



**GOVERNMENT OF ODISHA
DEPARTMENT OF WATER RESOURCES
SUPERINTENDING ENGINEER,
DEO CANAL DIVISION, KARANJIA**

DRAFT TENDER SCHEDULE

FOR THE WORK

Construction R.C.C Protection wall (heavy filling section) of Tail Minor Right side from RD 20m to RD 50m & RD 70m to RD 105m, Left side from RD 15m to 49m & RD 72m to 98.20m off-taking from Right Main Distributary under Deo Irrigation Project, Karanjia for the Year;2026-27.

Superintending Engineer,
Deo Canal Division, Karanjia

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**SECTION - 1
DETAILED
TENDER CALL NOTICE.**

GOVERNMENT OF ODISHA
DEPARTMENT OF WATER RESOURCES
OFFICE OF THE SUPERINTENDING ENGINEER
DEO CANAL DIVISION, KARANJIA
AT/PO: KARANJIA, DIST.: MAYURBHANJ-757037
Tel: 06796-296100, e-mail: ecedcd2016@gmail.com

“e” Procurement Notice No. 01/ SEDCD of 2026-27
Bid Identification No. 01/ SEDCD of 2026-27

- | | |
|--|---|
| 1. Nature of the Work | : Civil Work |
| 2. Number of Works | : 02 (Two) Nos of Individual Work |
| 3. Approximate amount put to tender | : Rs.54.59 Lakh to Rs.60.35Lakh |
| 4. Period of Completion | : 3 (Three) Calendar Months including rainy season |
| 5. Class of Contractor | : “B” Class Contractor |
| 6. Date & time of Availability of Bid document in the portal | : Dt. 05.08.2026 at 10 AM to 19.08.2026 up to 5.30 PM |
| 7. Last date & time of seeking tender clarification | : Dt. 14.08.2026 up to 1.00 PM |
| 8. Last date & time of receipt of Bids in the Portal | : Dt. 19.08.2026 up to 5.30 PM |
| 9. Date, time & place of opening of Technical Bid/s (Cover-I) | : Dt. 20.08.2026 at 10.30 AM in O/o the Superintending Engineer, Deo Canal Division, Karanjia |
| 10. Date, time & place of opening of Financial Bid/s(Cover-II) | : To be intimated after evaluation of Technical BID |
| 11. Name & address of the officer inviting Bid | : Superintending Engineer, Deo Canal Division, Karanjia, AT/PO-Karanjia, PS-Karanjia, Dist-Mayurbhanj, PIN-757037 |

*Further details can be seen from the Govt. web site www.tendersodisha.gov.in.

Any addendum/corrigendum/cancellation of tender can also be seen in the said Website.

Sd/-
Superintending Engineer,
Deo Canal Division, Karanjia

GOVERNMENT OF ODISHA
DEPARTMENT OF WATER RESOURCES
OFFICE OF THE SUPERINTENDING ENGINEER, KARANJIA
AT/PO: KARANJIA, DIST.: MAYURBHANJ-757037
Tel:06796-296100, e-mail: eedcd2016@gmail.com

Bid Identification No.: 01/SED CD of 2026-27

The **Superintending Engineer, Deo Canal Division, Karanjia** on behalf of Hon'ble Governor of Odisha invites on-line percentage rate tenders through "e" Procurement in **double cover** system for execution of the following work. The bid should be submitted by eligible Class of Contractors through on-line in the Govt. website **www.tendersodisha.gov.in**. The bidders should have necessary portal enrolment (with own Digital Signature Certificate). The registered bidders outside of 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	Class of Contractor	Approximate value of work (in lakh)	Time for completion	EMD required (in Rs.)	Cost of Tender Paper (in Rs.)
1	2	3	4	5	6	7
1	Construction of C.C Road from RD 10295 to 10960m of Right Main Distributary of Deo Irrigation Project for the year; 2026-27.	"B" Class	60.35	03 (Three) months including rainy season	Rs.60,500.00	10,000.00
2	Construction R.C.C Protection wall (heavy filling section) of Tail Minor Right side from RD 20m to RD 50m & RD 70m to RD 105m, Left side from RD 15m to 49m & RD 72m to 98.20m off-taking from Right Main Distributary under Deo Irrigation Project, Karanjia for the Year;2026-27	"B" Class	54.59	03 (Three) months including rainy season	Rs.55,000.00	10,000.00

- Mode of submission of Tender : Tender should be submitted on-line in www.tendersodisha.gov.in
- Period of availability of tenders online/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 online for bidding		Last Date & Time of seeking Tender Clarification	Date & Time of opening of Technical Bid Opening
		From	To		
Superintending Engineer, Deo Canal Division, Karanjia	01/SED CD of 2026-27.	05.08.2026 at 10.00 AM	19.08.2026 up to 05.30 PM	14.08.2026 up to 1.00 PM	20.08.2026 At 10.30 AM in the O/o the SE, Deo Canal Division, Karanjia

3. The bid is to be submitted in two covers.
- (i) **Cover-I** is to contain the technical bid with scanned copies of necessary documents in designated locations consisting Scanned copy of **Registration Certificate, PAN Card, GSTIN, Affidavit regarding authenticity of document, No-Relationship Certificate** for eligibility criteria in pdf format to be submitted at the time of bidding.
- (ii) **Cover-II** is to contain the financial bid with an intelligent Bill of Quantity in Excel Format duly filled in and signed by bidder in pdf format.
4. Bid document consisting of all information regarding the bidding, plans, specification and schedule of quantities of the works are available in web-site www.tendersodisha.gov.in and the set of terms and conditions of contract and other necessary documents can be seen in the web-site till last date of sale and receipt of tender papers. Interested bidders may obtain further information at the website www.tendersodisha.gov.in.
5. Furnishing scanned legible copy of original Registration certificate, PAN Card, GSTIN & Affidavit along with the Technical Bid is mandatory otherwise his/her bid shall be declared as non-responsive and thus liable for rejection.
6. The bids for the works shall remain valid for a period of **90 (Ninety) days** from the date of opening of technical bid. If any bidder / tenderers withdraw his/her bid / tender before the said period or makes any modification in the terms & condition of the bid, the EMD transferred at the time of submission of tender shall stand forfeited.
7. No Engineer of Gazetted rank or other Gazetted Officer employed in Engineering or Administrative duties in an Engineering department of the State Govt. is allowed to work as a contractor for a period of two years after his retirement from Govt. service, without Govt. permission.
8. Other details can be seen in the bidding documents, which is available in website www.tendersodisha.gov.in.
9. Authority reserves the right to reject any or all the tenders without assigning any reasons thereof.
10. The bidder shall transfer online the cost of the bid document in the table in column-7 above as part of its bid through a process as mentioned under DTCN.
11. The bidders shall pay/transfer the E.M.D/ Bid security amount specified for the work as in column-6 above online as part of its bid through a process as mentioned under DTCN. Bidders desirous to hire machineries or equipments from outside the state are required to transfer online 2% of the amount put to tender as bid security.
12. As per **Office Memorandum No.173/W, Dt. 03.01.2026 of Works Department**, the Additional Performance Security (APS) 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.

Additional Performance Security (As per Memorandum No. 173/W Dated 03.01.2026) shall be furnished by the bidder when the bid amount is less than the estimated cost put to tender. Only the successful bidder who has quoted less bid price/rates than the estimated cost put to tender shall have to furnish Additional Performance Security (As per Memorandum No. 173/W Dated 03.01.2026) in shape of National Savings Certificate (N.S.C) /Post Office Savings Bank Account/ Post Office Time Deposit Account / Kisan Vikas Patra/Bank Guarantee in favour of Divisional Officer (**Superintending Engineer, Deo Canal Division, Karanjia**) from any Nationalized/Schedule Bank in India counter Guaranteed by its local Branch at Bhubaneswar / e-Bank Guarantee executed on the Nationale-Governance Services Limited (NeSL) Digital Document Execution Portal / Insurance Surety Bond issued by an Insurance Company authorized by the Insurance Regulatory and Development Authority of India (IRDAI) [Vide Works Dept. OM No. WORKS-FA-MISCSB-0003-2026-4909/W, dt. 12.03.2026.] within **seven days** of issue of letter of acceptance (LOA) by the concerned officer (by e-mail) to the successful bidder otherwise the bid of the successful bidder shall be cancelled & the Earnest Money Deposit/Bid Security shall be forfeited. Further, proceeding for blacklisting shall be initiated against the bidder.

13. If more than one bid is quoted (decimal upto 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 the concerned bidders/their authorized representatives, the concerned SE/ EE of concerned Division and Divisional Accounts Officer (DAO) will remain present. [As per OM No.632/W, dt.09.01.2026]. If the scheduled date either for opening of tender or lottery for finalization of tender is declared as a Govt. holiday then the same will be conducted in the next working day.
14. If L1 bidder does not turn up for agreement after finalization of the tender, then he shall be debarred from participation in bidding for three years and action will be taken to blacklist the contractor as per codal provision in Annexure-II of Amendment to Para-3.5.14 Note-1 of OPWD Code Vol.-1. In case a contractor is black listed, it will be widely published and intimated to all departments of Govt. and also to Govt. of India agencies working in the State.
15. The technical bid documents (**Cover-I**) will be opened by the undersigned on dated **20.08.2026 at 10.30 A.M in the Office of the Superintending Engineer, Deo Canal Division, Karanjia** in presence of the bidder or their authorized representative who wish to attend. If the Office happens to be closed on the date of opening of the bid, the same will be opened on the next working day at the same time and venue. After evaluation of the documents contained in **Cover-I (Technical bid)**, the **Cover-II** containing **financial bid/s** of the technically responsive bidder/s will be opened. The date, time and place of opening the financial bid will be intimated to the eligible qualified bidder/s through system generated e-mails.
16. **THE CONTRACTOR HAS TO MENTION PERCENTAGE OF EXCESS OR LESS OVER THE ESTIMATED COST (IN FIGURES AND WORDS)**
17. In percentage rate of tender, only percentage quoted shall be considered. Percentage quoted by the contractor shall be accurately filled in figures & words, so that there is no discrepancy. If any discrepancy is found in the percentage quoted in words and figures, then percentage

quoted by the contractor in words shall be taken as correct. If excess/less is not mentioned, then the rate will be treated as percentage excess. In the percentage rate tender the bidder quoting zero percent is valid and will be taken at par with the estimated rate of the work put to tender.

18. The contractor will write percentage Excess or Less up to two decimal points only if he writes the percentage excess or less up to two or more decimal point, the two decimal points shall only be considered without rounding up.
19. Contractor exempted from payment of EMD will be able to participate in the tender directly by uploading documentary evidences toward his eligibility for such exemption.
20. 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, dated 28.03.2007.
21. The bidder may be asked in writing/online (in their registered e-mail ids) to clarify on the uploaded documents provided in the Technical Bid, if necessary, with respect to any doubts or illegible documents. The authority inviting bid may reserve the right to accept any additional document.
22. **The Schedule Caste/ Schedule Tribe Contractors** desirous to avail the facility of preference as per Works Department are required to submit an affidavit to this effect. The bidders have to produce their original registration certificate stating the fact of caste by their registration authority and to furnish as and when required for verification of the tender failing which they will not get price preference as per Rule.
23. 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 contractor.
24. Engineer Contractors desirous to avail exemption of E.M.D is required to submit an affidavit to the effect that he/she has not yet availed the facility for more than three works during the current financial year and he/she should produce original registration certificate as and when required for verification of the tender failing which the tender will be rejected.
25. Joint Ventures are not allowed.
26. Any addendum/corrigendum/cancellation of tender will be published in the Government Website www.tendersodisha.gov.in.

Sd/-

Superintending Engineer,
Deo Canal Division, Karanjia.

Memo No: _____ Date: _____

Copy submitted to the Principal Secretary to Government, Department of Water Resources, Odisha, Bhubaneswar for favour of kind information and necessary action.

Sd/-

SUPERINTENDING ENGINEER

Memo No: _____ Date: _____

Copy submitted to the Engineer-in-Chief, Water Resources / Engineer-in Chief, Procurement, Odisha, Bhubaneswar for favour of kind information and necessary action.

Sd/-

SUPERINTENDING ENGINEER

Memo No: _____ Date: _____

Copy submitted to the Director, Monitoring and Evaluation, O/o the Engineer-in-Chief, Water Resources, Odisha, Bhubaneswar for favour of kind information and necessary action. It is requested to kindly publish the NIFB in the official website.

Encl: Soft copy of the e-procurement notice.

Sd/-

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**SUPERINTENDING ENGINEER,
DEO CANAL DIVISION, KARANJIA
DETAILED TENDER CALL NOTICE**

The **Superintending Engineer, Deo Canal Division, Karanjia** invites online percentage rate tender through website in prescribed form to be eventually drawn P.W.D. form No. P₁ 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 govt. portal and must possess compatible digital signature certificate of class-II and III for online bidding. The website for online bidding is <http://tenderorissa.gov.in> for the work, **“Construction R.C.C Protection wall (heavy filling section) of Tail Minor Right side from RD 20m to RD 50m & RD 70m to RD 105m, Left side from RD 15m to 49m & RD 72m to 98.20m off-taking from Right Main Distributary under Deo Irrigation Project, Karanjia for the Year;2026-27.”**

1. The tender documents can be downloaded from the Govt. website <http://tenderorissa.gov.in> from dated **05.08.2026 at 10.00 AM to 19.08.2026 up to 5.30 P.M.** for the work **“Construction R.C.C Protection wall (heavy filling section) of Tail Minor Right side from RD 20m to RD 50m & RD 70m to RD 105m, Left side from RD 15m to 49m & RD 72m to 98.20m off-taking from Right Main Distributary under Deo Irrigation Project, Karanjia for the Year;2026-27.”** through online payment/transfer of **Rs.10,000.00 (Rupees Ten Thousand) only in favour of the Superintending Engineer, Deo Canal Division, Karanjia on the designated banks.** The bid will be received through e-procurement portal from dated **05.08.2026 at 10.00 AM to 19.08.2026 up to 5.30 P.M.** Each set of bid documents contains technical bid (Cover-I) and Price bid (Cover-II) i.e. an intelligent bill of quantity in MS Excel format. The bid Cover- I will be **opened on 20.08.2026 at 10.30 AM** in the **Office of the Superintending Engineer, Deo Canal Division, Karanjia** in presence of the bidders or their authorized agents. The bidders who participated in the online 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. Date, time and place of opening of cover- II (price bid) shall be intimated separately to those bidders who will be found eligible after evaluation of cover-I (Technical bid). The intimation letter will be sent both through their e-mail address and postal address.
2. The approx. value of the work tendered for **Rs.54.59 Lakhs.**
3. 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. Tender must be submitted in on-line only.
4. No tenderer will be permitted to furnish the tender in their own manuscript.
5. The Earnest Money deposit@1% of the approx. amount put to tender i.e. **Rs.55,000.00** only must accompany with tender. The bidder shall pay/ transfer the required amount of EMD/ Bid security by online as mentioned in the tender details through Payment gateway of designated banks and in no other form. **A bidder shall make electronic payment using his/her internet banking enabled account with designated Banks or their aggregator banks. A bidder having account in other Banks can make payment using NEFT/RTGS facility of designated Banks. For submission of bids through e-procurement portal, the bidder shall scan all the written pages of the Contractor’s Registration Certificate, PAN Card, GSTIN Clearance, Labour license, Affidavit regarding authenticity of documents & No Relationship Certificate, etc. and upload to the system in designated place.** The bidder shall furnish, as part of his Bid, a Bid security in the amount as shown in bid notice of the table of Invitation of tender for this particular work. The online bidder shall have to furnish the original

affidavit, Contractor's Registration Certificate, PAN & GSTIN clearance certificate & No Relation Certificate which were uploaded through web-site as and when required along with mobile number, e-mail Id of the agency in the office of the **Superintending Engineer, Deo Canal Division, Karanjia** during office hours. The Officer inviting the bid shall not be responsible for non-receipt due to any frivolous reasons. Non-submission of **"Bid Security"** along with the bid shall debar the bidder from participating in the online bidding system and his portal registration shall be cancelled. His/ Her name shall also be informed to the registering authority for cancellation of registration.

6. **(a) Providing facilities to the Engineer Contractors**

- i. As per works Department No.: FR-11/2001/10003/00 Bhubaneswar, dated.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.
- iii. Exemption of EMD to the Engineer contractor will be allowed for a maximum of three works in a financial year and the fact to attending a work with exemption of EMD should be entered in the original Registration Certificate of the Engineer Contractor. [F.D. & LAW Department UOR No.: 334/WE, dated05.06.1998 & No.: 449 L, dated25.03.2000 respectively.

a) No Cheque / Bank Draft / Cash Payment will be accepted towards EMD.

b) Adjustment of earnest money given with other tenders previously and submitted with other tenders shall not to be entertained.

7. 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.
8. For a particular work a bidder can submit only one tender paper. Submission of bids through e-Procurement portal the system shall consider only the last bids submitted through portal.
9. If any further necessary information is required the bidder can **seek clarification** on the bids **up to 1.00 P.M. of dated: 14.08.2026** from Office of the **Superintending Engineer, Deo Canal Division, Karanjia**. The employer's response for the queries raised by the bidder will be posted in the portal.
10. The Bid security paid/ transferred online through payment gateway of designated banks shall be valid for a period of 45 days beyond the validity of the bid.
11. The earnest money Deposit / Bid security and in respect of cost of bid are to be paid/ transferred online through payment gateway of designated banks along with the bid.
12. 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. In the eventuality of failure on the part of the lowest successful bidder to produce 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.
13. The Bidders desirous to hire machineries or equipment's from outside the State are required to furnish 2% (Two percent) of the amount put to tender only in the process described above and as per the above terms and conditions. Tender not accompanied with EMD and security for hired machineries as specified above shall be liable for rejection.
14. In case the contractor proposes to engage machineries and equipment's as asked for in the tender documents owned or hired but deployed outside the state, he/she is required to furnish additional 1% EMD/ BID Security. The entire Bid security including the additional bid security shall stand forfeited in case the contractor fails to mobilize the machineries within a week from the date of commencement of the work **& non submission of above specified documents in proper shape, the bid document will be summarily rejected.**
15. All charges towards quality control test will be borne by the contractor.
16. The work is to be completed in all respect within **03 (Three) Calendar Months including Rainy Seasons** from the date of issue of Work Order.
17. All tenders received will be remaining valid for **90 (Ninety) days** from the date of opening of technical bid and validity of tenders can also be extended if required without any monetary compensation.

18. 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.
19. The date of commencement of the work shall be as notified in work order.
20. The Plans, specifications and scope for the work can be seen from the Govt. website during the sale and received period of tender.
21. The tenderers shall carefully study the tentative drawing and specification applicable to the contract and documents which will form as part of the agreement to be entered into by the accepted tenderers. The detailed standard specifications for Odisha and other said relevant specification and drawings are available for sale. Complain at a future date that plans and specifications have not been seen by the tenderers will not be entertained.
22. 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 food stuff etc. In every case the materials must comply with the relevant specifications.
The tenderer will be deemed to have satisfied himself that the **Percentage** 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 in to account all conditions, difficulties that may be encountered during its progress and to have quoted labour rates and materials, octroi and other duties, including GST as applicable, lead, lifts, de-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. Complaints at future date that the availability of materials, labour or any other factor has been misjudged cannot be entertained. It should be understood clearly that no claim whatsoever will be entertained after wards on the plea of non availability of proper quantity and quality of materials including food stuff or for any other.
23. Each tenderer must quote a definite **Percentage** rate over the estimated cost of work which will be included in the contract. Tenders containing indefinite terms such as estimated rates will not be considered. Submission of Bids through the e-Procurement portal, an intelligent Bill of Quantity in Microsoft Excel format shall be made available to the bidder. The bidder shall fill percentage rates in figures and words should not leave any cell blank.
24. 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 be finalize the tender through a transparent lottery system, where all concerned bidders/their authorized representatives, the concerned SE/ EE of concerned Division and DAO will remain present. If the scheduled date either for opening of tender or lottery for finalization of tender is declared as a Govt. holiday then the same will be conducted in the next working day
25. **Sample of stone Product, Sand, Cement and Steel** etc. to be used are to be collected and deposited quoting the name of quarry under dated initial of the tenderer and Assistant Executive Engineer in charge in the Office of the **Superintending Engineer, Quality Assurance Division, Keonjhar/ Any Govt. Quality Control Laboratory under Chief Engineer, Quality Assurance, Department of Water Resources, Bhubaneswar** before procurement for testing and acceptance. The conveyance along with all charges will be borne by the contractor.
26. Bidders are to submit only the original BOQ (in Excel 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 item 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.
27. Rates should be furnished percentage rate of work unless otherwise mentioned in the tender schedule.
28. The bidder shall write his name in the space provide 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 item(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 places only in case of percentage rate tender.

