it shall submit the accounts to A.G (O) as per the established process.
- b) The Cyber Treasury will provide MIS as required to the SPC for the purpose of accounting and reconciliation of the electronic remittances made to the State Government account.

13. Redressal of Public grievances :

- a) The State Procurement Cell, Odisha, National Informatics Centre, Odisha and the e-FPB will have an effective procedure for dealing with public complaint for e-Receipt related matters. In case any mistake is detected by any of the stakeholders in reporting of receipt of tender paper cost and EMD either suo moto or on being brought to its notice the State Procurement Cell, Odisha, National Informatics Centre, Odisha unit Cyber Treasury and the bank will promptly take steps for rectification. The e-Focal Point Branch of the participating Banks, National Informatics Centre, Odisha and the State Procurement Cell, Odisha will notify the contact number and address of the Help Desk for resolution of any dispute regarding e-Receipt.

14. Applicability and modification of existing rules / orders:

The modalities prescribed in this Office Memorandum for downloading of tender paper, submission and rejection of bid, acceptance of Bids as well as refund and forfeiture of earnest deposit will be applicable for electronic submission of bids through e-procurement portal. Existing provisions regulating cost of tender paper, earnest money deposit in OPWD Code and OGFR would stand modified to the extent prescribed in this Office Memorandum.

15. These arrangements would be made effective after signing of MoU between the designated Banks and the State Procurement Cell, firming up of Banking arrangements and technical integration between designated Bank and e-Procurement Portal.

1. This shall take effect from the date of issue of this Office Memorandum.
2. Accordingly, relevant existing codal / contractual provision exist vide Office Memorandum No.6785W/ dt.09.05.2017 of Works Department stands modified to the above extent.
3. This has been concurred in by the Finance Department vide their UOR No.-39-WF-I dt.09.11.2017.

EIC - cum – Secretary to Government

Memo No.17255

/W. Dated : 05.12.2017

Copy forwarded to P.S. to Hon'ble Chief Minister, Odisha for information and necessary action.

FA – cum- Addl. Secretary to Government

Memo No.17256

/W. Dated : 05.12.2017

Copy forwarded to OSD to Chief Secretary, Odisha / Sr. P.S. to Development Commissioner – cum – Additional Chief Secretary, Odisha / Sr. P.S. to Additional Chief Secretary, Finance for information and necessary action.

FA – cum- Addl. Secretary to Government

Memo No.17257

/W. Dated : 05.12.2017

Copy forwarded to All Departments / Managing Director, OB & CC Ltd., Bhubaneswar / Managing Director, OCC Ltd., Bhubaneswar for information and necessary action.

FA – cum- Addl. Secretary to Government

Memo No.17258

/W. Dated : 05.12.2017

Copy forwarded to EIC (Civil), Odisha, Bhubaneswar/ All Chief Engineers, Odisha / All Superintending Engineers / All Superintending Engineers (under Works Department) for information and wide circulation among subordinate offices.

FA – cum- Addl. Secretary to Government

Memo No.17259

/W. Dated : 05.12.2017

Copy forwarded to the Principal Accountant General (A & E), Odisha, Bhubaneswar / Principal Accountant General, Odisha, Puri Branch, Puri for information and necessary action.

FA – cum- Addl. Secretary to Government

Memo No.17260

/W. Dated : 05.12.2017

Copy forwarded to the Director, Treasuries & Inspection, Odisha, Bhubaneswar for information and necessary action.

FA – cum- Addl. Secretary to Government

Back-end Transaction Matrix of Electronic receipt and remittance of Cost of Tender Paper and Earnest Money Deposit on submission of bids.

Cost of Tender Paper

Government Departments

- I. The payment towards the cost of Tender Paper, in case Government Departments shall be collected in separate Pooling accounts opened in Focal Point Branch called e-FPB of respective designated banks [as stated in Para 2] at Bhubaneswar on T+1_day.
- II. With reference to the Notice Inviting Tender/ Bid Identification Number, the amount so realised is to be remitted to Government Account under the Head Of Account 0075-Misc. General Services-800-Other Receipts-0097-Misc. Receipts-02237-Cost of Tender Paper through Odisha Treasury Portal after opening of the bid.

Earnest Money Deposit on submission of bids

- I. In case of tenders of Government Departments, amount towards Earnest Money Deposit on submission of bids shall be collected in a pooling account opened for this purpose at Focal Point Branch called e-FPB of respective designated banks at Bhubaneswar and the banks will remit the amount to respective bidder's account within two working days on receipt of instruction from TIA through refund and settlement of e-procurement system.

- II. In case of forfeiture of Earnest Money Deposit on submission of bids, the e-Procurement portal will direct the Bank to transfer the EMD value from the Pooling Account of SPC to the registered account of the tender inviting authority within two working days of receipt of instruction from TIA.

State PSUs
Statutory Corporations,
Autonomous Bodies and
Local Bodies.

- I. In case of State PSUs, Statutory corporations, Autonomous Bodies and Local Bodies etc. the amount towards **Cost of Tender Paper**, on submission of bids shall be collected in separated pooling accounts opened in Focal Point Branch called e-FPB of respective designated Banks at Bhubaneswar on T+1 days.
- II. The Paper cost will be transferred to the respective current accounts of concerned State PSUs, Statutory Corporation, Autonomous Bodies and Local Bodies etc. after opening of bid.

- I. Amount towards **EMD** on submission of bids shall be collected in a separate pooling account of Focal Point Branch called e-FPB of respective designated banks at Bhubaneswar and the banks will remit the amount to respective bidder's account on receipt of instruction from TIA through refund and settlement of e-procurement system within two working days from receipt of such instruction.

II. In case of forfeiture of Earnest Money deposit on submission of bids, the e-Procurement portal will direct the Bank to transfer the EMD value from the Pooling Account of SPC to the registered account of the tender inviting authority within two working days of receipt of instruction from TIA.