29. The percentage rate should be written in figures in decimal coinage and the units in words. The tender should also show the grand total of the whole tender.
30. Submission of Bids through the E-Procurement Portal, the bidder can submit the scanned copy of the documents in the designated locations of Technical Bid and Financial Bid. Submission of document shall be affected by using DSC of appropriate class and thus shall be in encrypted form.
31. The online bidder shall digitally sign on all statement's 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 & his registration in the portal shall be blocked and the bidder is liable to be blacklisted.
32. The tender may not (at the discretion of the competent authority) be considered unless accompanied by scanned attested true copies of Registration Certificate, PAN card, GSTIN& No Relationship Certificate, Affidavit regarding authenticity of documents. The original certificates are also to be produced at the time prescribed by the tender inviting authority. Copies of Registration Certificate, **PAN CARD, NRC and Affidavit** given with other tender previously or with other tender on the same day will not be taken in to consideration.
33. The tender containing extraneous condition not covered by the tender call 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.
34. Submission of Bids through the E-Procurement Portal, it is allowed to modify the bid. 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. 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. Submission of Bids through the E-Procurement Portal, withdrawal of bid is allowed. 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 the Officer inviting the bid and up load the scanned document to portal in respective bid. The system shall not allow any withdrawal after expiry of the closure time of the bid.
35. Items of work 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 rates will be paid, on actual analysis approved by the competent authorities.
36. On no account the contract work should be sublet to anybody without the prior approval of the competent authority of the Department. In such an event the contract may be rescinded with penalty as will be deemed proper as per decision of the competent authority.
37. Letter etc., raising and lowering the rates or dealing with any point in connection with the tender will not be considered.
38. Schedule of Quantity accompanies tender notice: It shall be definitely understood that the Government does 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 omission, deductions additions or alternations shall in no way invalidate the contract and no extra monetary compensation will be entertained.
39. The authority reserves the right to make such increase or decrease in the quantity of items of works mentioned in the schedule 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 the contract rates. The contractor shall not be entitled for any compensation on this account, except extension of time where considered necessary.
40. Tenders not accompanied by the **EMD @ 1% i.e. Rs. 55,000.00** will be summarily rejected. The bidders have to furnish, as part of his Bid, a bid security in the amount as shown in bid notice of the

table of Invitation of Tender for this particular work. Submission of Bids through the E-Procurement Portal, the bidder shall scan all the written pages and upload to the system in designated place. The online bidder shall have to deposit the “Bid Security” online through payment gateway of banks with the “Officer inviting the Bid”. Tender inviting authority, State Procurement Cell, NIC, the designated Banks shall not be held responsible for such pendency or failure shall debar the bidder from participating in the online bidding system and his portal registration shall be cancelled. His name shall also be informed to the registering authority for cancellation of his registration. The bids of the technically qualified bidders will be opened for evaluation of the price bid. In case of the bidders have not furnished the Bid/Performance Security (EMD) in the above process & documents as per DTCN, their price bid will not be taken in to consideration for evaluation.

41. The contractor shall bear cost of various incidentals, sundries and contingencies necessitated by work in full within the following or similar category. Rent, royalties and other charges of materials, all other taxes including ferry, tolls conveyance charge, other cost. It is implied that the quoted rates are inclusive of such elements except GST.
42. The earnest money will be retained in the case of successful tender and will be dealt with as per the terms and conditions of the O.P.W.D. code and will not carry any interest. The earnest money of the unsuccessful tender will be refunded on application after the tender is finally accepted.
43. The work may be splitted up and distributed among several contractors if considered necessary on the emergency of the circumstances of the work and the contractor is not entitled to any compensation on this account.
44. The Department reserves the right of authority to reject any or all tenders received without assigning any reason whatsoever.
45. The tender inviting officer is not responsible for any failure, malfunction of breakdown of the electronic system used during the e-procurement process.
46. That for the purpose of jurisdiction in the event of any dispute if any the contract would be deemed to have been entered in to 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.
47. The tenderer whose tender is selected for acceptance shall within a period of seven days of issue of letter of acceptance (LOA) being given to him shall make an initial security deposit in the form of Security (As per Memorandum No. 173/W Dated 03.01.2026) in shape of National Savings Certificate (N.S.C) /Post Office Savings Bank Account/ Post Office Time Deposit Account / Kisan Vikas Patra/Bank Guarantee in favour of Divisional Officer (**Superintending Engineer, Deo Canal Division, Karanjia**) from any Nationalized/Schedule Bank in India counter Guaranteed by its local Branch at Bhubaneswar / e-Bank Guarantee executed on the Nationale-Governance Services Limited (NeSL) Digital Document Execution Portal / Insurance Surety Bond issued by an Insurance Company authorized by the Insurance Regulatory and Development Authority of India (IRDAI) [Vide Works Dept. OM No. WORKS-FA-MISCSB-0003-2026-4909/W, dt. 12.03.2026.] and in no other form which shall be 2% of the agreement amount 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, Deo Canal Division, Karanjia** or as directed. Submission of Bids through the E-Procurement Portal, the system shall generate the award of Contract letter and intimate the bidders in his e-mail. Failure to enter in to the required agreement and to deposit the Initial Security Deposit as above shall entail forfeiture of the earnest money. No tender shall be finally accepted until the required amount of Initial Security money is deposited. The written agreement to be entered in to 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 in-complete 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 security will be refunded after one year of successful completion of the work and payment of the final bill and will not carry any interest.

48. Under section 12 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**) before commencement of the work.
49. The contractor shall be liable to fully indemnify the department of any compensation under workmen compensation Act VIII of 1993 on account of the workmen employed by the contractor and full amount of compensation paid will be recovered from the contractor.
50. Tenderers are required to abide by the fair wages clause 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.
51. In case of any complaint by the labourers working about the nonpayment 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 in default, he may recover such amount from the contractor's dues and pay such amount to the labourer directly under intimation to the local Labour Officer to the Govt. The decision of the Superintending Engineer is final and binding on the contractor.
52. The contractor will have to submit the **Superintending Engineer, Deo Canal Division, Karanjia** monthly return of labourer both skilled and unskilled employed by him on the work.
53. 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.
54. No compensation will be paid by the department for any damage done by rain, flood, cyclone, tide or by any other natural calamities during the execution of the work.
55. It should be understood clearly that no claim what-so-ever 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.
56. The tenderers 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, dt.25.01.1957, which can be seen in the Office of the **Superintending Engineer, Deo Canal Division, Karanjia** undersigned on working day, during office hours.
57. The tenderers 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, octroi duty, entry tax all other taxes including GST as applicable, ferry tolls, conveyance charges and other cost on account of land and building & temporary electric connection to worksite as well as maintenance of coffer dam, service road, diversion road till completion of work required by the tenderer for collection of materials, storage, housing of staff or other purpose of the work is the responsibility of the bidder. No tenderer will however be liable to pay for temporary occupation of land owned by Govt. at the site of the work.
 - b) Labour camps or huts necessary to a suitable scale including conservancy and sanitary arrangements there in to the satisfaction of the local health authorities.
 - 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 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.
58. 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 bench marks. Level pillars, profiles, benching and leveling

- the ground where require. The rates to be quoted should before finishing items of work inclusive of carriage of all materials and incidental items of works.
59. After the work is finished all surplus materials & debris should be removed 100 m 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 left neat and clean and this should be inclusive of the rates.
 60. If any further necessary information is required the **Superintending Engineer, Deo Canal Division, Karanjia** will furnish such, but it must be clearly understood that the tender must be received in order and according to instruction.
 61. In case of delay in acquisition of land no compensation will be admissible but extension of time will be allowed.
 62. The department will have the right to supply at any time in the interest of the work any departmental material to be used in the work in addition to those mentioned in clause No.54 and the contractor shall use such materials at the stock issue rate fixed by the Department or market rate whichever is higher.
 63. Over and above these condition including the technical specifications the terms, conditions, rules and regulations and specification laid down in Odisha Standard specification code are also binding on the part of the contractor.
 64. Submission of bids through E-Procurement Portal, the bidder shall upload the scanned copy/copies of License, GSTIN, PAN card, Affidavit regarding authenticity of documents & No-relationship certificate. The on-line bidder shall have to produce the original documents in support of scanned copies & statements up-loaded in the portal to the **Superintending Engineer, Deo Canal Division, Karanjia** as & when required.
 65. **No Relation Certificate**
The contractor shall have to furnish certificate along with the tender to the effect that he is not related officer in the rank to an **Assistant Executive Engineer** and above in the State P.W.D. and any officer in the rank of Asst. Secy. and above in the W.R. 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 of damage resulting from such cancellation. The proforma for no relation certificate is contained in a separate sheet of D.T.C.N. in Annexure-'B'.
 66. 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.
 67. The contractor is to supply necessary labour and materials for the purpose of alignment laying whenever required at his own cost.
 68. The contractor should arrange necessary tools and plants such as pumps, Road Rollers 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.
 69. In the event of delay in supply of design reasonable extension of time will be granted on the application of the contractor. But no claim for monetary compensation will be entertained under any circumstance.
 70. Under no circumstance, Interest chargeable for the dues to any additional dues, if any payable for the work.
 71. Conditional tenders will not be taken into consideration.
 72. The EMD will be forfeited by the competent authority if the tenderer backs out from the offer before acceptance of the tender, as concurred in by Law Department & Finance Department In their UOR No.: 848/L, dated.31.05.97 & UOR No.: 202/WFD, dated.06.03.98 respectively. (Works Department Memo No.: 9101/Clt, dated.30.03.98) also the EMD will be forfeited if the tenderer failed to sign the agreement after acceptance and not willing to deposit the required ISD and additional performance security for the unbalance tender items.
 73. If L1 bidder does not turn up for agreement after finalization of the tender, then he shall be debarred from participation in bidding for three years and action will be taken to blacklist the contractor as per codal provision in Annexure-II of Amendment to Para-3.5.14 Note-1 of OPWD Code Vol.-1. In

case a contractor is black listed, it will be widely published and intimated to all departments of Govt. and also to Govt. of India agencies working in the State.

74. **The Schedule Caste/ Schedule Tribe Contractors** desirous to avail the facility of preference as per Works Department are required to submit an affidavit to this effect. The bidders have to produce their original registration certificate stating the fact of caste by their registration authority and to furnish as and when required for verification of the tender failing which they will not get price preference as per Rule
75. 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 contractor.
76. When in response to a notice calling for tenders, only a single tender is received in the first time, the tender shall be cancelled without opening of the bid and fresh tender be invited publicly. If single tender is received even after retendering, then the approval of the next higher authority should be obtained, if the tender is otherwise in order and acceptable vide O.P.W.D. Code Vol.-I, Para-3.5.18 (Office Memorandum No 16/W dated 01.01.2015 of Works Department, Odisha.)
77. **Protection against flood:** In case of untimely floods in the river during the working season resulting in overtopping of coffer dam and flooding of the work area, the contractor shall make his own arrangement at his cost to shift the machineries, equipment's, materials, labour and departmental machineries if hired by the contractor to a safe place. The work shall have to be resumed after resending of floods and necessary strengthening of coffer dam and dewatering will be done by the contractor at his cost. Extension of time for the completion of the work may be considered by the department if the discontinuance of the work is beyond the all-reasonable attempts of the contractor to such eventualities.

The debris and other materials accumulated in the working area during floods or regular floods and necessary strengthening of coffer dam and dewatering will be done by the contractor at his cost. Extension of time for the completion of the work may be considered by the department if the discontinuance of the work may be considered by the department is beyond all reasonable attempts of the contractor to such eventualities.

The debris, and other materials accumulated in the working area during floods or regular floods in the monsoon 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 with concrete by the contractor, gets filled up during the monsoon period with earth such removal will not be paid for again. The contractor will have to re-excavate the same at his own cost.

It shall be distinctly understood that it is entirely the responsibility of the contractor to make such arrangements 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 payment made against damages either during working season or during the flood season. The flood includes the high tides, cyclonic effects and saline ingress which should be clearly understood by the contractor and no extra payment for the damage, re-excavation etc. shall be paid in any circumstance. The department accepts no liability what-so-ever for any damage or loss of men, materials, machinery and work of hindrance caused to the progress of work.

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 the probable flood during monsoon till completion and handing over of the entire work.

78. Dewatering from the foundation for bridges, culverts, building worksites etc. and watering for consolidation in roads embankments 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 term dewatering shall mean the execution or operation of the items due to standing water as well as due to percolation water.

79. 2% + surcharge as applicable over the gross amount of the bill shall be deducted from the contractor's bill towards income tax & as amended from time to time.
80. (a) GST as applicable will be paid extra after gross bill amount prepared vide Section-15 and Section 142 (11-C) of Odisha Goods and Service Tax Act 2017.
- (b) The percentage rate quoted by the contractor in the tender for works shall exclude GST that may be levied on turnover on works contract according to the Laws and Regulations as applicable from time to time & as amended from time to time.
- (c) Deduction of GST at source will be made from each running account bill for the work and credited to Govt. account at the rate as applicable or as amended from time to time.
79. The amount on **royalty** 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.
80. As per **Office Memorandum No.173/W, Dt. 03.01.2026 of Works Department**, the Additional Performance Security (APS) 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.

Additional Performance Security (As per Memorandum No. 173/W Dated 03.01.2026) shall be furnished by the bidder when the bid amount is less than the estimated cost put to tender. Only the successful bidder who has quoted less bid price/rates than the estimated cost put to tender shall have to furnish Additional Performance Security (As per Memorandum No. 173/W Dated 03.01.2026) in shape of National Savings Certificate (N.S.C) /Post Office Savings Bank Account/ Post Office Time Deposit Account / Kisan Vikas Patra/Bank Guarantee in favour of Divisional Officer

(**Superintending Engineer, Deo Canal Division, Karanjia**) from any Nationalized/Schedule Bank in India counter Guaranteed by its local Branch at Bhubaneswar / e-Bank Guarantee executed on the Nationale-Governance Services Limited (NeSL) Digital Document Execution Portal / Insurance Surety Bond issued by an Insurance Company authorized by the Insurance Regulatory and Development Authority of India (IRDAI) [Vide Works Dept. OM No. WORKS-FA-MISCSB-0003-2026-4909/W, dt. 12.03.2026.] within **seven days** of issue of letter of acceptance (LOA) by the concerned Officer (by e-mail) to the successful bidder otherwise the bid of the successful bidder shall be cancelled & the Earnest Money Deposit/Bid Security shall be forfeited. Further, proceeding for blacklisting shall be initiated against the bidder.

81. The quantities in respect of the items for which quoted rates are more than 25% of the estimated rates are not allowed to be varied by more than five percent. In case if it, exceeds the limit approval of the competent authority shall be obtain from the competent authority and no financial compensation shall be paid for delay in transit of sanction.
82. The bidder may be asked in writing/online (in their registered e-mail ids) to clarify on the uploaded documents provided in the Technical Bid, if necessary, with respect to any doubts or illegible documents. The authority inviting bid may reserve the right to accept any additional document.
83. For the purpose of estimate the approved quarry lead is to be provided judiciously Engineer-in-charge would be responsible for ensuring the quality of the materials supplied. 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.
84. 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 5 percent of the contract value. Assessment of incentives may be worked 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
85. **Miscellaneous:**
 - a) The department will have the right to inspect the scaffolding and centering made for the work and reject partly or fully such structures if found defective in their opinion.
 - b) Shuttering and centering shall be made with seasoned Sal wood planks the inside of which shall be lined with suitable sheeting and make leak proof and water tight or alternatively steel shuttering and centering may be used.
86. Tenderers are also required to go through each clause of P.W.D. form P₁ carefully in addition to the clause mentioned herein before tendering.
87. The contractor shall have to submit an affidavit about authentication of tender documents, while submitting tender.
88. All the forms and Annexure **A, B & III** attached to section 2 of this DTCN must be filled in properly along with the authenticated documentary evidence required therein, failing which the bid shall be treated as 'non-responsive' and be rejected.
89. **1% (One percent)** of the gross amount of the bill will be deducted from the contractor bill towards **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.
90. Registration in the Contractor Data base Management system (CDMS) available at www.cdmsodisha.govt.in by all Contractors is mandatory as per OM No.12934, dated.23.08.18 of Works Department.
91. Grant of Concessions (s) to Scheduled Caste and Scheduled Tribe Contractors will be allowed as per the Resolution No.16262, dated.30.10.2018 & OM No.10224, dated.01.09.15 of Works Department.
92. **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 equipment's, appliances or a thing 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 drawing referred to in the specifications, any modifications of such drawings approved in writing by the **Chief Construction Engineer, Khairibhandan & Deo Irrigation Project, Karanjia/ Superintending Engineer, Deo Canal Division, Karanjia** 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 Specification / 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 term "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.

93. All Reinforcement Steel and structural steel shall be procured and used as per specifications mentioned in BIS's documents- IS: 1786 and IS:2062 respectively. Independent tests shall be conducted, wherever required, to ensure that the materials procured conform to the specifications. These steel shall be procured only from those firms, which are established, reliable, Indigenous & primary producers of steel, having Integrated Steel Plants (ISP), using iron ore as the basic raw-material as per Ministry of Steel's guidelines.

No re-rolled steel shall be permitted in works. All other specifications and guidelines of MORTH shall be complied.

All reinforcement steel and structural steel shall be procured from primary and secondary producers of steel: **SAIL / RINL / TATA / Jindal Steel / Shyam Steel/SML Titan Brand TMT/Rungta Steel/ Reliable/Shrishtii/Majboot/SEL Tiger**

In case of exigency, other brands (Primary producers) of steel may be used with proper justification and prior approval of competent authority satisfying the tests as required by BIS's code.

Superintending Engineer
Deo Canal Division, Karanjia

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://www.tendersodisha.gov.in> and download the Technical bid (Cover-I) and Financial bid (Cover-II) in shape of bill of quantity in an intelligent MS Excel Format. As per the requirement of the bid document, the bidder will fill up required information and fill up the **percentage rate** in figures on the intelligent MS Excel sheet. The bidder is to scan and upload along with the bid the following documents.

1. Registration Certificate,
2. GSTIN Certificate,
3. PAN Card, EMD
4. Cost of Bid,
5. No relation Certificate
6. Affidavit (Ref. Annexure-A)
7. Details of Structure & Organization (Ref. Form-A)
8. All other documents as specified in the Bid Document for the work.
9. Attested True copy of registration of firm/company or Corporation.
10. Certified copy of Power of Attorney issued in favour of authorized persons in case of limited company or Corporation in favour of a partner in case of firm in partnership who shall sign the tender documents digitally (Ref Clause 2.7 and 2.8 of Section-2)

The bidder is also required to scan and upload any other required documents as specified in the bid document.

2. Method of submission of Tender Documents

- 2.1 The bidder shall upload the scanned copy / copies of the documents & information as per requirement of the bid document through the “e” Procurement Portal. All documents & scanned copies are to be uploaded in the designated location of the Bid. All the uploaded documents should be clear & 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 bidders shall digitally sign on the all statements, documents, clarification uploaded by him owning responsibility for their correctness / authenticity. If any of the information furnished by the bidder is found to be false /fabricated /bogus the bidder will be black listed & EMD /Bid Security will be forfeited.
- 2.2 The information required as per bid documents may be provided in the specified format annexed to the bid document.
- 2.3 Contractors are not required to write their name on the outer cover containing the bid documents. They are only required to write the name of the work and authority who had issued the tenderers. The tender shall not be taken into consideration and item of which no rate has been entered will not be paid for by the employer when executed and shall be deemed covered by the other rates and prices in the bill of quantities.
- 2.4 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 sending 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.

i. 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.

ii. 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) 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, dated.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.
 - Note: 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.

iii. 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) 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.

2.5 If the intending tender is an individual, the documents shall be signed by the individual above his full type written name and current address.

2.6 If the intending tenderer is a proprietary firm, it shall be signed by the proprietor above his full name and with his current address.

2.7 If the intending tenderer is a firm in partnership it shall be 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 pre-qualification documents.

- 2.8 If the intending tenderer is a limited company or Corporation, it shall be signed by a duly authorized person holding the power of attorney in which case certified copy of power of attorney shall accompany.
- 2.9 All witness and sureties shall be of person of status and probity and their full names, occupation and address shall be stated below their signatures.
- 2.10 As the period of execution is **03 (Three) Calendar Months including Rainy Seasons so there is no provision of payment of escalation** as per details given in Clause-32(a) of Condition of Contract. As such the increased cost on cement, rod & bitumen will not be considered.
- 2.11 **The agency will install display board mentioning information about the work at work site after drawl of the agreement at his own cost.**
- 2.12 The tender documents duly filled in and signed by the intending tenderer should be submitted in on-line through prescribed website only.
3. **Opening of Technical Bid Document.**
The bid documents will be opened on dated **20.08.2026 at 10.30 AM** in the **Office of the Superintending Engineer, Deo Canal Division, Karanjia** 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, dt.01.01.2019
B. The bidder must upload the valid RC, valid GST No. and PAN, Affidavit, undertaking regarding No-relationship certificate & required EMD amount online payment mode which are mandatory.
5. **Financial Decision-making authority.**
The original records are to be verified **within 07 (Seven)** days from the date of opening of the tender. The Financial bid who qualified in the technical bid will be opened, if the documents furnished are found to be genuine after due check. If any discrepancy is found in genuineness of the records furnished during verification legal prosecution will be initiated against the default bidder as per legal provisions & the bidder will be debarred from tendering any further work in the Department. The competent authority reserves the right to accept or reject or disqualify any of the tender of Pre-qualification bid without assigning any reasons & its decision shall be final.
6. Submission of bids through E-Procurement portal, the bidder shall upload the scanned copy/copies of **Registration Certificate, GSTIN, PAN Card, Affidavit regarding authenticity of documents & No-relationship certificate.** The on-line bidder shall have to produce the original documents in support of scanned copies & statements uploaded in the portal to the **Superintending Engineer, Deo Canal Division, Karanjia** before opening of bid.
7. **Final Decision-making authority**
The competent authority reserves the right to accept or reject or disqualify any of the tender of pre-qualification without assigning any reasons and its decision shall be final.
8. **Further Clarification**
The **Superintending Engineer, Deo Canal Division, Karanjia/Assistant Executive Engineer, Deo Canal Sub-Division No.: I/II/III, Karanjia & Tato** may be contacted during office hours on any working days for any further clarification.
9. **Affidavit.**
I. The contractor/ Firm has/have to furnish affidavit along with the Bid in support of authenticity of the tender documents / blacklisting / validity of registration certificate etc. as per Annexure-J.
II. Affidavit should be furnished by Engineer Contractor / S.C. / S.T. Contractors / Physical Handicapped Contractors etc. for availing exemption / relaxation of E.M.D. as per rules. Such

bidders have to upload documentary evidence towards his eligibility for such exemption along-with Bid.

10. **Sample of all Material:** The contractor shall supply of all materials fully before procurement for the work for testing report and acceptance by **Superintending Engineer, Quality Assurance Division, Keonjhar at his own cost.** If found unsuitable the same may be rejected.
11. From the commencement of the works to the completion of the same, they are to be under the contractor's 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.
12. Where it will be found necessary by the Department, the Officer-in-Charge of the work will be supplied site order book with pages serially numbered. Orders regarding the work whenever necessary are to be entered in this 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 this 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 site 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.

Superintending Engineer
Deo Canal Division, Karanjia

FORM - A
STRUCTURE AND ORGANISATION

1. Name Tenderer.
2. Nationality of Tenderer.
3. Office Address.
4. Telegraphic Address
- Telephone No ;
- Telex Number
5. Location of establishment
6. The tenderer is -
 - a. An individual
 - b. A proprietary firm.
 - c. A limited company or limited corporation
 - d. A member of a group of companies (If yes, give names, address and present description of other companies.)
 - e. A subsidiary of large organization
(If yes, give names, address of the present organization)
 - f. if the company is subsidiary, state what involvement if any, will the parent company have in the project.

Attach the organization chart showing the structure of the organization including the names of the Directors position of officer.

7. Number of year of experience
 - a. As a prime contractor
 - I. In own country
 - II. Other country (specify country)
 - b. In a Joint venture
 - I. In own country
 - II. Other country (specify country)
8. Name of the address of any associates the tenderer has in India who are knowledgeable in the procedure of customs, immigration takes and other information necessary to do work.

9. How many years has your organization been in business under your present name? Add what were your fields were and when you established your organization. When did you add new field (if any)?
10. Were you ever required suspending construction for a period of more than six months continuously after you started? If so, give the names of project and reason of failure.
11. Have you ever not completed any work awarded to you? If so give name of project and reasons for not completing the work.
12. In how many projects were imposed penalties for delay? Please give details.
13. In which fields of Civil Engineering construction do you claim specialization and Interest?
14. Give details of your experience in modern concreting / Earth work and quality control.
15. Give details of your material testing laboratory.

Signature of tenderer

(AFFIDAVIT)

(To be submitted in original in legal stamp paper)

I Sri.....aged..... Years, 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 possess a valid license for execution of works contract issued by
* belongs to Class & is valid up to **
- ii) I am submitting tenders before the **Superintending Engineer, Deo Canal Division,
Karanjia** for execution of following works in response to Bid Identification
No.....
 1. **
 2.
 3.
 4.
- iii) I am the authorized signatory for the tender for the work (mention name of
work).
- iv) I am swearing this affidavit that all tender documents and accompanying papers
those being submitted by me before the **Superintending Engineer, Deo Canal
Division, Karanjia** are all authentic and bonafied documents in the eyes of Law of
the land.
- v) I do hereby authorize and request any bank, person, firm or Corporation to
furnish pertinent information as deemed necessary and as requested by the
Department to verify this statement or regarding my (our) competency and
general reputation.

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

Signature of the Contractor/
Authorized Signatory

Note: -

- * Mention the license issuing authority
- ** Mention the date up to which license is valid
- *** Mention the name of works for which tender 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 **Assistant Executive Engineer and above** and any Officer of the rank of Assistant 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 for feature of EMD & security deposit and I/We shall be liable to make good the loss or damage resulting from such cancellation.

I/We also note that, non-submission of this certificate will render my/our tender liable for rejection.

Signature of Contractor

Address _____

Date: _____

UNDERTAKING TO PAY MINIMUM WAGES

I do here by undertake that, I will pay **Rs. 472.00 (Rupees Four Hundred Seventy-Two) only** minimum & other allowances (V.D.A.) or as fixed by Government from time to time per day to the labourers engaged by me as per minimum wages act.

CONTRACTOR.

SECTION-3

**GENERAL RULES
& DIRECTIONS**

ODISHA PUBLIC WORKS DEPARTMENT

(FORM P₁)

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 pasted through Govt. web site www.tendersodisha.gov.on.
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 to be deposited by the successful tenderer and the percentage if any, to be deducted from bills. Copies of the specification, 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 payments made on account of work, 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 receipt 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 Department 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 tenderer without having been so filled in a 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 deposited will be 1%.
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 willing to undertake each item of the work specified in the said form of invitation to tender, or which contain any other conditions of any sort, or omit to note the time within which the work can be furnished 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 shall bear the name of the work to which they refer written outside the envelope.
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. In the event of a tender being rejected the challan for the earnest money forwarded therewith shall there upon be returned to the tenderer with a pay order for the amount of the earnest money.
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 tender. The tenders to the selected tenderer 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-in-charge is not competent to accept the tender himself, he will inform the tenderer of the tender which he decides to recommended for acceptance, such tender shall there upon 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 within the prescribed time.

The tender with the specification and other documents signed by the tenderer will then be forwarded for acceptance to the Engineer-in-charge who is competent to accept the same. If the said Engineer-in-charge 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 percent of the estimated value of the work, failing which tender shall be liable to rejection. Any balance of the security money outstanding after completion of the contract with the tenderer may be made up by deductions of 5 percent of the amount of each payment to be made to him under clause 7 of the conditions of contract for the work done under the contract. 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-in-charge 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, 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 lists 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, dated 01.08.2005).
14. The earnest money deposited is liable to be forfeited to Govt. if the tenderer back-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& as amended from time to time.

Superintending Engineer
Deo Canal Division, Karanjia

TENDER FOR WORKS

I/We hereby tender for the execution for the Government of Odisha for the work specified in the underwritten memorandum at the rates specified therein in a period of **03 (Three) Calendar Months including Rainy Seasons** from the date of written order to commence and in accordance in all respects with the specifications, designs, drawings 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 : | Construction R.C.C Protection wall (heavy filling section) of Tail Minor Right side from RD 20m to RD 50m & RD 70m to RD 105m, Left side from RD 15m to 49m & RD 72m to 98.20m off-taking from Right Main Distributary under Deo Irrigation Project, Karanjia for the Year;2026-27. |
| | b) Amount put to tender: | Rs.54,59,244.00 |
| | c) Agreement Amount : | Rs. |
| | d) Name of the Agency : | |
| | e) E.M.D. | Rs. 55,000.00 |
| b) This deposited will be 2% of the estimated cost of the work | f) i) Initial Security deposit (including Earnest Money) to be deposited before the commencement of the work: | 2% (two percent) of the Agreement value. |
| | ii) Additional Performance Security : | Rs. |
| c) This percentage From bills will be credited to the contractor's security deposit | g) Security deposit to be deposited from the work bill of contractor. | 5% (five percent) of the gross amount of bill |
| | h) Time required for the work from date of written order: | 03 (Three) Calendar Months only (Including Rainy Seasons) |
| | i) Date of written order to commence: | |
| | j) Total item of work tendered for: | 12 (Twelve) Items only |

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

Dated theday of2026

Signature of the Contractor before submission of tender

Signature of witness to one tender's signature

CONTRACTOR

Witness:

Address:

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,
Deo Head Woks Division, Karanjia

Certified that this Agreement No.:, contains.....Pages only(Schedule XLV-Form No.: 61)

Superintending Engineer
Deo Canal Division, Karanjia

SECTION-4

CONDITION OF CONTRACT

CONDITIONS OF CONTRACT

Compensation
for delay

Clause-1: All compensation or other sums of money payable by the contractor to 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 of the security deposit or any part thereof.

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

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 essence of the contract on the part of the contractor) and the contractor shall pay, as compensation, an amount equal to 1/2 percent on the amount of the estimated cost, if the whole work as shown by the tender for every day that the work remains un-commenced, or un-finished 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 authorized 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 event of the contractor failing to comply with the condition 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 every day that the due quantity of work remains incomplete. Provided always that the entire amount of compensation to be paid under the provision of this clause shall not exceed 10 percent of the estimated cost of the work as shown in the tender.

Action when whole
security deposit is
forfeited.

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

i) To rescind the contract (of which recession notice in writing to the contractor under the hands of the Superintending Engineer shall be conclusive evidence) 20% of the value of the 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 respect in the same manner and at the same

rates 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 the work done shall be final and conclusive against the contractor.

iii) To measure up 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 sum 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 the 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 advance on account of 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 to 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 payable in-respect thereof and he shall only be entitled to be paid the value 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.

Contractor remains liable to repay compensation if action not taken under clause No.6. Power to take possession of or require removal of or sell contractors plants.

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 to be exercisable. In the event of any future case of 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 clauses, he may 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 notice in writing to the contractor or his clerk of the works, foreman or other authorized 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.

Extension of time

Clause-4: 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, authorize such extension of time, if any, as may in his opinion be necessary or proper. The Superintending Engineer shall at the same time inform the contractor whether he claims compensation for delay.

Final Certificate

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 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 contractor 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 the completion of the 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 sum actually realized by the sale thereof.

Sub-Clause to Clause-5: If in the opinion of Engineer-in-Charge, which shall be final and binding on the contractor, occupation or utilization of a portion of the work completed in no way interferes with progress of the work the same may be occupied or utilized by on behalf of the Govt. 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 (Contractor) own cost within **03 (Three) months** from the date of completion of the whole work provided that the contractor will not be allowed any concession either in the shape of extension of stipulated period or any other monetary compensation on account of such occupation or use.

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

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 counter signature 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, outstanding from each such payment shall be deducted so as to, 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.

Stores supplied
by Government.

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 prices 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.

Clause-9(a): "If a contractor removes any materials 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-9(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 today 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 vides also Clause-5.

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

Do not invalidate Contract.

Rates of work not in estimate or schedule of rates of the district.

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

Clause-10: 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, fully and faithfully to the designs, 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 expenses to make or cause to be made copies of the specification, and of all such designs, drawings and instructions as aforesaid.

Clause-11: 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 intension 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.

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 Chief Construction Engineer, Khairibhandan & Deo Irrigation Project, Karanjia/ Superintending Engineer, Deo Canal Division, Karanjia will be final.**

Clause-12: 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 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 the work as originally contemplated.

Action and compensation payable in case of bad work.

Clause-13: If it shall appear to the Engineer-in-charge or his sub-ordinate-in-charge of the work, that any 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.

Work to be open for inspection

Contractor or responsible Agents to be present.

Clause-14: 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 the contractor's agent shall be considered to have the same force as if they had been given to the contractor himself.

Notice to be given before work is covered up.

Clause-15: 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 thereof 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.

Contractor is liable for damages done and for imperfection for 6 months after certificate.

Clause-16: 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 thereof and the contractor shall be liable to pay any part of the expenses not so recovered by the Engineer-in-charge.

Contractor to supply Plant, ladders, scaffolding etc.

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

Clause -17: 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 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-18: 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 fourteen 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, PWD provided that where higher rates have been prescribed under the minimum wages Act. 1948 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 labour for the work done by such labour 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 fourteen years

and to refuse to allow any labourer whom he decides to be below the age of fourteen years to be employed by the contractor.

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

Clause-19: 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 to do so or become insolvent or commence any insolvency, proceedings or make any composition with his creditor or attempt to do so 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 if he contract had been rescinded under the clause3 thereof, and in addition the contractor, shall not be entitled to recover or be paid for any work thereto for actually performed under the contract.

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

Clause-20: 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.

Changes in constitution of firm.

Clause-21: 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 ensure 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.

Clause-22: 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, Deo Head Woks Division, Karanjia 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-23: DELETED.

Lump sums in estimates.

Clause-24: 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.

Clause-25: In the case of any class of work for which there is no such specification as is mentioned in the rule-1, 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-26: 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-27: 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 contracts.

Clause -28: 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-29: 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-30: Sanitary arrangements will be made by the contractor at this own cost for his labour camp.

Clause-30(a)1: The contractor shall bear all taxes including GST as applicable, Income tax, royalty, fair-weather charges and tollage, where necessary.

Clause-31(a)(i): REIMBURSEMENT/RECOVERY DUE TO VARIATION IN PRICES OF MATERIALS OTHER THAN (STEEL, CEMENT, BITUMEN, PIPES & P.O.L).

If during the progress of the work the price of any materials (excluding the cost of steel, cement, bitumen& P.O.L) incorporated in the work (not being materials supplied from the Engineer-in-Charge’s store) in accordance with clause there of increases or decreases a result of increase or decrease in the Average wholesale Price Index (all commodities), and the contractor thereupon necessarily and properly pays in respect of that materials incorporated in the work such increased or decreased price, then he shall be entitled to reimburse or liable to refund, quarterly, as the case may be such an amount, as shall be equivalent to the plus or minus difference of 85% in between the average wholesale price index (all commodities) which is operating for the quarter under consideration and that operated for the quarter in which the bid was received (last date of receipt) as per the formula indicated below provided that the work has been carried out within the stipulated time or extension thereof as are not attributable to him. If penalty is levied for delayed completion of the work, the contractor shall not be eligible to get price escalation on the above materials on the value of works executed during the extended period.

This clause will be applicable to the contracts where original stipulated period of completion is more than 18 months.

In the situation where the period of completion is initially stipulated in the agreement as less than **18 (eighteen)** months but subsequently the completion period has been validly extended on the ground that the delay in completion is not attributable to the contractor and in the result the total period including the extended period stands more than 18(eighteen) months or more, price escalation for other materials is admissible only for the remaining period excluding **18 (eighteen)** months there from.

Formula to calculate the increase or, decrease in the price of materials:

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

$$V_m = 0.85 \times P_m / 100 \times R \times (M_i - M_o) / M_o$$

V_m = Increase or decrease in the cost of work during the quarter under consideration due to changes in the price of materials other than cement, steel, bitumen, pipes and POL.

R = Value of work done during the quarter under consideration excluding the work executed under extra items if any at prevailing schedule of rate / derived rates.

M_o = The all-India wholesale price index (all commodities) prevailed during the quarter of last date of receipt of bids (as published by the Economic Adviser to Govt. of India, Ministry of Industry and Commerce, New Delhi).

M_i = The all-India wholesale price index (all commodities) for the quarter under consideration as published by Economic Adviser, Govt. of India, Ministry of Industry & Commerce, New Delhi. In respect of the justified period extended for completion of the work, the index prevailing at the time of stipulated date of completion or the prevailing index of the period under consideration, whichever is less, shall be considered.

P_m = Percentage of material component (other than cement, steel, bitumen, pipes and POL) of the work, as indicated in Clause-31(d) below.

Clause-31(a) (ii): REIMBURSEMENT/RECOVERY OF DIFFERENTIAL COST DUE TO VARIATION IN PRICES OF PRINCIPAL MATERIALS (STEEL, CEMENT, BITUMEN AND PIPES NOT ISSUED BY DEPARTMENT) AFTER SUBMISSION OF TENDER:

If after submission of the tender, the prices of steel, cement, bitumen and pipes (not being supplied by the Department) increases / decreases beyond the price(s) prevailing at the time of the last date for submission of tenders including extension for the work, the contractor shall be eligible to get differential cost due to such hike on the value of works executed during the stipulated period and during the extended period when the reason of delay in completion of the work is not attributable to the contractor. If penalty is levied for delayed completion of the work, the contractor shall not be eligible to get price variation on the above materials on the value of works executed during the extended period.

Reimbursement in case of differential cost due to increase in price of cement, steel, bitumen and pipes are to be made by the Superintending Engineer with prior approval tender accepting authority subject to following conditions:

- 1) Contractors have to submit the vouchers showing procurement of different materials from authorized dealers for the said work.
- 2) Differential cost will be allowed only for the works which are progressed as per the approved work programme/revised work programme duly approved by the Engineer-in-charge.

Recovery in case of decrease in prices of cement, steel, bitumen and pipes shall be made by concerned Superintending Engineer from the contractor immediately.

The increase/decrease in prices of cement, steel, bitumen and pipes for reimbursement/recovery shall be determined as follow.

a) Adjustment towards differential cost of cement

V_c = $(C_i - C_o) / C_o \times$ Actual quantity of cement utilized in the work during the quarter under consideration $\times$ base price of cement as prevailing on the last stipulated date of receipt of tender including extension, if any.

V_c = Differential cost of cement i.e. amounts of increase or decrease in rupees to be paid or recovered.

C_i = All India wholesale price index for cement for the quarter under consideration published by Economic Adviser, Govt. of India, Ministry of Industry and Commerce, New Delhi.

C_o = All India wholesale price index (as published by Economic Adviser, Govt. of India, Ministry of Industry and Commerce, New Delhi) for cement as prevailing on the last stipulated date of receipt of tender.

b) Adjustment towards differential cost of steel

V_s = $(S_i - S_o) \times$ Actual quantity of steel utilized in the work during the quarter under consideration.

V_s = Differential cost of steel i.e. amounts of increase or decrease in rupees to be paid or recovered.

S_i = Cost of the steel as prevailed during the period under consideration as fixed by Steel Authority of India.

S_o = Base price of steel prevailing as on the last date of submission of tender including extension, if any.

c) Adjustment towards differential cost of Bitumen.

V_b = $(B_i - B_o) \times$ Actual quantity of Bitumen utilized in the work during the quarter under consideration.

V_b = Different cost of Bitumen i.e. amounts of increase or decrease in rupees to be paid or recovered.

B_i = Average cost of Bitumen prevailed during the period under consideration as fixed by IOCL / BPCL / HPCL.

B_o = Base price of bitumen as prevailing on the last date of receipt of tender including extension, if any.

d) Adjustment towards differential cost of pipes:

$V = 0.85 \times P_p / 100 \times R (P_i - P_o) / P_o$

V_p = Differential cost of pipe i.e. amounts of increase or decrease in rupees to be paid or recovered during the quarter under consideration.

P_p = Percentage of pipe component of the work as indicated in the clause 31(d).

R = Value of work done during the quarter under consideration excluding the value of work executed under extra items, if any, at prevailing schedule of rates or derived rate.

P_i = All India Wholesale Price Index for the period under consideration as published by Economic Adviser, Govt. of India, Ministry of Industry & Commerce, New Delhi for the type of pipe under consideration.

P_o = All India Wholesale Price Index (as published by Economic Adviser, Govt. of India, Ministry of Industry & commerce, New Delhi) as on the last stipulated date of receipt of tender including extension, if any, for the type of pipe under consideration.

Clause 31(b):-REIMBURSEMENT/REFUND DUE TO STATUTORY RISE IN COST OF MINIMUM WAGES BY GOVERNMENT:

If after submission of the tender, the wages of labour increases or decreases as a direct result of the coming into force of any fresh law, or statutory rule or order beyond the wages prevailing at the time of the last date of submission of tenders including extensions, the contractor shall be eligible to get escalation due to such hike on the value of works executed during the stipulated period & during the validly extended period when the delay in completion is not attributable to the contractor. If penalty is levied for delayed completion of the work, the contractor shall not be eligible to get escalation on labour on the value of works executed during the extended period.

The contractor shall, within a reasonable time of his becoming aware of any alteration in the price of any such wages of labour, give notice thereof to the Engineer-in-charge stating that the same is given pursuant to this condition together with all information relating thereto which he may be in a position to supply. Engineer-in-charge may call book of account and other relevant documents from the contractor to satisfy himself about reasonability of increase in prices of wages & actual payment thereof for this purpose, the labour component of the work executed during period under consideration shall be the percentage (as specified in table below) of the value of work done during that period and the

increase/decrease in labour shall be considered on the cost of minimum daily wages of any unskilled Labourer, fixed by the Government under Minimum Wages act.

The compensation for escalation for labour shall be worked out as per the formula given below:

$$V_I = 0.85 \times P_I / 100 \times R \times (L_I - L_0) / L_0$$

V_I = increase or decrease in the cost of work during the quarter under consideration due to changes in rates of minimum wages.

R = Value of work done during the quarter under consideration excluding the work executed under extra items if any at prevailing schedule of rate/derived rates.

L_0 = The minimum wages for labour as notified by State Govt., as prevailing on the last stipulated date of receipt of tender including extension, if any.

L_I = The minimum wages for labour as notified by State Govt. & as prevailed on the last date of the quarter previous to the one under consideration. In respect of the justified period extended, the minimum wage prevailing on the last date of quarter previous to the quarter pertaining to stipulated date of completion or the minimum wage prevailing on the last date of the quarter previous to the one under consideration, whichever is less, shall be considered)

P_I = Percentage of labour component of the work, as indicated in the clause 31(d).

Clause 31(c): REIMBURSEMENT/REFUND DUE TO VARIATION IN PRICES OF P.O.L.:

Similarly, if during the progress of work, the prices of Diesel, Petrol, Oil and Lubricants increases or decreases as a result of the price fixed thereof by the Government of India and the contractor thereupon necessarily & properly pays such increased or decreased price towards Diesel, Petrol, Oil and Lubricants used in the execution of the work, then he shall be entitled to reimbursement or liable to refund, quarterly, as the case may be such an amount as shall be equivalent to the plus or minus difference of 85% in between the price of P.O.L., which is operating for the quarter under consideration & that operated for the quarter of last date of receipt of bids as per the formula indicated below provided that the work has been carried out within the stipulated time or extension thereof as are not attributable to him. If penalty is levied for delayed completion of the work, the contractor shall not be eligible to get price escalation on POL on the value of works executed during the extended period.

Formula to calculate the increase or decrease in the price of P.O.L:

$$V_I = 0.85 \times P_i / 100 \times R \times (F_i - F_0) / F_0$$

V_I = Increase or decrease in the cost of work during the quarter under consideration due to Changes in rates for P.O.L.

P_i = Percentage of P.O.L. component of the work, as indicated in clause-31(d) below.

R = Value of work done during the quarter under consideration excluding the work executed under extra items if any at prevailing schedule of rate/derived rates.

F_i = All India Wholesale price Index for Fuel, Oil & Lubricant (High Speed Diesel) for the quarter under consideration as published by Economic Adviser, Govt. of India, Ministry of Industry & Commerce, New Delhi. In respect of the justified period extended, the rates prevailing at the time of stipulated date of completion or the prevailing rates of the period under consideration, whichever is less, shall be considered.

F_0 = All India Wholesale price Index for Fuel, Oil & Lubricant (High Speed Diesel) as prevailing on the last stipulated date of receipt of tender including extension, if any.

Clause 31(d):-The following percentages will govern the price adjustment for the entire contract for different types of works as applicable given in the following table:

Percentage Table

Sl. No.	Category of Works		% Component (cost wise)		
			Labour (P _i)	POL (P _i)	Steel+ Cement +Bitumen +Other Materials*
1	R&B works (% of	Road Works	5	5	90
		Bridge Works	25	5	70

	component)	Building Works	25	-	75
2	Irrigation works (% of component)	Structural Works	20	5	75
		Earth, Canal & Embankment Works	25	10	65
3	P. H. Work	Structural Works	25	5	70
		Pipe Line Works	5	-	<u>Pipe-70%*Other material-25%</u>
		Sewer Line	10	-	<u>Pipe-70%*Other material-20%</u>

***Note:** Further break up may be worked out considering the consumption of Cement, Steel, Bitumen & Pipe in the concerned works for the period under consideration.

Clause- 31(e):-APPLICATION OF ESCALATION CLAUSE:

- (i) 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 or reduction available & 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 alteration in the price of such material, wages of labour and/or price of P.O.L. give notice thereof to the Engineer-in-charge stating that the same is given pursuant to this condition along with information relating thereto which he may be in a position to supply.
- (ii) The compensation for escalation shall be worked out at quarterly intervals and shall be with respect to the cost of work done as per bills paid during the three calendar months of the said quarter. The first such payment shall be made at the end of three months after the month (excluding the month in which tender was accepted) and thereafter at three months interval. At the time of completion of the work, the last period for payment might become less than 3 months, depending on the actual date of completion.

Clause-32:-After the work is finished all surplus materials & debris are to be removed by the contractor & preliminary works such as vats, mixing platforms, etc. are to be dismantled & all materials removed from 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 twelve years and shall pay for 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 labourers 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 unauthorized 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 indemnify 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: The amount on *royalty* 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.

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 **Chief Construction Engineer, Khairibhandan & Deo Irrigation Project, Karanjia/ Superintending Engineer, Deo Canal Division, Karanjia** 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 30m 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 $1/6^{\text{th}}$ volume for voids shall normally be deducted from closely packed sacks percentage of void shall be determined an actual observation and deducted.

(d) $12 \frac{1}{2}$ voids shall be deducted from Metal and Moorum stacks. The box of size 1.50m x 1.50m x 0.50m to be measured as $1.50\text{m} \times 1.50\text{m} \times 0.44\text{m} = 1 \text{ cum}$. 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 equipment's 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 own 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 subordinates. 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.....Certifyclearly understand them.

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

- Short Title:** These regulations may be called "The Orissa 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" means a worker 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.
- 3. Display of notice regarding wages, etc.**
 - (a) Before he commences 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 in which the work is done.
 - (b) Send a copy of such notice to the Engineer-in-charge of the work.
- 4. 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.
- 5. 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.
- 6. 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.
- 7. 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 paisa in rupee of the wages payable to him in respect of that wage period.
- (4) No fine imposed on any worker shall be recovered from him by installments or after the expiry of 60 days from the date on which it was imposed.

8. 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 be imposed. It shall display such list and maintain it in clean and eligible condition in conspicuous places of the work.

9. Preservation registers:

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.

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

The labour Welfare Officer or any other persons authorized 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.

11. Report of Labour Welfare Officer:

The labour Welfare Officer or other authorized as aforesaid shall submit a report of the result of his Investigation or enquiry to the Superintending Engineer concerned indicating the extent. If 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 due be paid to the labour concerned.

12. 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 authorized 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.

13. 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 authorized by the Government of Odisha on his behalf.

14. Submission of return:

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

- 16. **Amendment-** Government of Orissa may from time to time, add to or amend these regulations. On any question as to the application, interpretation or effect of these regulations, the decision of the labour Commissioner or any other person authorized by the Government of Orissa in that behalf shall be final.

**ADDENDUM TO THE CONDITION OF F2
(NOW RENAMED AS P-1) CONTRACT**

Clause-2(a) of F2 (now renamed as P-1) Contract:

TIME CONTROL

2.1. Progress of work and Re-scheduling programme.

- 2.1.1. The Superintending Engineer / Engineer-in-Charge shall issue the letter of acceptance to the successful contractor. The issue of the letter of acceptance shall be treated as closure of the Bid process and commencement of the contract.
- 2.1.2. Within 15 days of issue of the letter of acceptance, the contractor shall submit to the Engineer-in-Charge for approval a Programme commensurate to **Clause no. 2.1.3** showing the general methods, arrangements, and timing for all the activities in the Works along with monthly cash flow forecast. The Contractor is required to maintain a certain rate of progress specified in the Contract. The Contract will be terminated with penalty when the progress of work is not as per the conditions of contract.
- 2.1.3. To ensure good progress during the execution of the work the contractors shall be bound in all cases in which the time allowed for any work exceeds one month to complete, 1/4th of the whole time allowed under the contract has elapsed, 1/2 of the whole of the work before 1/2 of the whole time allowed under the contract has elapsed, 3/4th of the whole of the work before 3/4th of the whole time allowed under the contract has elapsed.
- 2.1.4. If at any time it should appear to the Engineer-in-Charge that the actual process of the work does not conform to the programme to which consent has been given the Contractor shall produce, at the request of the Engineer-in-Charge, a revised programme showing the modifications to such programme necessary to ensure completion of the works within the time for completion. If the contractor does not submit an updated Programme within this period, the Engineer-in-Charge may withhold the amount of 1% of the contract value from the next payment certificate and continue to withhold this amount until the next payment after the date on which the overdue Programme has been submitted.
- 2.1.5. An update of the Programme shall be a programme showing the actual progress achieved on each activity and the effect of the progress achieved on the timing of the remaining work including any changes to the sequence of the activities.
- 2.1.6. The Engineer-in-Charge's approval of the Programme shall not alter the Contractor's obligations. The Contractor may revise the Programme and submit it to the Engineer-in-Charge again at any time. A revised Programme is to show the effect of Variations and Compensation Events.

1.2. Extension of the Completion Date.

- 2.2.1. The time allowed for execution of the works as specified in the Contract data shall be the essence of the Contract. The execution of the works shall commence from the 15th day or such time period as mentioned in letter of Award after the date on which the Engineer-in-Charge issues written orders to commence the work or from the date of handing over of the site whichever is later. If the Contractor commits default in commencing the execution of the work as aforesaid, Government shall without prejudice to any other right or remedy available in law, be at liberty to forfeit the earnest money & performance guarantee / Security deposit absolutely.
- 2.2.2. As soon as possible after the Agreement is executed the Contractor shall submit the Time & Progress Chart for each milestone and get it approved by the Department. The Chart shall be prepared in direct relation to the time stated in the Contract documents for completion of items of the works. It shall indicate the forecast of the dates of commencement and completion of various trades of sections of the work and may be amended as necessary by agreement between the Engineer-in-Charge and the Contractor within the limitations of time imposed in the contract documents, and further to ensure good progress during the execution of the work, the contractor shall in all cases in which the time allowed for any work, exceeds one month (save for special jobs for which a separate programme has been agreed upon) complete the work as per milestone given in contract data.
- 2.2.3. In case of delay occurred due to any of the reasons mentioned below, the Contractor shall immediately give notice thereof in writing to the Engineer-in-Charge but shall nevertheless use constantly his best endeavors to prevent or make good the delay and shall do all that may be reasonably required to the satisfaction of the Engineer-in-Charge to proceed with the works.
 - i) Force majeure, or
 - ii) Abnormally bad weather, or

- iii) Serious loss or damage by fire, or
- iv) Civil commotion, local commotion of workmen, strike or lockout affecting any of the trades employed on the work, or.
- v) Delay on the part of other contractors or tradesmen engaged by Engineer-in-Charge in executing work not forming part of the Contract.
- vi) In case a Variation is issued which makes it impossible for Completion to be achieved by the Intended Completion Date without the Contractor taking steps to accelerate the remaining work and which would cause the Contractor to incur additional cost, or
- vii) Any other cause, which, in the absolute discretion of the authority mentioned, in Contract data is beyond the Contractors control.

2.2.4. Request for reschedule and extension of time, to be eligible for consideration, shall be made by the Contractor in writing within fourteen days of the happening of the event causing delay. The Contractor may also, if practicable, indicate in such a request the period for which extension is desired.

2.2.5. In any such case a fair and reasonable extension of time for completion of work may be given. Such extension shall be communicated to the Contractor by the Engineer-in-Charge in writing, within 3 months of the date of receipt of such request. Non-application by the contractor for extension of time shall not be a bar for giving a fair and reasonable extension by the Engineer-in-Charge and this shall be binding on the contractor.

2.3. Compensation for Delay.

2.3.1. If the contractor fails to maintain the required progress in terms of clause 2 or to complete the work and clear the site on or before the contract or extended date of completion, he shall, without prejudice to any other right or remedy available under the law to the Government on account of such breach, pay as agreed compensation the amount calculated at the rates stipulated below as the Superintending Engineer (whose decision in writing shall be final and binding) may decide on the amount of tendered value of the work for every completed day / month (as applicable) that the progress remains below that specified in Clause 2 or that the work remains incomplete. This will also apply to items or group of items for which a separate period of completion has been specified. Compensation @ 1.5% per month of for delay of work delay to be completed on per Day basis. Provided always that the total amount of compensation for delay to be paid under this condition shall not exceed 10% of the Tendered Value of work. The amount of compensation may be adjusted or set-off against any sum payable to the Contractor under this or any other contract with the Government. In case, the contractor does not achieve a particular milestone mentioned in contract data, or the rescheduled milestone(s) in terms of Clause 2.5, the amount shown against that milestone shall be withheld, to be adjusted against the compensation levied at the final grant of extension of time. Withholding of this amount on failure to achieve a milestone, shall be automatic without any notice to the contractor. However, if the contractor catches up with the progress of work on the subsequent milestone(s), the withheld amount shall be released. In case the contractor fails to make up for the delay in subsequent milestone(s), amount mentioned against each milestone missed subsequently also shall be withheld. However, no interest whatsoever shall be payable on such withheld amount.

2.4. Management Meetings.

2.4.1. Either the Engineer or the Contractor may require the other to attend a management meeting. The business of a management meeting shall be to review the plans for remaining work and to deal with matters raised in accordance with the early warning procedure.

2.4.2. The Engineer shall record the business of management meetings and is to provide copies of his record to those attending the meeting and to the Employer. The responsibility of the parties for actions to be taken to be decided by the Engineer either at the management meeting or after the management meeting and stated in writing to all who attended the meeting.

Clause-2 (b) of Agreement: - Rescission of Contract (Amendment as per letter No.10639, dated 27.05.2005 of Works Department, Odisha):-

To rescind the contract (of which rescission notice in writing to the contractor under the hand of the Superintending Engineer shall be conclusive evidence), 20% of the value of left over work will be realized from the contractor as penalty.

Superintending Engineer
Deo Canal Division, Karanjia

SECTION – 5

**TECHNICAL
SPECIFICATION**

SECTION - 1

1.0 General Information & Scope of Work

1.1 Description of work to be executed:

The proposed work “Construction R.C.C Protection wall (heavy filling section) of Tail Minor Right side from RD 20m to RD 50m & RD 70m to RD 105m, Left side from RD 15m to 49m & RD 72m to 98.20m off-taking from Right Main Distributary under Deo Irrigation Project, Karanjia for the Year;2026-27. The work site is situated in Karanjia Block under Mayurbhanj District.

1.2 Location of work site:

The work site is situated about 20 Km from Sub-Division headquarters at about 5 Km. from NH-220 at Saharpada and approximately 245 Km from State Capital, Bhubaneswar. Nearest Railway Station is Keonjhar which is 60 Km from work site and nearest Airport is at Bhubaneswar which is 245 Km from Karanjia.

1.3 Transport communication facilities:

Private trucks are plying frequently in NH-49 and Karanjia-Anandapur S.H-53 via Thakurmunda. The contractor has to make arrangements at his own cost to transport all his construction equipment's, construction materials and labour to work site.

1.4 Climate:

The project area has moderated climate with mean temperature from 10°C during winter month to 42°C during summer month. The rainy season is generally confined to four months from 15th June to 15th October during which about 93% of the total annual precipitation is received.

1.5 Availability of Labour:

Both Semi-Skilled & Un-Skilled labour required for the work are available in project area and it is preferable to engage local labour, However the Contractor must make his own arrangements for labour / machineries / equipment's.

1.6 Nearest Town:

The nearest town to the work site is Karanjia, the work site is 20 Km from the Block Head Quarter i.e. Karanjia.

1.7 Availability of Petrol, Diesel and other lubricants:

The nearest petrol pumps for procurement of petrol, diesel and other lubricants are available at Singada/ Karanjia which is about 5 Km/ 20Km from work site. The contractor shall make his own arrangement for procurement of same at his own cost required for the machineries and equipment's engaged for the work.

1.8 Electric Supply:

Electricity supply is available at every village i.e. within 1.0 Km to 2.00Km from the work site. The contractor shall make his own arrangement for extension of electric connection at his own cost if so required by him.

1.9 Observation of Rules:

The contractor shall take precaution to ensure safety to the workers. The department will not take any responsibility for accident if any that may occur during the period of execution. The contractor shall take immediate action to rectify the defects, immediately if any during the period of execution pointed out by the department.

1.10 Housing Facilities:

Private house may or may not available in the vicinity of the work site. The contractor shall make his own arrangement for housing the labour, workers and staff at the work site.

1.11 Medical Aid:

The nearest Hospital is available at **Karanjia**. However, the contractor shall make First-Aid arrangement at his own cost in accordance with rule and regulations of prevailing Labour Act.

1.12 Post, Telegraph & Telephones:

Post, Telegraph, Telephones & Fax are available at **Singada / Karanjia**.

1.13 Local Roads:

The existing available approach road to the work site can be used by the contractor. The contractor shall however construct and maintain the connecting roads in the working areas including drainage, sanitary etc. at his own cost. The contractor shall construct haul road and other approach road as may be necessary for proper execution of the work at his own cost.

1.14 General Information:

1.14.1 The information and the data related to work site conditions described above represents the site condition in general and for information of bidders/contractors. The department does not guarantee the reliabilities or accuracy of any other data. The contractor shall undertake at his expense such studies as are necessary to assess the reliabilities and accuracy of information presented.

1.14.2 It shall be presumed that the bidder / contractor visits sites of proposed works at his expense and satisfy himself as to the nature and location of work and local condition in general and particularly about the availability of construction materials electricity supply, water supply, storage and handling of materials, disposal of soil, road communication, availability of labour and other related matters, planning for execution etc. before quoting his rates for different items of work. The department therefore will not bear any responsibility for any interpretation or conclusion made by the contractor in respect of site condition and consequence thereof.

Superintending Engineer
Deo Canal Division, Karanjia

CHAPTER - 1

GENERAL SPECIFICATION

The term the India standard specifications herein after referred to as BIS as used herein means the relevant Bureau of Indian Standard Codes with all amendments published upto the date of submission of tender a statement of relevant BIS is applicable to this context is enclosed.

LIST OF INDIAN STANDARDS

Sl No	Short Title	BIS Number
I.	CEMENT	
1.	Specification for ordinary and low heat Portland Cement 269-1976	269-1976
2.	Specification for Portland pozzolana cements	1489-1976
3.	Portland slag cement (Third revision)	455-1976
4.	Method for physical tests for hydraulic cement (Reaffirmed 1980)	4031-1968
5.	Method for chemical analysis of hydraulic cement (first revision)	4032-1985
6.	Rap hardening Portland cement	8041-1990
7.	Hydrophobic Portland cement	8043-1991
8.	High strength ordinary Portland cement	8112-1989
II.	AGGREGATES	
1.	Specification of coarse and fine AGGREGATE from natural source for concrete.	383-1970
2.	Specification for sand for masonry	2116 - 1980
3.	Method for test for aggregate for concrete	2386-1969 (Part-I to Part-VIV)
4.	Standard sand for testing of cement (First Division) with amendment 1 & 2 reaffirmed 1980.	650-1991
5.	Methods of sampling of aggregates for concrete	2430-1969
6.	Methods of test for determining aggregates impact value of soft coarse aggregates.	5460-1970
III.	BUILDING STONES	1221-1974 (Part-I to Part-IV)
1.	Methods for test of determination of strength properties of natural building stones. Part - I Compressive Strength Part - II Traverse Strength Part - II Tensile Strength Part - IV Shear Strength	
2.	Method of Measurement of Buildings and Civil Engineering Works (Part-IV, stone masonry)	1200-1976
IV.	STEEL	
1.	Code of practice for bending and fixing of bars for concrete reinforcement.	2502-1963
2.	Specification for cold worked steel deformed bars for concrete reinforcement.	1786-1979
3.	Code of practice for Welding of M.S. Bars used for reinforced Concrete Construction.	2751-1989
4.	Code for practice for use of Metal arc Welding for general construction in mild steel.	818 - 1989
5.	Deformed bars for concrete reinforcement hot rolled mild steel and medium tensile steel (revised)	1139-1969
6.	Recommendations for detailing or reinforcement in reinforced concrete works	5525-1969
7.	Specification for Mild Steel and Medium Tensile steel Bars for concrete reinforcement	432-1982 (Part-I)
8.	Code for practice for safety and health requirement in Electric and Gas welding and cutting operations.	818-1968
9.	Code for practice for Fire precautions in welding and cutting operations	3016-1982
10.	Measurement of Building and Civil Engineering Works, method Part-VII steel work and iron work.	1200-1993 (Part-VIII)

11.	Code of procedure for manual or metal ARC and welding of Mild Steel	823-1964
12.	Specification for Filler rods and wires for gas welding	1278-1972
13.	Recommendations for welding cold-worked steel bars for reinforced concrete construction	9417-1989
14.	Hard drawn steel wire fabrics for concrete reinforcement	1566-1982
V.	MASONRY	
1.	Code of practice for construction of stone masonry Part-I Rubble stone Masonry	1597-1992 (Part - I)
2.	Code of practice for construction of stone Masonry Part - II Ashlar masonry	1597-1992 (Part-II)
3.	Specification for fly-ash for use as Pozzolana and admixture	3812-1981 (Part-I)
4.	Method of Measurement of building and Civil Engineering Works, Plastering and pointing	1200-1976 (Part-XII)
VI.	CONCRETE	
1.	Method of Measurement of building and Civil Engineering works Part-II Cement concrete works	1200-1974 (Part-II)
2.	Code of practice for plain and reinforced concrete.	456-2000
3.	Specification for Precast concrete coping blocks	5751-1984
4.	Methods of tests for strength of concrete	516-1959
5.	Code of practice for laying in situ cement concrete lining on canals	3873-1993
6.	Specification for Admixtures for concrete	9103-1979
7.	Method of Test for Autoclaved cellular concrete products	6441-1972,1973 (Part-I to IX)
8.	Methods of Sampling and Analysis of concrete.	1199-1959
9.	Specification for Batch type concrete mixtures	1791-1985
10.	General requirements for concrete vibrators - immersion type.	2505-1992
11.	Specification for concrete vibrating tables	2514-1963
12.	Method of test for permeability of cement mortar and concrete.	3085-1965
13.	Specifications for fly-ash for use as pozzolana as admixture for concrete.	3812-1981(Part-II)
14.	Specification for Portable swing weight batch for concrete (single and double bucket type)	2722-1664
15.	Code of practice for installation of joints in concrete pavement.	6509-1985
16.	Code of practice for general construction of plan and reinforced concrete for dams& other massive structures.	457-1957
17.	General requirements of concrete vibrator screed board type (first revision)	2506-1985
18.	Code of practice for concrete structures for the shortage of liquids.	3370 - 1965 (part - I to 4)
19.	Code of practice for use of immersion vibrator for consolidating concrete (first revision)	3558-1983
20.	Method of testing performance of batch type concrete mixer.	4634-1990
21.	Form vibrators for concrete	4656-1991
22.	Concrete batching and mixing plant	4925-1991
23.	Ready mixed concrete (first revision)	4926-1990
24.	Code of practice for sealing joints in concrete lining on canals.	5256-1992
25.	Vibrating plate compactor	5889-1994
26.	Concrete transit mixer and agitator	5892-1991
27.	Concrete paver	7245-1991
28.	Concrete slump test apparatus	7320-1992
29.	Method of making curing and determining compressive strength of accelerated cured concrete test specimen.	9013-1978
VII	EARTH WORK	
1.	Method of Measurement of building and Civil Engineering Works Part-I Earth work.	1200-1992 (Part-I)
2.	Safety code for piling and other deep foundation	5121-1994
3.	Code of practice for Design Installation observation and	6532-1991

	maintenance of uplift pressure pipes for Hydraulic structure on permeable foundation.	
4.	Safety code for excavation work.	3764-1992
5.	Code of practice for Protection of slope for Reservoir embankments.	8237-1990
6.	Code of practice for earth work on Canal.	4701-1990
7.	Guidelines for lining of canals in expensive soils.	9451-1991
8.	Method of test for soils Part-II Determination of water content.	2720-1993 (Part-II)
9.	Method of testing for soils determination of water content dry density relation using light compaction.	2720-1997 (Part-VII)
10.	Method of testing for soils determination of dry density soils in place by the sand replacement method. of	2720-1995 (Part-XXVIII)
11.	Method of testing for soils determination of dry density of soils in place by the core cutter method.	2720-1995 (Part-XXIX)
12.	Classification & identification of soils for general Engineering purpose (first revision)	1498-1997
13.	Safety code for blasting and related drilling operations (with Amendment No.1) (reaffirmed 1978)	4081-1991
14.	Portable Pneumatic drilling machine (first revision)	5441-1991
15.	General requirements for blast hold drilling rigs.	7209-1991
16.	Safety code for working with construction machinery.	7293-1996
17.	Code of practice for stability analysis of earth dams.	7894-1991
18.	Guidelines for design of under seepage control measures for earth & rock fill dams.	8414-1993
19.	Filtration media sand & gravel.	8419-1990 (Part-I)
20.	Guidelines for design of large earth and rock fill dams.	8826-1991
21.	Under drainage arrangements of lined canals.	4558-1995
22.	Precast cement concrete slabs for canal lining.	3868-1995
23.	Method of tests soil	2720 - 1999 (Part-I to X)
24.	Ammonium nitrate for explosive.	4668-1991
25.	Method of test for commercial blasting explosives and accessories	6609-1990 (Part-I to V)
26.	Detonators.	7632-1990
27.	Method of load test on soils (2nd revision)	1888-1997
28.	Method for standard penetration test for soils (First revision)	2131-1997
29.	Glossing of terms and symbolic relating to soils engineering.	2809-1995
30.	Method of sampling and preparation of stabilized soils for testing.	4332 - 1995 (Part-I)
31.	Test in over burden	5529 (Part-I) of 1969
32.	Sheet Pile	ISPS 1021Z to IS 2314 - 1963 to IS 2062 Grade A
VII	OTHER SUBJECTS	
1.	Safety code for scaffolds and ladders (part-I scaffolds)	3696-1996 (Part-I)
2.	Safety code for scaffolds and ladders (Part-II Ladders)	3696-1996 (Part-II)
3.	Recommendations on stacking and storage of construction materials at site.	4082-1996
4.	Plywood for general purposes (2nd. Revision Amendment 1 to 3)	303-1993
5.	Test sieves	460-1990
6.	Code of practice for under drainage of lined canals (first revision)	4558-1995
7.	Code of practice for in-situ permeability test.	5529-1990 (Part-I & II)

In addition to the relevant BIS code, the specifications prescribed and guidelines issued by Central Water Commission Standard Specifications shall also be followed, where BIS specifications are not available.

CHAPTER - 2

SITE OF WORK

SECTION 2.1 DISCHARGES OF RECORDS

2.1.1 DISCHARGE RECORDS

The hydrological data, pertaining to the canal and the streams crossing the canal furnished in the relevant report and drawings are for information of bidders and contractors. It should be noted that the data used in preparing these particulars are assessed as per the standard code of practice.

2.2 SETTING OUT OF WORK

- (A) Permanent bench marks shall be fixed at suitable location connecting permanent bench marks fixed by Survey of India. Temporary Bench Marks shall be set up by the Department at every 0.5 km. interval at conventional locations along the dam to serve as reference levels. The Contractor shall establish additional reference Mark as may be needed at his own cost for facilitating the setting out and taking levels for measurement of work with approval of Engineer-in- Charge. The Bench Mark shall be marked on a concrete pillar 30 cm. (I) x 30cm. (b) x 75 cm. (d) which shall be embedded 55 cm. into firm ground and projecting 20cm. above the ground. The Bench Mark pillar shall be constructed in plain cement concrete of M-10. The pillar shall be well protected from being disturbed. The R.L of benchmark shall be conspicuously carved and painted on the pillar.
- (B) 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 dam and the reference line for all alignments for demarcation purpose shall be laid by dug-belling on the ground. The reference line shall comprise the base line properly dug belled on the ground with numbered concrete/ masonry R.D pillars suitably placed.
- (C) Center line of the dam shall be marked by fixing pillars/stone at 30 m intervals. Profile of dam in filling and in moderate cutting shall be marked at 50 m intervals in straight reaches and at 25m Intervals in curves. A reference line shall also be marked on ground away from the outer edges of cutting and filling with pillars at suitable intervals for future reference.
- (D) The check profiles shall be located 15 meters. Apart or longer as directed by the Engineer-in-Charge to serves as a guide for execution of all slopes and steps to the elevations, and profile or profiles indicated in the approved drawings. 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-Charge.
- (E) The zones of full cutting section, full filling section, partial cutting section shall be separated by conspicuous demarcation in the field. The curves stipulated in construction drawings shall be carefully laid in the field by adopting approved method of curve layout The curves shall be marked on the ground by fixing pegs at very closer intervals and joining the peg -point by dug-belling to a suitable depth.

The locations of different structures indicated in construction drawing shall also be clearly marked on the ground along the alignment of the dam. The control structure locations of off-taking canals shall also be clearly demarcated, so that unnecessary excavation or filling at these locations can be avoided.

The soil dumping zones shall clearly be demarcated in the field. These zones should be at least 2m beyond the location of the catch water drains.

- (F) To ensure accuracy in execution of cutting, the dam embankment, spoil banks and the structures, their layout shall be given in an appropriate manner with pegs and pillars, suitably placed in relation to outer dimension of these elements.
- (G) All materials and their labour for setting out works including construction of reference bench marks, reference lines, check profiles and surveys as may be required at the various stages of

the construction shall be supplied by the Contractor at his own cost. The cost of such works shall be deemed to have been included in the cost of the item scheduled.

2.3 CLEARING AND GRUBBING

(A) CLEANING AND LEVELING SITE

The portion of the right-of-way where required for constructing the work under these specifications shall be cleared of all trees, bushes, rubbish and other objectionable matter. Trees marked by the Engineer-in-Charge shall not be cut and shall be protected from injury. Such cleared material shall be disposed of as provided in sub -paragraph "C" below or removed from the site of work before the date of completion of the contract as approved by the Engineer-in-Charge. The cleaning operation shall be in accordance with clauses 4.1,4.1.1,4.2 and 4.3 of I.S. 4701-1982 Indian code of practice for earthwork in canals. Surface boulders either loose or partly embedded in the ground will have to be removed and stacked as directed.

(B) GRUBBING

The area described or shown on the relevant site plan shall be cleared of all obstructions, loose stones, non-required materials and rubbish of all kinds. All brushwood shall be cleared and the roots grubbed up. No tree shall be cut down and removed without the instructions of the Engineer-in-Charge. Those, which are cut down, shall be grubbed up. The same remarks apply to jungle clearance. Trees to be preserved will be designated by 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 perfectly clean conditions; all products of the clearing shall be the property of Government and shall be disposed of as per the direction of the Engineer-in-Charge.

All holes or hollows, whether originally existing or produced by digging up roots shall be carefully filled up with earth, well rammed to the design density and leveled off, as directed.

PREPARATION OF BED

Any hills shall be completely dug out before earthwork is started. In the absence of any separate contract schedule provision for removal of shrubs, loose stones and digging of ant hills, involved in the preparation of bed, the contract rate for earth work shall be deemed to include all the work to be done in accordance with this clause. In case where the work of preparation or bed is rather extensive, the Engineer-in-Charge will usually provide a separate schedule item for such preparation. But in the absence of such schedule provision, the Contractor shall understand that his tender rate is inclusive of all such work without extra charge. The Contractor shall therefore examine the site before tendering and provide for all items to be done under his earthwork tender rate. Old bonds will be benched or sloped as directed by the Engineer-in-Charge before addition of earth, the benches being 500 mm x 500 mm unless other sizes are specified. The benches or slope shall be inspected by the Engineer-in-Charge or Engineer designated for the purpose and approved before new earthwork is keyed into them.

(C) DISPOSAL OF CLEARED AND GRUBBED MATERIAL

The disposal of cleared and grubbed material shall be in accordance with clause 4.1.1 of I.S 4701- 1982 code of practice for earthwork in canals. All waste materials to be burnt shall be piled neatly and when suitable condition shall be burnt completely to ashes. Piling of waste material for burning shall be done at such a location and in such a way as would not cause any fire risk. Necessary precautions shall be taken to prevent spreading of fires to areas beyond the limits of cleared areas. Suitable materials and equipment for prevention and suppression of fire shall be kept available at all time. The material to be disposed off shall be buried.

(D) PAYMENT

For the clearance of light jungles, heavy jungle with or without uprooting etc. payment will be made as provided for in the tender documents. Separate payment will not be made for clearing of site and grubbing including disposal of the cleared and grubbed material required under the above paras unless and otherwise specified in the contract document. The Contractor shall include the cost thereof in the price bid in the bill of quantities of the contract for the relevant

finished item of work for which clearing and grubbing as mentioned in the above paragraph are required. No payment towards removal of small stones and boulders of size less than 0.014 cubic meter will be made, and the rate quoted for excavation will be considered to include this item. However, payment will be made for the removal of surface boulders of sizes greater than 0.014 cubic meter but less than 3 cubic meters, either loose or partly embedded in the ground, at the rate quoted in bill of relevant strata classification after deducting 40% towards voids.

No payment will be made for separate benching of surface.

2.4 USE OF WATER

2.4.1 WATER FOR DUST ABATEMENT

(A) GENERAL

The Contractor shall procure and apply water for dust abatement. Water applied for dust abatement will not be eligible for payment. The cost of procuring and applying water including all expenses for all means of conveying water to the point of use, their collection, usage, and all other incidental expense will not be paid separately including creation of source of water and the cost shall be deemed to have been included in the concerned unit price bid in the bill of quantities of the contract for the relevant finished item of work for which water for dust abatement is required.

So also the cost of procuring and applying water required for the work shall be included in the price bid in the bill of quantities for the items of work for which the water is used.

2.4.2 PRE-WETTING OF DAM AND ADJACENT AREAS

(A) GENERAL

The Contractor shall furnish all labour, materials and equipment and shall procure and apply water required for pre-wetting the areas under dam embankment. Water applied for pre-wetting areas as detailed above will not be eligible for payment. The cost of procuring and applying water including all expenses for all means of conveying the water to the point of use, their collection, usage, and all incidental charges shall be included by the Contractor in the concerned unit price bid in the bill of quantities for that item of work where the water shall be used and no separate payment for the same will be made.

2.5 SITE DRAINAGE

2.5.1 CROSS DRAINAGE

The Contractor shall handle all flows from natural drainage channel intercepted by the work under these specifications, perform any additional excavation and grading for drainage as directed and provide and maintain any temporary construction required to by past or otherwise cause the flows to be harmless to the work and property. When the temporary construction is no longer needed and prior to acceptance of the work the Contractor shall remove the temporary construction and restore the site to its original condition as approved by the Engineer-in-Charge. The cost of all works and materials required by this paragraph shall be included by the Contractor in the unit prices quoted in the bill of quantities and no separate payment will be made for the same.

In additions to cross drains, longitudinal drains may be considered necessary for proper drainage. The drainage system consisting of network of cross and longitudinal drainage system will be led into out fall drains to prevent stagnation of water at the place construction. The drains shall be constructed to the section designed, and shall be either open or filled up with material to ensure free flow of water without clogging of the filled materials.

2.5.2 DRAINS, BERM DRAINS AND DOWEL BANKS

A) DRAIN

In connection with the excavation for the dam and structures, the Contractor shall perform excavation for the construction of drains, berm drains and chutes and any other drains as directed by the Engineer-in-Charge.

The location, grades and sections of the drains shall be as shown as on the drawings and/or as directed. Measurement of excavation for the above drains will be made to the lines shown in

the drawings or as directed. Payment of excavation of the above drains, channels and embankment will be made at the unit price bid in the bill of quantities for execution of dam, which unit price shall include the cost of placing the materials in embankment or otherwise disposing of the excavated materials and all work necessary to maintain to work in good order during construction.

(B) BERM DRAINAGE AND DOWEL BANKS

Berm drainage including drainage along the berms and longitudinal berm drains shall be constructed where shown in the drawings where directed. The Berm drains shall be constructed to dimensions and grade shown on the drawings or as directed.

The surface of the berms shall be sloped transversely and dowel banks should be made along with sides of the banks and berms where shown on the searing and elsewhere where directed. The soil bank may be made by balding of material in place following completion of a dam reach.

No direct payment will be made for constructing dowel banks and slopping berms and cost there of shall be included in the unit price per Cum. Bill in the bid in the bill of quantities for construction for dam embankment including reconstructing and remodeling.

2.6 MONSOON DAMAGES

Damages due to rain or flood 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 de-silting and making good the damages due to rain or flood rests with the Contractor. No extra cost is payable for such operations and the Contractor shall, therefore, have to take all necessary precautions to protect the work done during the construction period.

2.7 REMOVAL OF SILT AND WATER.

Accumulated silt and water in the dam and structures for the works partly done by the Contractor in current or previous seasons should be removed and no extra payment will be made, for such removal of silt and Water. This unit rate of excavation is deemed to include cost for removal of such silt and water.

2.8 PROCEDURE FOR MEASUREMENT

Before commencement of work, initial levels to indicate existing ground levels shall be taken at 15 m intervals longitudinally along the alignment of the canal. The level points transversely along the cross sections shall be maximum at 5 m. interval in flat ground and 1.50 to 2.00 m in undulated terrain. The cross section shall be extended beyond the limit of work to a suitable distance and minimum 5 m beyond the toe lines of slopes on both the sides. The intervals stipulate shall be made closer depending on the topography or any stipulation made by the Engineer-in-Charge.

All initial level shall be recorded in ink in authenticated 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 Executive Engineer and Superintending Engineer shall exercise strictly in accordance with the Codal provision.**

Actual construction work shall not be allowed to start unless the above formalities are fulfilled.

If the work is awarded to any agencies the levels 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 token of acceptance. These cross sections shall form the basis of all future measurements and payments. Each dimension shall be measured to the nearest 0.01 m. Area/s shall be computed to nearest 0.01 Sqm. volume shall be computed to nearest 0.01 Cum.

CHAPTER 3

EARTH WORK

3.1 EARTH WORK GENERAL

To the extent that they exist, plan and estimates for the Government's studied of the earth work for construction of the dam will be available for inspection by bidders in the office of the concerned Engineer-in-Charge. Such information is made available solely for the convenience of Bidders. The Government does not guarantee the information is accurate or complete. Bidders are cautioned that this information is subject to revision and that the Government disclaims responsibility for any interpretations, deduction or conclusions, which may be made there from. It is not intended that this information will limit or prescribe the excavation and handling procedures of the Contractor, and the Government reserves the right to utilize and distribute earth work materials during the progress of work as it serves the interest of the Government.

Drawing showing the typical section of dam and dam structure Annexed to these specifications provides such details as would enable the Contractor to execute the work in general conformity there with under these specifications which have been prepared as definitely and in as much details as possible with regard to design data presently available these drawings will be supplemented by such additional, general and details of drawings or directions may be considered necessary or desirable as the work progresses. For all changes in approved drawing/design the recommendation of Superintending Engineer and approval of Chief Engineer will be essential. Where details shown on these drawings differ from the requirements of these specifications, the requirements of specifications shall govern. The Contractor shall no work without proper drawings. He shall check all drawings and specifications carefully and advise the Engineer-in-Charge if any errors and omissions are discovered where upon the Superintending Engineer will prepare and lodge such revised additional drawings and specifications as may be required to suit the stage of the work. All such additional, general and detailed drawings whether original or revised lodged in the office of the Engineer-in-Charge and signed by him for purpose of identification shall be open for inspection by the Contractor under the same terms and conditions as provided in agreement.

All works of the contract shall be executed as per the specific and relevant clause/ clauses of relevant I.S. code unless otherwise specified. Materials used should, confirm to the desired standards prescribed in the relevant codes. Where a pair of I.S. code is cited in specification, it goes without saying that the latest revision of the specification subsequently, shall apply. For purpose of relevancy or otherwise of any provision of I.S. code refer to the decision of the Engineer-in-Charge shall be final and binding.

SECTION 3.2 EXCAVATION FOR CANAL/DRAINAGE CHANNEL AND FOR STRUCTURES

3.2.1 CLASSIFICATION OF EXCAVATION

The subsurface lodging has been indicated in the longitudinal section of the dam is carried out during exploration studies. This information is furnished only as indication of nature of soil to be made with payment shall, however be made on actual classification of soil met with during excavation.

Materials once excavated shall not be classified for payment, except or otherwise provided in these specifications. Material excavated shall be measured and classified in excavation, to the lines shown on the drawings or as provided in these specifications, and all materials required to be excavated will be paid for at the applicable rates in the schedule for excavation. No additional allowance above the rate in the schedule will made on account of any of the material being weight and requiring additional time to drying stock filling and re-handling. Except for areas of rock, all areas to be excavated and materialized to be used shall be pre-weighted so that the time for excavation moisture contain shall be about optimum. Bidders and the Contractors must assume all responsibility for deducting and concluding as to the nature of the materials to be excavated and the difficulties of making and maintaining the required excavations.

The classification of excavation shall be decided by the Engineer-in-Charge and binding on the Contractor. In case of dispute, the decision of Superintending engineer shall be final. Merely the use of explosive in excavation will not be considered in areas on the higher classification unless blasting is clearly necessary in the option of the Engineer-in-Charge.

3.2.2 EXCAVATION FOR CANAL / DRAINAGE CHANNEL.

- (a) The excavation may be carried out manually or mechanically and as per specification, drawing and direction of the Engineer-in-Charge. ;
- (b) The excavation for dam in all kinds of soil and D.I. Rock shall be done according to the dimensions and grades shown In the drawing. Proud equivalent to thickness of the lining on sides and in bed on the under signed of the lining shall be left unexcavated temporarily & the removal of these code shall be done just before trimming and placing concrete for lining.
- (c) Blasting shall be done in such a manner as not to cause over break 'which in the opinion of the Engineer-in-Charge is excessive. Special care shall be taken to prevent over break or loosening of material on bottom and side slopes against which concrete lining is to be placed. Final cutting in hard rock for 45 cm shall be carried out by controlled blasting or chiseling or with the help of pneumatic pavement breakers. If excavation is required to be done within 30 m from the existing structure, the same shall be carried out by chiseling without adopting blasting for which no extra rate shall be payable. The method of drilling and blasting to be resorted to for hard rock excavation shall be got approved from the Engineer-in-Charge.
- (d) Except for the areas of rock. all areas to be excavated for dam sections shall be pre-wetted so that at the time of excavation moisture content shall be about optimum. However, in case the excavated material from dam is not be used for embankment, such pre-wetting is not necessary.
- (e) The excavation shall be allowed to progress from the valley ends of the ridge works in conformity with the layout level. All successful earth from excavation shall be used in for filling the banking section, with varying leads and with all lifts either manually or mechanically. Excavated materials which is not useful for banking or which is in excess after meeting the banking requirement of the reach, shall be disposed at specified at paragraphs 8.1 and 8.2 of I.S. Code 4701-1982 either by head lead or by mechanical means or by both in spoil bank or at any specified place with all lifts and varying leads.
- (f) The re-gradation for tail channel and approach channel for structures and diversion of drains/Nallas shall be done according to the dimension and grade as shown on the drawings (as instructed by the, Engineer-in-Charge.
- (g) The Contractor shall not be entitled to any additional rate above the rates quoted in the schedule on account of the requirement for allowing additional time for drying, stock piling and re-handling the excavated material which have been deposited temporarily and stock piled.
- (h) When cutting on cross sloping ground the Contractor shall quote a catch water drain on the higher side to prevent water from flowing down the cutting slope. No separate payment will be made for the work as the same is deemed to have been included in the Unit rate of excavation of soils. D.I. and rock etc. The materials encountered during excavation shall be broadly classified as follows:

3.2.2.4 OVER EXCAVATION

The dam shall be excavated to exact designed section in all kinds of soil and D.I rock. No. over excavation will be allowed in such reaches. However, in dam sections taken in Hard rock formation over excavation to the extent of 10 cm depth on an average will be allowed and paid for in respective item. In case of over excavation due to poor geological formation certified by the Superintending Engineer and approved by the Chief Engineer, payments would be made for removal of such quantity only.

In the canal section where expansive type of soil such as CH type of soil encountered and over which concrete lining cannot be directly laid. the canal prism shall be over excavated to the extent as directed by the Engineer-in-Charge and such over excavated section shall be filled

with suitable cohesive non-swelling (CNS) type of soil to be placed in uniformly compacted layers as directed by the Engineer-in-Charge. The over excavation made in such way, filling by suitable soil, watering and compacting will be paid under respective items at the quoted rate.

3.2.2.5 DEWATERING TRENCHES AND WET EXCAVATION

Subsoil water met within dam excavation shall be diverted to nearby drain/Nalla by cutting an open channel within the dam section to be excavated. When the drain/Nalla bed is higher than the sub soil water level met with pumping shall be resorted to for dewatering below the drain/nalla bed level. In case where the topography of the area is such that surface water is not possible to be drained off by excavating the channel. Pumping shall be resorted to till completion of the work. No distinction shall be made as to whether the material being excavated is dry and moist or wet. Care should be taken to discharge the drained water not to cause damage to works crops or any other property. No separate payment shall be for dewatering by pumping or by any other method.

DISPOSAL OF EXCAVATED EARTH

The excavated earth shall be utilized in construction of embankment on the both side or one side wherever necessary as per design section. The earth shall be laid in layer not exceeding 22.5 cm in thick spread uniformly and compacted with embankment. But payment shall be made in excavation of earth in canal suitable compaction upto at least 85% of MDD. The spoil surplus earth shall be deposited in the area identified by the Engineer and direction of the Engineer-in-Charge. No payment will be made separately for this.

3.2.2.6 MEASUREMENT AND PAYMENT

1. The payment shall be made on volumetric basis for the quantities excavated to the required extent. The cross section shall be taken initially before commencement of work as stipulated in earlier paragraph. On completion of excavation. Final cross sections shall be taken at the same points longitudinally and transversely. These cross sections shall be marked on the initial cross sections and the quantities between initial and final cross sections shall be worked out and paid. In case of canal excavation on hard rock and MHR, cross section shall be taken at 3M interval longitudinally with transverse levels at 1M average closer intervals. Isolated boulders having volume more than 0.30 cum not covered in section measurement shall be pre-measured.

2. RATE OF PAYMENT

The rate for the respective items of excavation shall include the entire costs for labour, materials, tools and plants, machinery, taxes, drilling blasting excavation, transportation and incidental operation required for carrying out and completing the respective items of work in accordance with relevant specifications , drawings and as directed by the Engineer-in-Charge including (i) Setting out works, (ii) Marking out, providing and forming model sections, lock spitting, string and stakes as may be considered necessary by the v to guide the contractor in excavating and depositing (iii) All cost of drilling or ripping with all costs (iv) All costs of blasting including cost conveyance and storage of blasting materials and controlled blasting (v) Final cutting for 450mm to 600 mm in all rocks by controlled blasting or trimming wedging and baring with the help of pneumatic paving breakers for finishing (vi) All safety measure (vii) All dewatering of surface and ground water till completion of the work including construction, maintenance and removal of coffer dam with necessary diversion arrangement for all following excess water in coffer dam (viii) Providing temporary ramps and steps at the site of deep trenches and subsequent removal . (ix) Transporting the excavated materials, mechanically with a variable lead maximum up to 1 km. And depositing the same on neatly specified dump yard for use of final disposal (x) Construction and maintenance haul roads (xi) Removal of silt during execution (xii) Water applied for pre-wetting in excavation areas. (xiii) All works necessary to maintain the excavation in good order during excavation.

3.2.3 EXCAVATION FOR STRUCTURES

(A) GENERAL

After the site is cleared and grubbed the limit of excavation for the foundation of the structure shall be set out true to the line's curves and dimension of the drawings or directed by the Engineer-in-charge on the basis of actual site conditions revealed after opening of the foundation. In so far as practicable, the usable materials removed from excavation of structures shall be used for back filling and embankment filling or disposed.

(B) FOUNDATIONS FOR STRUCTURES

All trenches for foundation in all kinds of rock taking out to full width and length at the base course having more than 1.5m deep in to which men enter shall be excavated with recommended side slopes and suitable berm/s if cutting more than 3m considered to be quite safe and no shoring and strutting and carried along with the opening of a trench but when condition permit protection work such as sheet piling may be done before the excavation commences.

All loose stones, projecting clumps of earth, pockets of materials which might come down on the workers in the trench or any condition which is a hazard. Shall be either removed or the excavated sides adequately braced and trench suitably guarded. On steep slopes workmen shall not be permitted to work one above the other.

The Contractor shall prepare the foundations at structure sites by methods which will provide firm foundation for the structures. The bottom and side slopes of common excavation upon or against which the structure is to be placed shall be finished to the prescribed dimensions and the surfaces, so prepared shall be moistened and tamped with suitable tools to form firm foundation upon or against which the structure is to be placed. The Contractor shall prepare the foundation of the structures as shown on respective drawings. The horizontal foundation material beneath the required excavation shall be moistened if required and compacted in place.

If the Engineer-in-Charge considers it necessary to consolidate the foundation strata by grouting cement slurry, then drilling and grouting or any other foundation treatment shall be done by the Contractor as directed by the Engineer-in-Charge and the payment will be as per the general contract document in respect of extra items. Densities of the compacted foundation material and the testing thereof shall be in accordance with relevant I.S. specification.

Separate payment will not be made to the Contractor for moistening and compacting the foundation of structures. The Contractor shall include cost thereof in the prices bid per cubic meter of the item of the bill of quantities for preparation of foundations.

When suitable material is encountered in the foundation for structure the Engineer-in-Charge will direct additional excavation to remove the unsuitable materials. The additional excavation shall be refilled as follows. In excavation in soils, the over excavation shall be filled in by selected bedding materials and compacted. In excavation in rock, it shall be filled by cement concrete M-7.5. No separate payment for excavation, backfill will be made.

Whenever ground water or surface water is met with during excavation for structures, dewatering shall be restored by the contractor. The contractor shall take adequate measures for diversion channels and discharging drain water safely. No pumping shall be permitted during the period of doing concrete and masonry or any period of at least 24 hours. Thereafter it is done suitably from a sump separated from the work by suitable means.

Care shall be taken during blasting to prevent over breakage or losing of material on bottom and side slopes against which foundation concrete is to be laid. Final cutting for 45 cm in hard rock shall be carried out by controlled blasting or chiseling with the help of pneumatic pavement breakers. If excavation required to be done within 30m from the existing structures, the same shall be carried out by chiseling without resorting to blasting for which no extra rate will be payable. Without the permission in writing of the Engineer-in-charge, blasting operation shall be both allowed.

(C) OVER EXCAVATION

Over excavation shall not be done beyond the defined pay line and dimension of the drawing. If any such over excavation is done, the same shall be filled back with suitable soil and properly

compacted or concrete filled as required or as directed by the Engineer-in-charge. No extra claim for such excavation, filling and compaction of soil /concrete shall be entertained.

(D) PAYLINES

- i. Regardless of whether excavation for construction of the structure proceeds or follows the excavation of the dam at the site of structure measurement for excavation outside the pay lines for the canal excavation and below the original ground surface measured to the dimensions and slopes specified below.

In all Kinds of Soil - 1 H : 1 Vertical
In soft D.Irock - 0.75 H : 1 Vertical
In Hard disintegrated rock - 0.50 H : 1 Vertical
In hard rock - 0.125 H : 1 Vertical

(E) DISPOSAL OF MATERIALS

All suitable materials removed in excavation or as much thereof as may be needed as directed by the Engineer-in-Charge shall be used in the construction of canal embankments, roadway embankments and for selected bedding material or for backfill around Structure. If there is an excess of material in the excavation, it shall be used to strengthen the embankment on either side of the canal, deposited in low areas uphill of the canal to eliminate trapped drainage or otherwise wasted as directed by the Engineer-in-Charge. The disposal of the excavated material shall be in accordance with clauses 8.1 and 8.2 of B.I.S. 4701-1982.

(F) MEASUREMENT AND PAYMENT

The payment shall be made on volumetric basis for quantities excavated to the required extent. Foundation for structures will be measured for payment for prismoidal cutting with recommended side slopes for pay line of foundation dimensions. The contractor shall have to make his own arrangements for shoring, strutting, if necessary, arises and no separate charge will be paid for any such incidental charges arising either during excavation of foundation for any excavation beyond pay line. Final payment shall be based on levels only.

- i) In case of structure 60 cm extra excavation shall be done where compaction is specified by pneumatic tampers at designed foundation level shown on the drawings or the actual foundation level provided during excavation. Pay line shall be considered from actual foundation level, with slopes as per designed foundation level or actual foundation level, whichever is lower.
- ii) Lead specified for excavation shall be measured from the back of 15m of the foundation the place of dumping as straight-line distance i.e. crow-fly distance.

(G) RATE FOR PAYMENT

The rate for the respective items of excavation shall include the entire cost for labour , materials, tools and plant, machinery , taxes, drilling, blasting, excavation, transportation and incidental operations required for carrying out and completing the respective items of work in accordance with specifications, (as in chapter one para 1.1 to 1.13) drawings and as directed by Engineer-in-charge including (i) Site clearance (ii) Setting out of work (iii) Foundation preparation (iv) all dewatering of surface water and ground water including construction and removal of coffer dam etc. Till complete of the work (v) Shoring and shuttering and their subsequent removal (vi) Trimming rock foundation by controlled blasting (vii) Disposal of surplus materials including re-handling of excavated materials temporarily deposited in stock piles to disposal areas or point of final use (viii) Removing slips and blows (ix) Maintaining excavated slopes and trenches (xii) sorting and stacking the useful excavated materials above high flood level (xiii) Removal of silt clearance during executing (xiv) Monsoon damages (xv) Cost, conveyance and storage of blasting materials (xvi) All works necessary to maintain the excavated in good order during executing .

3.2.4 BACKFILL

3.2.4.1 BACKFILL AROUND STRUCTURES

(A) **GENERAL**

The item of the schedule for backfill around structures including pipe portions of structures includes all backfill required to be placed under these specifications.

- (B) **MATERIALS:** The type of material used for backfill, the amount thereof and the manner of depositing the material shall be subject to approval of the Engineer-in-Charge. In so far as practicable backfill material shall be obtained from material removed in require excavations for structures. But when sufficient suitable material is not available from this source or from adjacent canal excavation, additional material shall be obtained from approved borrow areas. The borrow pit excavation shall be in accordance with clauses 9.1 to 9.3 of B.I.S. 4701-1982.

Where sand filling is specified, the sand shall be clean, free from admixture of foreign material and approved by the Engineer-in-Charge before filling commenced. Should there be a necessity to fill in a basement with sea sand, prior written approval of the Engineer-in-Charge shall be obtained. Sand filling should be saturated with water before the construction is allowed to proceed.

Filling around structures shall have optimum moisture content and well consolidated in layers of 15 cm by ramming with iron rammers and cut ends of crowbars. When filling reaches the finished level the surface shall be saturated with water for at least 24 hours, allowed to dry and then rammed and consolidated to desired density in order to avoid any settlement at later stage.

Except as otherwise provided below, backfill material to be compacted shall contain no stones larger than 80 mm in diameters and if not be compacted shall contain no stones larger than 130 mm in diameter. If the excavation for the foundations of the structure is in swelling soils, a layer of cohesive non-swelling soil conforming to B.I.S. 9451-1985 should be interposed between the swelling soil and the structure and compacted to at least 95% standard proctors density.

(C) **PLACING BACKFILL**

Backfill shall be placed to the lines and grades shown on the drawings as prescribed in this paragraph or as directed by the Engineer-in-Charge.

The surface to receive the filling shall be first prepared free from all roots, vegetation or spoil and wetted.

All backfill shall be placed carefully and spread in uniform layers so that all spaces around rocks and clods will be filled. Backfill shall be brought up as uniformly as practicable on both sides of walls and all sides of structure to prevent unequal loading. Backfill shall be placed to about the same elevation on both sides of the pipe positions of the structures to prevent unequal loading and displacement of the pipe. The Contractor shall at his cost provide at least 60 (Sixty) centimeter thick earth cover over the top of pipe to prevent damage from construction equipment loads. If a haul road is built over a pipe all backfill about and over the pipe shall be placed to a uniform surface and no humps or depressions will be permitted at the pipe crossing.

Backfill required to be compacted shall be compacted in accordance with paragraph 3.3.2.

(D) **STRUCTURES ON FILL**

Where the original ground surface is below the base of a structure or below the bottom of pipe, all fill required for the structure foundation and all fill up to the bottom of the pipe shall be placed as compacted embankment. The embankment over the natural ground up to pipe bottom and over the pipe shall be laid in accordance with clauses 9.2.4, 9.2.5 and 9.2.6 of B. I. S. 783 code of practice for laying of concrete pipes.

(E) **MEASUREMENT AND PAYMENT**

The unit price bid therefore in the bill of quantities for excavation of foundation of structure shall include cost of back fill about the structure upto ground level. No separate payment shall be made for back fill foundation.

Refill of excavation performed outside the established paylines for excavation for structures shall be placed in the same manner specified for the adjacent backfill and such refill shall be placed at the expense of the Contractor. The cost of backfill shall be included in the applicable price bid in the bill of quantities of contract for excavation of foundation of structure, for which backfill is required.

3.2.4.2 COMPACTING BACKFILL AROUND STRUCTURES

(A) GENERAL

Unless otherwise shown on the drawings backfill around structure shall be compacted. The compacting equipment shall be so selected as to give maximum safety to the structure. The compaction of backfill under or over the pipes shall be in accordance with clauses 9.2.4, 9.2.5 and 9.2.6 of I.S. 783. In the case of very high embankments, the embankment shall be built to an elevation above the top of the pipe equal to the external diameter of the pipe after which a trench shall be excavated and the pipe laid. When the backfill is placed above the pipe, the vertical surface~ of the trench above the top of the pipe shall not be more than 20 cm beyond the outside diameter of the pipe. After the pipe has been laid suitable backfill, material shall be placed around the pipe and carefully compacted in layer, not more than 15 cm after compaction up to the top of the pipe. Thereafter, a loose fill of depth equal to external diameter, of the pipe shall be placed before further layers are added and compacted.

Compacted backfill should be placed in horizontal layers not exceeding 15 (fifteen) centimeters after compaction.

Heavy stones shall neither be dropped on top of the pipe nor shall be allowed to roll down the side of the embankment against the pipe.

(B) MATERIAL AND COMPACTION

The material used for the backfill the compacted shall be selected material containing no stones larger than 80 millimeters or as approved by the Engineer-in-Charge and obtained from required excavation or approved borrow pit.

(C) MEASUREMENT AND PAYMENT

The cost of the compaction of the back fill to different compaction efficiency will be paid as per the price bid for respective item of watering & compaction.

SECTION -3.3 CONVEYANCES OF EXCAVATED MATERIALS (LEADS & LIFTS)

Payment for conveyance shall be made only for excavated materials required for dam embankment and no payment shall be made for the excavated material used for the temporary and permanent embankment for Roadways and Road Crossings and other excavated materials directed to be wasted beyond the limit of the haul. The entire cost of hauling of the above-described materials any distance up to the free haul limit from the original position shall be included in the price bid in the schedule for excavation of the materials.

Unless otherwise specifically provided no conveyance payment shall be made for haul of materials paid for as backfill around structured revetment, gravel bedding for revetment or for selected bedding material used in preparing foundation for concrete canal lining.

3.3.1 HEAD LEADS

Where materials is taken from borrow area excavation and deposited in dam embankment or disposed of on stocks piles, or waste banks, the lead shall be measured as horizontal distance between the vertical center lines of the pit cross section and the bank which is formed with excavated earth.

A 25 (twenty-five) meter head lead defined as one unit of excavated material hauled to a distance of 25 (twenty-five) meter length or part thereof in excess of free haul limit of initial 50 (fifty) meter and is considered as one extra lead.

A length of lead will be measured in sanction units of 25 (twenty-five) meter. The excavated material will be measured in one cubic meter unit for excavation in rock and one cubic meter unit for excavation in rock and one cubic meter units for excavation in all soils. Payment for leads will be made at the unit price for extra lead bid therefore in the bill of quantities.

3.3.2 HEAD LIFTS

"Lift" will be the vertical distance obtained by adding up.

- a. half the depth of pit actually excavated;
- b. half the maximum height of the bank formed with the excavated earth over existing ground or bank; and,
- c. The difference between the top level of pit actually excavated and the level above which (b) is reckoned.

1.50 meters head lift is defined as one unit of excavated material hauled from 1.50 meters height or part thereof in excess of free haul limit of initial 1.5 meter lift.

The head lift will be measured in station units 1.5 meter for soils and rocks. The excavated material will be measured in one cubic meter unit for excavation in rock and one cubic meter unit for excavation in all soils. Payment for head lifts will be made at the unit the price for excavation in all soils. Payment for head lifts will be made at the unit the price for extra lifts bid therefore in the bill of quantities.

Beyond 150 meters head and depth of excavation in canals exceeding 7.5 meters the payment for overhaul will be as follows:

Measurement and payment for overhaul will be made as detailed below regardless on the methods and types of equipment used in excavation and hauling.

Where material is taken from canal excavation and deposited in dam embankment-the length of haul will be measured along the center line of the dam from the center of material found in a excavation. To the center of material as deposited regardless of haul routes actually traveled. The above lengths of haul shall be distance measured along the center line between the center of the excavation as projected on the center line and the center of the deposit as projected on the center line. Where material is excavated from canal or drainage channel and is deposited in embankment other than the embankment of canal from which excavated the length of haul shall be measured along a straight-line distance as determined by the Engineer-in-Charge. from the center of the material as and found in the excavation to the material as deposited.

3.3.3 MEASUREMENT AND PAYMENT

Up to 150 meters leads and 7.50 meters depth of canal excavation the payment for overhaul shall be on Head leads and as shown in the bill of quantities.

In measuring quantities of overhaul for payment, the volume of the overhauled material shall be measured in cubic meter units for excavation in rock and for excavation in soils. The length of a haul will be measured as stated above in kilometer. Payment for overhaul shall be made at the unit price bid for kilometer extra lead therefore in bill of quantities.

3.3.4 DISPOSAL OF MATERIAL

(A) GENERAL

All suitable material removed in excavation or as much thereof as may be needed as determined by the Engineer-in-Charge shall be used in the construction of dam embankments, roadways embankments and for selected bedding material or for backfill around structure. If there is an excess of material in the excavation for any reach it shall be used to strengthen the embankment on either side of the canal, deposited in low areas up-hill of the canal to eliminate trapped drainage or otherwise wasted as directed by the Engineer-in-Charge. The disposal of a excavated material shall be in accordance with clauses 8.1 and 8.2 of I.S. 4701-1982.

When directed by the Engineer-in-Charge excess material shall also be placed in low areas that may occur adjacent to bridge sites between the O&M Road ramps and the canal bank.

Material removed in excavation and not suitable or required for embankments backfill or other require earth work, shall be deposited in waste banks on right of way owned by or controlled by the Government as directed by the Engineer-in-Charge and any overhaul necessary shall be in accordance with paragraph 3.3.

The spoil obtained from dam cut-off cutting which is considered useful by the Engineer-in-Charge shall be fully utilized for the formation of both the banks of the canal to the required profiles as shown of the earth. The spoil not useful for the banks has to be thrown parallel to the bank and away from it as may be directed by the Engineer-in-Charge during execution to form the spoil bank. In case of deep cutting the spoil shall be so disposed of as not to result in unsightly heaps and shall be leveled and properly dressed. The top of both the finished banks shall slope away from the inner edge with a suitable gradient.

The useful rock obtained from the canal cutting shall not be mixed with other soils and shall be deposited on the outer slopes of the canal spoil bank. If the rock and the soil are mixed up while depositing at the spoil banks suitable deduction for the agreement rate as decided by the Engineer-in-Charge shall be made which is binding on the Contractor.

(B) COST

Except as specially provided in these specifications for payment for hauling or placing of individual items of excavated materials cost of all work described in the paragraph shall be included in the unit price per cubic meter bid in the bill of quantities for excavation for canal.

Section 3.4 Drilling and Blasting

3.4.1 General

Blasting where required shall be permitted only when proper precaution have been taken for the protection of persons and property in accordance with I.S. 1967 (Indian Standard Specifications) for safety Code for blasting and related drilling operations). While carrying out excavation, adequate precautions in accordance with I.S. 3761-1966 (Indian Standard Specifications for safety code for excavation work) shall be taken.

All contractors who execute blasting operations in connection with works for purpose of the quarrying stones, road construction, excavating foundations, well sinking or for any further additional instructions which may be given by the Engineer-in-Charge.

3.4.2 Blasting with Powder

- (a) Blasting operation shall be under charge of competent persons specially deputed for this purpose and be carried out during fixed hours of the day preferably during early hours, mid-day lunch hour or at the close of the working day, in the presence of competent persons. Prominent signboard indicating the blasting timings should be put up at a number of places. The Safety Engineer shall see strict safety precautions are taken and observed.
- (b) Red flags shall be prominently displayed and all the people except those who have actually to light the fuse must evacuate to safe distance from the blast not less than 150 meters as a rule.
- (c) Sirens shall be sounded five minutes prior to the blast with wailing note and an all clear shall be given with a long blast at the end of the operation. These sirens should be kept at different locations so as to identify the danger zones.
- (d) All fuses must be cut to required length before being inserted into the bores. The safety fuses of the charged holes are to be lighted in the presence of the Supervisor, who must see that the fuses of all holes charged have properly ignited.
- (e) The number of blasts to be fired and the actual number of shots heard must be compared and the person responsible must satisfy himself by examination that all blasts have exploded before workpeople are permitted to approach the site. Withdrawal of charge which has not exploded, is not to be permitted under any circumstances, but the tamping and charge should be flooded with water and the hole marked in a distinguishing manner. Another hole should be drilled at distance of about 23cm. from the old hole and fired in the usual way. The result shall be carefully examined by the persons in charge of blasting and the operation continued until the original blast is exploded.

3.4.3 Blasting with Dynamite and Other High Explosives

Sub paragraphs (a) to (c) of the paragraph 3.4.2 instructions for blasting with powder shall apply. The strength of the special gelatin to be used in the excavation of foundation as per the percentage mentioned below.

60% Special gelatine- for softer rock strata.

70% Special gelatine- for medium hard rock strata.

80% Special gelatine- for hard rock strata.

Bore holes must be of such a size that the cartridges can easily be passed through.

The position of all holes to be drilled must be marked out with white paint and the responsible man in charge of blasting (supervisor) shall take particular note of these positions and check them again after holes are drilled.

The Supervisor himself must supervise preparation of all charges necessary for the bore holes. Blasting plans shall be evolved after trial blasting at the site. The first few rounds blasted at the work site shall be considered as test/trial blasting to find the most economic and efficient drilling and firing pattern, consistent with limiting the blast- induced peak particle velocity (ppv) within permissible range. He shall adjust the drilling pattern, hole depth, number of holes, charge per hole and the firing sequence including the types and number of delays for ensuring most favorable angle of breakage. The blasting plan, so evolved, and approved by the Engineer-in-Charge, will restrict the development of crack zone beyond the drilled contour and limit the PPV's influencing the damage prone features/structures range. Through trial blasting and vibration measurement the value of variable K shall be determined from the following equation.

$$V = \frac{K(Q^{1/2})}{D^{1.7}}$$

V = Peak particle velocity in mm/sec.

Q = Co-operating charge in Kg

D = Distance from the blasting zone in meters.

K = Transmission factor constant which depends upon rock characteristics. homogeneity of rock and presence of faults and cracks.

Broadly, a peak particle velocity range of 70-100 mm/sec shall be permissible in good rock excavation. The number of holes to be blasted in a round will be governed by the blasting plan evolved through trial blasting as explained above with the framework of permissible PPV. If blasting is to be done in the vicinity of any risk-prone feature of structures, the permissible PPV shall be reduced and the Engineer-in-Charge shall lay down the safe limits of PPV.

3.4.4 Explosive and Blasting

Explosive required for rock blasting are to be procured by the Contractor at his cost. It shall be the responsibility of the contractor to store the explosive purchased by him in accordance with the rules of the explosives act and other rules framed by Govt. of India.

Blasting materials such as Gelatine. Detonators and fuse coils will have to be produced by the Contractor, the Contractor should make his own arrangements for their transport to work spot at his cost and their safe custody in a portable magazine, as per the rules in force and furnish the following details:

Capacity	License No. and Date	Validity Period

The Contractor shall acquaint himself with all the applicable laws and regulation concerning storing, handing and the use of explosives. All such laws, regulations and rules as prevalent from time to time shall be binding upon the Contractor.

The provision detailed in the specifications are supplementary to the above laws, rules and regulations and are also applicable except where they conflict with the above-mentioned laws. Further the Engineer-in-Charge may issue modifications, alterations and new instructions from time to time. The Contractor shall comply with the same without these being made a cause for any claims.

All the materials such as explosives, detonators, fuse, coils tamping materials, etc. they are proposed to be used in the blasting operations shall have the prior approval of the Engineer-in-Charge. Only explosives of required make and strength are to be used.

The use of fuse with only one protective coat is prohibited. The fuse shall be sufficiently water resistant as to be unaffected when immersed in water for thirty minutes. Rate of burning of the fuse shall be uniform and not less than 4 (four) seconds per 35 millimeters of length with 10 percent (ten percent) to tolerance on either side. The fuse known as instantaneous fuse shall not be used.

Before use, the fuse shall be inspected and most damaged or broken ones discarded. The rate burning of all new types of fuses or when they have been in stock for long shall be checked before use. The detonators used shall be capable of giving an effective blasting of the explosives.

3.4.5 Personnel

Excavation on blasting shall be permitted only under the personal supervision of competent and licensed persons and trained workmen employed by the Contractor at his cost. All supervisors and workmen in charge of makeup storage and blasting work shall be adequately insured by the Contractor.

The storage of explosives shall be in charge of a very reliable person approved by the Engineer-in-Charge who may, if necessary, cause police inquiry being made as to his reliability, antecedents, etc. The Contractor shall have to produce security for the person in charge of the explosives, if and as required by the Engineer-in-Charge or the civil authorities of the district.

3.4.6 Storage of Explosives

The Contractor shall build at his cost a magazine for storing the explosives and portable magazine for carrying the explosives to work spot from the magazine or one storage magazine to be built near the site of the work on which explosive are to be used. The site of the magazine, its capacity and design shall be subject to approval by the Engineer-in-Charge and the Inspector of Explosives before the construction is taken up. As a rule, the explosive should be stored in a clean, dry, well-ventilated bullet proof and fire proof building on an isolated site.

The explosives, detonators, and fuse coils shall each be separately stored.

A careful and day to day account of the use of explosives shall be kept by the Contractor in register in a manner prescribed by the Engineer-in-Charge. The Engineer-in-Charge may also pay surprise in a visit to the storage magazine. In case of any unaccountable storage of the explosives, or if the account is not found to have been maintained in a manner prescribed by the Engineer-in-Charge, the Contractor shall be liable to be penalized in which case, he shall not be entitled to any compensation for the losses etc. The action taken under this clause shall be in addition to that which might be taken by the competent authorities or in the court of law. The magazine shall at all times be kept scrupulously clean.

No unauthorized person shall at any time be admitted inside the magazine. A notice shall be hung near the storage, prohibiting entrance of unauthorized persons.

The magazines on no account be opened during or on the approach of a thunder storm and no person shall remain in the vicinity the magazine during such periods.

Magazine shoes without nails shall at all times be kept in the magazine, and a wooden tub or cement trough about 300 millimeters high and 450 millimeters India meter filled with water shall be fixed near the door of the magazine.

Persons entering the magazine, must put on the magazine shoes which shall be provided by the Contractor for the purpose and be careful.

- i. Not to put their feet on the clear floor unless they have the magazine shoes on.
- ii. Not to allow the magazine shoes to touch ground outside the clean floor.
- iii. Not to allow any dirt or grit to fall on the clean floor.

Person with barefoot shall before entering the magazine dip their feet in water and then step direct from tub over the barrier 9if there be one) on the clean floor.

A brush or broom shall be kept in the lobby of he magazine, for cleaning out the magazine, on each occasion it is opened for the receipt, delivery or inspection of explosives. No. matches or inflammable material shall be allowed in the magazine. Light shall be obtained from an electric storage battery lantern.

No persons having articles of steel or iron on him shall be allowed to enter the magazine.

Oily cotton, rags, waste and articles liable to spontaneous ignition, shall not be allowed inside the magazine.

Workmen shall be examined before they enter the magazine to see that they have none of the prohibited articles on them.

No tools or implements other than those of copper, brass, gun metals or wood shall be allowed inside the magazine. All tools shall be used with extreme gentleness and care.

Boxes of explosives shall not be thrown down or dragged along the floor, and shall be stacked on the wooden trestles.

Where there are white ants, the legs of the trestles shall rest in shallow copper, lead or brass bowls containing water. Open boxes of dynamite shall be never be exposed to the direct rays of the sun. Empty boxes or loose packing materials shall not be kept inside the magazine.

The magazine shall have lightning conductor which should be got tested at least once a year, by a officer authorized by the Engineer-in-Charge. The Contractor shall within15days. comply with all the recommendations made by the officer testing the lightning conductor failing which the Engineer-in-Charge shall entitle to comply with the same at the contractor's expenses which shall not be open to question or the Engineer-in-Charge may consider any action that he may consider.

The following shall be hung in the lobby of the magazine.

- a. A copy of rules both in the English and the languages in which the workers concerned are familiar.
- b. A statement showing the stock in the magazine at that particular time.
- c. A certificate showing the last date of testing of the lightning conductor.
- d. A notice that "Smoking is strictly prohibited."

The magazine shall be inspected at least twice a year by an officer representing the Engineer-in-Charge who shall see that all the rules are strictly complied with. He shall notify all omissions etc., to the Contractor who shall rectify the defects with in a period of 15 days (fifteen days) from the date of receipt of the notice, falling which the Engineer-in-Charge may take whatever action he considers suitable.

3.4.7 Transport and Storing of Explosives.

For the transport of the explosives and detonators between the store and site, closed and strong containers made of soft materials such as timber, zinc, copper, leather shall be used. Explosives and detonators shall be carried in separate boxes. For the conveyance of primer special container shall be used.

The boxes and containers used, shall be kept closed. Explosives shall be stored and used chronologically to ensure the ones received earlier being use first. A make-up house shall be provided at each working place in which cartridge will be made up by competent and licensed men it as required for the work. The makeup house shall be separated from to other buildings. Only electric storage battery lamps will be used in this house. No smoking shall be allowed in the make-up house generally while dealing with explosives.

No child under 16 years of age & person who is in the state of introduction, shall be employed on the loading, unloading or transport of explosive or be employed in or allowed enter the premises where explosives are handled and/or stored.

3.4.8 Disposal of Deteriorated Explosives

All deteriorated explosives shall be disposed off in an approved manner. The quantity of the deteriorated explosives to be disposed off shall be intimated to the Engineer-in-Charge prior to its disposal.

3.4.9 Preparation of Primers

The primers shall not be prepared near open flames or fire. The work preparation of primers shall always be entrusted to the same personnel. Primers shall be used as early as possible after they are ready.

3.4.10 Charging of Holes

The work of charging of holes shall not commence before all the drilling work at the site is completed and the Contractor's supervision be satisfied himself to the effect by annual inspection. While charging open lamps shall be kept away. For charging with powered explosives, a naked flame shall not be allowed. Only wooden tamping rods, without any kind of metal on the rod shall be allowed to be used. The tamping rods shall have cylindrical ends. Bore hole must be of such size that the cartridges can easily pass down them, they shall not however be too big.

Only one cartridge shall be inserted at a time and gently pressed into the hole with the tamping rods. The sand, clay or other tamping material used for filling the holes completely shall not be tampered too hard.

3.4.11 Blasting

Blasting shall be carried out during fixed hours of the day which shall have the approval of the Engineer-in-Charge. The hours once fixed shall not be altered without prior, written approval of the Engineer-in-Charge.

The site of blasting operations shall be prominently demarcated by red danger flags. The order of fire shall be given only by the Contractor's supervisor in charge of the work and his order shall be given only after giving the warning signal three times. So as to enable all the labour, watchmen, etc., to reach safe shelters.

All the roads and foot paths leading to the blasting areas shall be watched. Road closing barriers should be provided to close the traffic on these roads at least 400 meters away when the firing is to take place.

In special cases, suitable extra precautions shall be taken. The Engineer-in-Charge may however permit blasting for underground excavation, without restriction of fixed time, provided that he is satisfied that proper precaution are taken to give sufficient warning to all concerned and that work of other agencies on the site is not hampered. For lighting the fuse, a lamp with strong flame such as carbide lamp shall be used.

The Contractor's Supervisor shall watch the required time for the firing of the fuses and shall see that all the workmen are under safe shelters in good time.

3.4.12 Electrical Firing

Only the Contractor's Supervisor in charge shall possess the key of the exploder and short firing accessories and he shall keep it always with himself. Special apparatus shall be tapped for the purpose.

The detonators shall be checked before use. For blast in series, only detonators of the same manufacture of the same group of electrical resistance shall be used.

Such of electrical lines as could constitute danger for work of charging shall be removed from the site.

The firing cable shall have a proper, insulating cover so as to avoid short circuiting due to contact with water, metallic parts of rock.

The use of the earth as a return line shall not be permitted.

The firing cables shall be connected to source of current only when nobody is in the area of blasting. Before firing, the circuit shall be checked by a suitable apparatus. After firing whether with or without an actual blast the contact between the firing cables and the source of current shall be cut off before anyone is allowed to leave the shelter.

During storms, charging with electrical detonators shall be suspended. The charges, already placed in holes shall be blasted as quickly as possible but taking all the safety precautions and

giving necessary warning signals. If this is not possible the site shall be abandoned till the storm has passed.

3.4.13 Precautions after Blasting

After the blast, the Contractor's Supervisor must carefully, inspect the work and satisfy himself that all the charges have exploded. After the blast is taken. place in underground works, workmen shall not be allowed to go the place till all the toxic gases are evacuated from the face.

3.4.14 Misfires

If it suspected that part of the blast has failed to fire and delayed, sufficient time shall be allowed to elapse before entering the danger zone. When fuse and blasting caps are used, a safe time should be allowed and then the Contractor's Supervisor alone shall leave the shelter to see the misfire.

None of the drolleries are to work nearer this hole under one of the two following operations have been carried out by the supervisor.

Either (i) the supervisor should very carefully (when the tamping is of camp clay) extract the tamping with a wooden scraper or jet of water or compressed air (using pipe of soft materials and withdraw the fuse with the primer and detonator attached after which a fresh primer and detonator with fuse should be placed in this hole and fired out or (ii) the hole may be cleared of 300 mm of capping and the direction then be ascertained by placing a stick in the hole. Another hole may be drilled at least 225mm away, and parallel to it. This hole should than be charged and fired. The balance of the Cartridge and detonators found in the muck shall be removed.

Before leaving this work, the Contractor's Supervisor should inform the supervisor of the relieving shift of any case of misfires and should point out the position with red cross denoting the same, also stating what action if any, he has taken in the matter. A register of misfires and their location and how they were dealt with shall be maintained by the Contractor.

The Contractor's Supervisor should also at once report at the Contractor's office all cases of misfires, the cause of the same and what steps were taken in connection there with.

The name of the day and night shift supervisors of the Contractor must be noted daily in the Contractor's office. If misfire has been found to be due to defective detonator, or dynamite, the whole quantity of box form which the defective article was taken. must be returned to the Contractor's office for inspection, and shall be disposed off.

Blasting operation, when considered necessary shall be resorted to only with the written permission of the Engineer-in-Charge. Prior inspection shall be carried out for the safety and stability of the public and property. Blasting operations in the proximity of overhead power lines, communication lines, utility lines or other structures shall not be carried on until the operator or the owner or both of such lines have been notified and precautionary measures deemed necessary have been taken.

Any damage to the neighboring buildings, properties, standing crops, and life due to blasting shall be made good by the Contractor at his cost.

SECTION -3.5 EMBANKMENT

3.5.1 PREPARATION OF SURFACES UNDER EMBANKMENT

The preparation of surfaces under embankment shall be in accordance with clauses 6.1 and 6.5 of I.S. 4701 -1982.

Before commencing the work, the toe of the slope on each side of the Banks shall be lock-spitted (dog belled) and mark by pegs firmly driven into the ground at intervals of about 15 miters, profiles made by bamboo, earth, or other convenient materials and strings shall be set up for the guidance of the workmen about 15 meters apart over straight reaches and about 7.5 meters apart at curves.

Except in areas of rock, the areas under dam embankments shall be pre-wet by sprinkling water before cleaning, grubbing, or excavation operations or embankments construction begin. The moisture content shall be optimum to a depth of one meter below the original ground surface up to impervious material whichever is less as directed by the Engineer-in-Charge

Whenever possible all water shall be added uniformly in one application. Areas on the sides of the canal banks upon which the Engineer-in-Charge may direct spoil banks to be constructed will not require application of water.

The Contractor is cautioned to control carefully the application of water and to check on the depth and amount of water penetration during application so as to avoid over watering, accumulation of water in depressions or excessive run off.

If at any location on embankment foundations, before and during embankment construction there is excessive moisture as determined by the Engineer-in-Charge, steps shall be taken to reduce the moisture by excavating drains, by allowing adequate drain time or by any other approved means.

The Contractor shall not be entitled for any additional allowance above the unit prices bid in the schedule on account of the requirement for excavating drains or allowing additional time for drying, delays, or increased costs due to poor traffic ability on the embankment foundations or on the haul roads.

Where the ground surface under any embankment is not suitable as determined by the Engineer-in-charge for a foundation for the embankment, the Contractor shall strip the area under the embankment of such unsuitable material to such depths as may be directed. The material so removed shall be disposed off as provided in paragraph 3.3.4. Measurement for payment of stripping unsuitable material under embankments shall be made only to the lines and to such depths as may be directed and payment therefore will be made at the unit prices per cubic meter bid in the bill of quantities for excavation for construction of canal embankment.

Before beginning the construction of embankment's the surface area of ground to be occupied shall be cleared all roots and vegetable matter of any kind stripped to suitable depth. The stumps shall be pulled or otherwise removed, and the roots grubbed. The stumps and roots removed shall be suitably disposed. The depth to which top soil is removed shall be adequate to remove all perishable material and any soil which may become unstable on saturation or may interfere with development of proper bond between foundation and embankment. It is not necessary to remove all the soil containing fine hairlike roots but only the rather heavy mat. The underline table may offer as a guide for lines for finding depth of stripping.

Type of Vegetable Cover in the Soil	Depth of Stripping
1. Soil containing light grass cover	5.0 to 7.5 cm
2. Agricultural lands to bottom of ploughed zone	15.0 to 20.0 cm

The ground surface under all canal embankments excepting rock surface, where it is below the full supply level in the canal shall be scarified making open furrows not less than 20 centimeters deep below natural ground surface at intervals of not more than 1.0 (one) meter. However, where the ground surface is below the bed level of the canal, the entire surface of the foundation of embankments shall be stripped to a depth of not less than 20 (twenty) centimeters.

Immediately after preparation of the embankment's foundation, the Contractor shall excavate cut of trenches. Following this operation as soon as feasible and as approved by the Engineer-in-Charge the Contractor shall place and compact embankment in the cut off trenches and place one meter of embankment over the entire embankment foundation and compact where required. This procedure will seal the foundation against loss of moisture and provide some consolidation of the foundation.

The cost of scarifying the foundation surfaces under the canal embankments and other embankments shall be paid at the unit price per cubic meter bid in the bill quantities for excavation of canal.

Payment for out off trenches shall be made at the unit price per cubic meter bid in the schedule of quantities for excavation for canals.

Payment for compacting embankment in the cut off trenches shall be included in the unit price per cubic meter bid in the bill of quantities for watering of embankments.

Water applied for the pre-wetting areas under the canal embankments and under other embankments will not be measured for payment and shall be include in unit price per cubic meter bid in the bill of quantities for excavation of canal/construction of canal embankment.

In case of existing canals, where the slopes in canals and embankment portions are to be modified, benching of slopes shall be done or old bunds shall be sloped as directed by the Engineer-in- Charge duly clearing the surface area under slopes from all roots, vegetable matter and stumps shall be pulled or otherwise removed and roots grubbed. The stumps and roots removed shall be suitably disposed off.

The measurement of the benching operation if done shall be done separately and the payment shall be made at the unit price per running meter bid in the bill of quantities for that item.

3.5.2 CONSTRUCTION OF EMBANKMENTS

(A) GENERAL

Canal embankment shall be constructed to top widths and side slopes as shown on the drawings duly providing for the compacted allowance of two cm. per meter height of bank for settlement. The embankment shall be built to heights as directed above those shown on the drawings. The top of all the canal embankments shall be graded to be suitable for a road way in accordance with sub paragraph (B) and the top of other embankments shall be graded to scarify as directed.

Before commencing over haul of material from the borrow area levels of the banks to be formed in the sections where the over hauled material is proposed for construction of embankments shall be taken. After completing the construction of embankment final cross section levels shall be taken and the volume shall be arrived at the payment shall be made to that quantity only.

All material shall be deposited in the embankments so that cobbles, gravel and boulders are well distributed through other material and not nested in any position within or under the embankment as enunciated in clause 6.4 of I.S. 4701-1982.

In the area where required excavation does not furnish suitable for adequate material for constructing embankments, material shall be obtained from areas where material in excess of that required to construction the adjacent embankment is available.

Where the original ground surface is below the grade of canal and where construction of a fill below the bottom of the canal is prescribed such fill shall be placed as a compacted embankment. . Where the original ground surface is below the base of a structure, the fill required to form a suitable foundation for the structure shall be placed as compacted embankment.

(B) ROADS AND RAMPS

In conjunction with construction of dam and canal embankments, the contractor shall construct operation and maintenance roads and earth ramps adjacent to the dam and canal and structures where shown on the drawings and where directed at his own expenses. Suitable material from required excavation shall be placed as embankment for the roads and ramps. If sufficient material is not available from required excavation the Engineer-in-Charge may direct excavation from borrow areas.

The width of road shall be provided as shown in the drawing and where the width of road is not shown on the drawings it shall have a width of not less than 4.2 meters. The work required for construction, operation and maintenance of road and for earth ramps that obtainable with a motor grader provided for safe travel with a two-wheel drive automobile in high gear to moderate speed. Special rolling or compact will not be normally required. Provided that, if compaction is directed, the embankments shall be compacted in accordance with Section 3.6.

(C) EMBANKMENTS NOT TO BE COMPACTED

Embankments not to be compacted shall be formed conforming to clause 6.6.1 of I.S. 4701-1982. The material for these embankments shall have optimum moisture content before earth moving equipment is routed over the embankment. The embankments shall be built in layers not exceeding 30 cm in thickness. Embankment shall be built approximately horizontal layers

carried across the entire width of the embankments to the required slopes. Embankments shall not be widened with loose material dumped from the top. Embankments may be built by excavation and hauling equipment or by excavating machinery depositing the materials directly from the excavation. Embankments built by excavating and hauling equipment shall be made in horizontal layers and shall be kept as close to level as practicable. The travel over the embankments during construction shall be routed so as to distribute the compacting effect of the equipment to the best practicable advantage.

(D) EMBANKMENTS TO BE COMPACTED

The requirements for compacted embankments shall be as specified in Section 3.6. All materials in compacting embankments shall be placed moisturized and compacted as provided in corresponding section.

The material used for compacted embankments shall be suitable materials as determined by the Engineer-in-Charge and shall be obtained from required excavation. The material shall conform to clause 6.4 of I.S 4701-1982.

Before the materials for the 1st layer of embankment is placed, the foundation of the embankment shall be prepared as provided in paragraph 3.5.1 and shall be moisturized and compacted in the manner hereinafter specified for each layer of compacted embankment to be placed thereon. The embankments shall be compacted to the elevation and to the top widths and side slopes shown on the drawings or prescribed by the Engineer-in-Charge.

The layer shall be placed in rows approximately parallel to the axis of the bank. The base of embankment at every height is to be made to its full width of each zone as shown in the drawing plus offsets of not less than 0.45 meters beyond the finished profile on either side for compaction. No payment will be made for the offsets or for the subsequent removal and unit price quoted for the banking is deemed to include this. No additions will be allowed

to the slope for full design section of the bank after the bank is raised. The embankment shall be compacted to the 95% proctor's density using pneumatic tamper, frog rammers or vibratory plate compactor or power roller.

Where the original ground surface is below the bottom of the canal and where compacted fill below the bottom of the canal is prescribed. such fill shall be placed as compacted embankment. Where the original ground surface is below the base of structures or where slopping concrete walls or slabs extended above the original ground surface and it is practicable as determined by the Engineer-in-Charge to construct the walls or slabs directly on earth foundation, without of intervening forms, compacted embankments shall be constructed to lines and grades as directed to form suitable foundation for the structure or for the sloping walls or slabs.

3.5.3 BORROW AREA

3.5.3.1 GENERAL

- (a) All material required for the construction of embankment and backfill for cut-off trench and around the structures which are not available from dam and canal excavation, excavation for structure or from excavation of other ancillary work shall be obtained from the designated borrow areas within 3 km. after stripping as shown on drawing or as designated by the Engineer-in-Charge in consultation with field laboratory. The depth of cut in all borrow areas shall be designated by the Engineer-in-Charge and the cut shall be made up to such designated depths only. Shallow cut will be permitted in the borrow areas if un-stratified materials with uniform moisture contents are encountered. Each designated borrow area shall be fully exploited before switching over to the next designated borrow area. Haphazard exploitation of borrow pits shall not be permitted. The type of equipment used and the operations in the excavation of materials in borrow areas shall be such as to produce the required uniformity of the mixture of materials for the embankment. The Contractor has to arrange borrow earth at his own cost and responsibility. The borrow area shall not be designated within a distance of five times the height of the embankment from the outer toe.
- (b) Borrow pits shall be operated so as not to impair the usefulness or mar, the appearance of any part of the work or any other property. The surfaces of wasted materials shall be left in a reasonably level and even condition.

3.5.3.2 PREPARATION OF BORROW AREAS.

All areas required to borrowing earth for embankment shall be cleared of all tree stumps, roots, bushes, rubbish and other objectionable materials. Adequate lighting arrangement should be provided by the Contractor. '

Particular care shall be taken to exclude all organic matter from the materials to be placed in the embankment. All cleared organic materials shall be burnt to ashes or disposed as of as directed. The cleared areas shall be maintained free of vegetable growth during the progress of the work. No payment shall be admissible for preparation of borrow areas indicated above as this is deemed to have been included in unit bid price of earth work in the bill of quantities.

3.5.3.3 STRIPPING OF BORROW AREAS

Borrow areas should be stripped of top soils, sod and any other objectionable materials to the required depth as directed by Engineer-in-Charge. The work may done manually or with suitable machine. Stripping operation shall be limited only to designated borrow areas. Materials from stripping shall be disposed of in exhausted borrow areas or in the approved adjacent areas as directed. No extra payment shall be admissible for stripping the borrow areas as this is deemed to have been included in the bid price for earth work in the bill of quantities.

3.5.3.4 BORROW AREA WATERING/DEWATERING

- (a) Borrow area watering shall be done by the Contractor at his own cost wherever necessary preferably 48 hours in advance, so that materials may be carried with adequate moisture and in the manner specified by the Engineer-in-Charge.
- (b) The initial moisture content of the material in the borrow areas be estimated with the help of field laboratory tests. The optimum moisture content required for the materials in any particular borrow area shall be obtained from the field laboratory. The additional moisture requirements as determined by the laboratory test shall be introduced into the borrow areas by watering well in advance of the excavation to ensure uniformity of moisture content. All care shall be taken to reduce excessive moisture in any of the locations of a borrow area before or during excavation to secure the materials with moisture content' close to the optimum. To avoid formation of pools in the borrow areas during excavation operation, drainage ditches from borrow areas during excavation operation, drainage ditches from borrow areas to suitable outlets shall be excavated, wherever necessary. Upon exhausting of all materials or abandoning the borrow areas, the pits shall be fully drained to ensure no ponding of water.

3.5.3.5 HAUL ROADS AND APPROACH ROADS

Construction and maintenance of approach roads, and haulage roads will be the responsibility of the Contractor. The Department will have full right of way to those roads for inspection purposes. Proper road sign as directed have to be provided for safety. For haulage of earth, the Contractor shall construct ramps and haul roads of sufficient width along the shortest but most practicable route and shall maintain and illuminate them to a satisfactory manner. Watering of the haul road shall be done by the Contractor as often as necessary to prevent raising of dust, formation of cuts and consequent detritions of the surface. When, ever service roads meant for public through fare traverse through or run close to the borrow area, the Contractor shall direct the excavation and haulage operation in such a manner as to ensure uninterrupted use of the service road and safety to the public. At the haul road and service road crossing, the Contractor shall install necessary check gates and road signs.

No extra payment is admissible as this is deemed to have been included in the unit bid price for earth work in the bill of quantities being contingent to the main work.

3.5.4 EARTH FILL MATERIAL

3.5.4.1 HOMOGENEOUS EARTH FILL

Dam embankment shall be constructed to the top width and side slopes as shown on the drawings. Suitable excavated material available from the canal cutting, proud cutting, removed of ramps and excavation for structures shall be used for construction of banks. If suitable and adequate material for constructing embankment is not available from excavations the desired material shall be obtained from borrow area designated for the purpose as per the instruction of the Engineer-in- Charge.

The planning for execution should be such that all the useful excavated materials are utilized in embankment prior to utilization of borrow earth from outside. The embankment earth shall be borrowed only after getting written instruction of the Engineer-in-Charge. Only suitable material as per specification shall be excavated, loaded and conveyed to the point of its placement in the embankment.

Unsuitable material if sniveled shall be removed and disposed clear the work site as directed by the Engineer-in-Charge at the cost of the Contractor. The maximum dimensions of the stones, pebbles and rock fragments etc., placed in the outside zone of the embankment shall not be more than 15 cm and the quantity of such stone shall not exceed 5% of total quantity.

3.5.4.2 ZONED EARTH FILL

- (a) When the embankment section is designed zone section, the embankment shall be divided into zones which fill materials obtained from canal excavations having different characteristics are to be placed. Placement of fill within these zones as shown on the drawing shall be performed, in an orderly sequence and in efficient and work man like manner. The selected material shall be filled above the key of lining.
- (b) Chemical and physical tests of the soil in the embankment shall be carried out to ensure that the soil does not contain soluble lime salt content or cohesionless fines, and quantities harmful to the embankments. The useful material available from canal excavation of proud and excavation of quantities, placed in the specified layers for embankment.
- (c) In areas where suitable and adequate material for constructing the inner zones of the embankment is, not available from the canal excavation and excavation of structures, the material shall be obtained from the borrow areas fixed for the purpose. The borrow areas shall be excavated to the dimensions and depths actually required and as per the instructions of the Engineer-in-Charge.
- (d) The inner compaction zone / impervious zone in the drawings, shall be constructed of materials having required percentage of clay so that it can be compacted at optimum moisture content by suitable compacting equipment to their maximum dry density. The materials shall be compacted to a density as specified on the drawings and as per standard proctor density. Water tightness of material shall be checked by carrying out in situ permeability tests. Permeability of impervious material shall not be greater than 10. cm/sec. The impervious material of inner zone should preferably be free from large size particles. If this is not possible the maximum size of gravel's i.e. coarse particles to be permitted executed 10 percent of the quantity.
- (e) The rest of the compacted zone may consists any suitable material which provides support to impervious core under various conditions of saturation and draw down. If silty or sandy material is used, compaction shall be done by using proper machinery utilizing the principle of vibro-compaction. The distribution of material shall be such that the compacted material shall be homogeneous, free from cracks pockets or other imperfections. The maximum dimensions of stones placed in the embankment shall not be more than 15 cm and the quantity of such stone shall not exceed 5%. The excavating and placing operations shall be such that the material when compacted shall be blended sufficiently to secure the best practicable degree of compaction, impermeability and stability. The materials shall be compacted to a density as specified on the drawings or as directed by Engineer-in-Charge.

3.5.5 PLACING EARTH FILL

- (a) The embankment shall be constructed with homogeneous earth fill of required materials as per drawing and specification. The fill shall be free from lenses, pockets, streaks or layer of materials differing substantially in texture of gradation from the surrounding materials. The useful excavated materials shall be classified as 'impervious' and semi pervious' by the Engineer-in-Charge. Care shall be taken to utilize the impervious materials towards the water side of the embankment and semi pervious materials towards outer zone of the embankment as per drawing.
- (b) Construction of embankment shall begin at the toe of the fill and in no case shall embankment be widened by material dumped from the top. The material shall be placed in the earth fill in continuous horizontal layers not more than 15 cm in thickness after being rolled as herein specified.

The thickness of the layer shall be adjusted by the Engineer-in-Charge, if the Contractor specifies the Department that the particular type of compactors used by him give the required density by carrying out trial compaction and requisite tests. The thickness of horizontal layers after compaction shall not be more than 10 cm. if compaction is performed by mechanical tampers, not more than 125 cm if by sheep foot roller and not more than 30 cm if compaction is performed by vibratory or pneumatic rollers or similar equipment. Initially the earth in the embankment fill shall be laid in a greater width than the designed section. Adequate extra width of about 0.6 m on either side of the embankment shall be provided so that the earth fill, up to lines of the finished slopes, shall have the required compaction as per the drawing and specification. Such extra width shall be removed and utilized in the upper layers of embankment along with slope dressing, for which no additional payment shall be made as it is deemed to have been included in bid price of earthwork in embankment in the bill of quantities.

The inside proud section shall not be removed if the lining work is not included under the same contract. Such proud section made out of borrow earth from outside only shall be paid as per bid price of the item in the bill of quantities. No payment shall be made for compaction from such proud section.

- (c) No fresh layer shall be laid until the previous layer is properly watered and compacted as per the requirement. If in the option of the Engineer-in-Charge, the surface of the prepared foundation or the rolled surface of any layer of earth fill is too dry or smooth to bond properly with the layer of materials to be placed thereon, it shall be moistened or worked with harrow, scarifier or other suitable equipment in an approved manner to a sufficient depth to provide a satisfactory bonding surface before the next succeeding layer of earth fill materials is placed. If the rolled surface of any earth fill is found to be too wet proper compaction of the layer of earth fill materials to be placed

thereon, it shall be raked up and allowed to dry or be worked with harrow, scarifier or any other suitable equipment to reduce the moisture content to be required amount and then it shall be compacted before the next succeeding layer of earth fill materials is placed.

- (d) The materials shall be deposited in rows parallel to the axis and spread in the uniform layers and shall be broken clods maximum up to 5 cm. The layer shall not exceeding 15.5 cm in thickness or such thickness as directed by the Engineer-in-Charge. the work of spreading and compaction shall be so adjusted as not to interfere with each other and in such a way that neither of the operations is held up because of non-completion of rolling and watering. The excavation and placing operation shall be such that the material when compacted shall be blended sufficiently to secure the best practicable degree of compaction, impermeability and stability. If the work is held up due to failure of machinery, no claim what-so-ever shall be entertained even in case the machinery is supplied by the Department. The surface of banking shall at all time of construction be maintained true to required cross section.
- (e) During construction a small transverse slope from center towards edges should be given to avoid pools of water forming due to rains.
- (f) When compacting the soil against the rock abutment or walls of masonry or concrete structures, the construction surface of the embankment shall be sloped away from the rock, masonry or concrete structures having a minimum distance of 0.6 m and at an inclination of 3:1. If the foundation surface is too irregular to allow the use of large roller directly against the structure or rock out crop, the roller shall be used to compact the soil, as close to the structure or the out crop as possible and the portion of the embankment directly against the rock or the structure shall be compacted with pneumatic hand tampers in thin layers. The moisture content of the earth fill placed against the rock or the structure shall be slightly above the optimum to allow it to be compacted in to all irregularities of the rock and this shall be determined by the field laboratory. In placing the earth fill under rock foundation, the foundation shall first be prepared as detailed earlier.
- (g) Care shall be taken in placing the first layer of the fill above the filter layer so that no damage is caused by the hauling machinery. Sheep foot roller shall not be employed for compaction till over the filter of thickness of the layers compacted by other means is greater by 30 cm then the teeth of the roller drum. The soil for the first layer shall be at a moisture content sufficient to enable satisfactory bonding of the fill with the filter surface.

3.5.6 WEATHER CONDITIONS

- (a) Embankment materials shall be placed only when the weather conditions are satisfactory to permit accurate control of the moisture content in the embankment materials. Before closing work on embankment, in any continuous reach prior to setting of monsoon, the top surface shall be graded and rolled with a smooth wheeled roller to facilitate run off. Prior to resuming work, the top surface shall be scarified and moistened or allowed to dry as necessary and approved by the Engineer-in-Charge for resumption.
- (b) The contractor shall provide suitable protection works to protect the slope from erosion due to rain water. No payment what-so-ever shall be made for providing such protection work and rectifying the monsoon damages.

3.5.7 MOISTURE CONTROL

- (a) The water content of earth fill material prior to and during compaction shall be distributed uniformly throughout each layer of materials and it shall be between -2% and +2% of the optimum moisture content. Moisture determination of soil as well as needly moisture determination of soil shall be carried out as per I.S. 2720-1983.
- (b) Laboratory investigations may impose some restriction on the lower limits of the practicable moisture contents on the basis of studies on consolidation characteristics of soil in embankment. Here-in-after, the term range of optimum practicable moisture content shall refer to the value as described above. As far as practicable, the material shall be brought to the proper moisture content in the borrow area before excavation. If additional moisture is required it shall be added preferably at the borrow area, and only in limited cases/extent, if required, on the embankment by sprinkling water before rolling or a layer. If more moisture is present than required, the material shall be spread and allowed to dry before starting rolling. Moisture control shall be strictly adhered to. The moisture content shall be relatively uniform throughout the layer of the material. If necessary, plowing, disc-harrowing or blending with other materials may have to be resorted to obtain uniform moisture distribution. If the moisture content is more or less than the range of optimum practicable moisture content or if it is not uniformly distributed throughout the layer, rolling and adding of further layer shall be stopped. Further work shall be started again only when the above conditions are satisfied.

In order to have proper control of moisture content in the earth fill, no earth shall be done during rainy days. No compensation shall be made to the Contractor due to held up of work for rain or fog.

3.5.8 MEASUREMENT AND PAYMENT

Measurement for payment

- a) All works shall be measured by levels.
- b) For payment the level books, field books, the cross-section sheets and calculation sheet shall be treated as adjunct to the measurement books.
- c) All linear measurement shall be in meters correct to 0.005 meter, and volume worked out in cubic meters corrected to 0.01 M3.
- d) The quantities between the levels taken after stripping and cross-sectional levels taken after construction of consolidation embankments under OMC conditions with the available useful excavation soil within the pay lines shall be worked out excluding rip-rap, rock toe and filters. It shall be clearly understood that construction of embankments to extra width as specified in para 3.5.3 (b) and extra height formed for shrinkage allowance as specified in para 3.6.8 will not be included for payment.
- e) The measurement for construction for consolidated embankments with the materials obtained from the borrow area shall be the difference between the net quantities of the final compacted embankment section under OMC and net quantities of compacted embankments constructed with the suitable materials from all excavations as specified above and in earlier paragraphs.
- f) Final measurement and levels shall be taken at the cross section specified in paragraph of the completed, compacted dam and canal design section after the slopes dressed to ensure that the work is completed as shown on the drawings plus the settlement allowances. The measurement for computation of quantities shall not include the extra section provides as per sub-para 3.5.5 (b) and 3.6.8. The quantity of compacted earth work utilizing the materials from

all excavated and compacted materials utilizing from borrow area shall be worked out on the basis of cross section areas to the pay lines and the distance between the cross section.

RATE OF PAYMENT

The rate of embankment fill under item specified in schedule of quantities shall include the entire cost of labour, materials, tools and plants, machinery, taxes, excavation, transportation and incidental operation required for carrying out and completing the item of work in accordance with the specification, drawing and as directed by Engineer-in-Charge including (i) Site clearance (ii) Setting out works (iii) Cost component of construction and maintenance of cofferdam with diversion agreement for allowing to flow the excess water in coffer dam and removal of the arrangement for allowing to flow the excess water in coffer dam and removal of the same after completion of the work (iv) Clearing trees, stumps and bushes, grubbing and stripping of the borrow area up to required depth (v) Scarifying and benching etc. (vi) Marking out, providing and forming model section, look spitting, string and stacks as may be considered necessary by the Engineer-in-Charge to guide the contractor in embankment construction (vii) Maintaining borrowing area free from vegetation growth, drainage arrangement and moisture control including watering (viii) Loading, conveyance from designed borrow area, unloading and spreading of suitable fill materials including re-handling (ix) Construction and maintenance of approach roads and hauls roads (x) Cutting and trimming the extra fill as specified in paragraph (b) and dressing of the slope in para (xi) Restricted working near side of structure (xii) Settlement allowance as per para (xiii) Spreading in thinner layers at required places (xiv) Removal of unsuitable materials like bushes, roots, sods, other perishable materials and pebbles etc. from the fill materials (xv) Providing labour for testing of samples (xvi) Cost of testing shall be borne by the department (xvii) The department may review the design, if necessary, on examination of density test results and the contractor shall have no claim arising out of such review and consequent change, if any, in the design (xviii) All safety measures.

3.6 COMPACTING EARTH MATERIALS

3.6.1. GENERAL

Where compacting of earth materials is required the materials shall be deposited in horizontal layers and compacted as specified in this paragraph. The excavation, placing moistening and compacting operations shall be such that the materials will be uniformly compacted to the required density throughout the required section, and will be homogenous, free from lenses, pockets, streaks, voids, laminations or other imperfections.

Having decided on the filling materials to be used standard compaction test will be conducted on the materials proposed for embankment to indicate best type of equipment to be used and the moisture content at which compaction should be done, thickness of layer and number of passes etc.

MOISTURE CONTROL

The water content of earth fill material prior to and during compaction shall be distributed uniformly throughout each layer of materials and it shall be between -5% and +2% of the optimum moisture content. As far as possible and practicable, the moisture content of the material should be brought to required level by watering of borrow area before excavation. If additional moisture is required, the same should be sprinkled while laying the earth fill in layers. If the moisture content is greater than required, the material shall be allowed to dry and if necessary, plowing, disc-harrowing, or blending with other materials may have to be resorted to obtain uniform moisture distribution. In order to have proper control of moisture in earth fill, no embankment shall be constructed during rainy days.

3.6.2 COMPACTING CLAY AND MATERIALS

When compaction of earth materials containing appreciable amount of clay or silt is required the compaction shall be carried out in accordance with clause 6.6.2 of I.S. 4701-1982. The material shall be deposited in horizontal layers. The thickness of each horizontal layer before compaction shall not be more than 25 centimeters (loose layer) and the layer shall be to full width of embankment. The excavating and placing operation shall be such that the materials when compacted will be blended sufficiently to secure the highest practicable density and best

impermeability and stability. If the surface of any compacted layer of earth fill is too dry or too smooth to bond properly with the layer of material to be placed thereon, it shall be moistened and /or scarified in an approved manner to provide a satisfactory bonding before the next succeeding layer is placed. All the rollers used on any one layer of fill shall be of the same type and same weight. Prior to and during compaction operations, the embankment material shall possess optimum moisture contents as required in clause 6.6.4 of I.S. 4701-1982. The embankment materials shall have optimum moisture content required for the purpose of compaction and this moisture content shall be fairly uniform throughout the layer. In so far as practicable the moistening of the material shall be performed at the site of excavation but such moistening shall be supplemented as required by sprinkling water at the site of compaction, if necessary. If the moisture content is greater than optimum for compaction the compaction operation shall be delayed until such time as the material has dried to the optimum moisture content or to the level directed by the Engineer-in- Charge. The moisture content of soil shall be determined in accordance with I.S. 2720 (part-III) 1982

If the moisture content is not within the limits described above, the compaction operation shall not be proceeded except with the specific approval of the Engineer-in-Charge, until the material has been wetted or allowed to dry out, as may be required to obtain optimum moisture content, as no adjustment in price will be made on account of any operations of the Contractor in wetting or drying the materials or on account of any delays occasioned thereby.

When the material has been conditioned, as herein before specified, it shall be compacted by rollers or by hand or power tampers. Where hand or power tampers are used to compact soils in confined areas such as under pipes and at the joints of bank connections with the structures, they shall be equipped with suitably shaped heads to obtain the required density.

The dry bulk density of the soil portion in compacted embankment material shall be not less than 98% of the maximum dry bulk density at optimum moisture content obtained in accordance with I.S 2720 (Part-VII) 1980 Indian Code of practice for determination of moisture content, dry density relation using light compaction.

The dry density of soil in field shall be determined in accordance with I.S.2720 (Part- XXVIII) 1974, Indian code of practice for determination of dry density of soil in place by sand replacement or by I.S. 2720 (Part-XXIX) 1975, Indian Code of Practice for determination of dry density of soils in place by the core cutter method.

Moisture content of soil shall be determined in accordance with I.S. 2720 (Part-II) 1973, Indian Code of practice for determination of moisture content.

The optimum moisture content is the moisture content that corresponds to the laboratory maximum dry determined in accordance with I.S. 272.0 (Part-VII) 1973.

The above compaction tests will be conducted by the Contractor in the presence of departmental officers at his cost and the Contractor shall ensure compaction, till the Engineer-in-Charge or his authorized representative is satisfied that the maximum dry density at optimum moisture is obtained, and permits the laying of next layer.

3.6.3 COMPACTING COHESIONLESS MATERIALS

Where compaction of cohesion less materials, such as sand and gravel is required, the material shall be deposited in horizontal layers and compacted to the relative density specified below. The excavating and placing operation shall be such the materials when compacted will be blended sufficiently to secure the best practicable degree of compaction and stability. Water shall be added to the materials as may be required to obtain the specified density by method of compaction being used.

As envisaged clause 6.6.2.1 of I.S. 4701-1982, the embankment layer shall not exceed 25 centimeters (loose layer) before compaction and it should be spread over the full width of the embankment and compaction shall be done by tampers or crawler type tractor, surface vibrators or similar equipment the thickness of the layer before compaction shall not be more than 40 centimeters. If compaction is performed by internal vibrators the thickness of the layers shall be more than the penetrating depth of the vibrator.

As envisaged in clause 6.6.2.1 of I.S.2720 (part-XIV) 1983, Indian Code of Practice for determination of density index (relative density) of cohesion less soils.

3.6.4 COMPACTION COHESIONLESS MATERIALS CONTAINING SOME CLAY AND SILT

This sub-paragraph applies only to cohesion less materials and not to cohesive materials. Cohesion less materials containing clay and silt may not be free draining. When compaction of cohesion less materials containing clay and silt is required, the material shall be compacted to a dry density in accordance with either sub-paragraph (a) below, using whichever test that results in higher dry density of the compacted material in the placement.

- (a) Dry density determined using procedure IS 2720 (Part-VII) 1965, (Indian Code of Practice for determination of moisture content dry density relation using light compaction.) Prior to and during compaction operation the material shall possess optimum moisture content as determined in accordance with clause 6.6.4.1 of I.S. 4701-1982 and the moisture content shall be uniform throughout each layer. Provided that the moisture content is ensured as required in clause 6.6.4 of I.S.4701 -1982, the dry density of the soil portion in the compacted material shall not be less than 98% of the laboratory maximum soil dry density compacted. The field dry density shall be determined in accordance with I.S. 2720 (part -XXVIII) 1974 or I.S. 2720 (Part-XXIX) 1975.
- (b) Dry density using the relative density test as described in I.S. 2720 (part-XIV) 1983, Indian Code of Practice for determination of density index (relative) of cohesion less soils. The relative density of the compacted material obtained shall be not less than 70% determined in accordance with clause 6.6.3.1 of I.S. 4701, the moisture content shall be maintained as per clause 6.6.4 of I.S. 4701-1982.

3.6.5 Rollers and Other Compacting Equipment

As shown in Appendix C or I.S. 4701-1982, the following earth compacting equipment may be used for compacting the soils shown against them as detailed below :

Major Division	Sub-Group	Suitable type of Compacting equipment
Coarse Grained Soils	Well Grained Gravel gravels and little or no fines.	Smooth wheel roller, Diesel Road rollers of 8 to 10 tons capacity, pneumatic tyred roller vibrating smooth wheel roller.
	Well graded gravel sand mixtures with excellent clay binder.	-do-
	Uniform gravel with little or no fines poorly graded gravel and gravel sand mixtures little or no fines.	-do-
	Gravel with fines, silty gravel, clay gravel, poorly graded gravel sand clay mixtures.	-do-
Coarse Grained Soils Sand & sandy clays	1. Well graded sand and gravelly sands little or no fines	Heavy vibrating plate, Frog rammer, power rammers Power rollers
	2. Well graded sand with excellent clay binder	-do-
	3. Uniform sand with little no fines	-do-
	4. Sand with fines, silty sands clayey sands, poorly graded sand clay mixture	-do-

Fine Grained Soils : Soil having low compressibility	1. Silt (inorganic) and very fine sand rock sand rock flour silty or clayey fine sand with slight plasticity.	Smooth wheel roller, diesel Road roller of 8 to 10 tones Capacity power rollers pneumatic typed roller.
	2. Clay silts (inorganic)	-do-
Soils having medium compressibility	1. Organic silts of low plasticity	Sheep foot roller
Soils having medium compressibility	2. Silty and sandy clays (inorganic) of medium plasticity.	
	1. Organic silts of low plasticity	Sheep foot roller
	2. Silty and sandy clays (inorganic) of medium plasticity.	
	3. Clays (inorganic) of medium plasticity	-do-
Soils having higher compressibility	4. Organic clays of medium plasticity	-do-
	1. Micaceous or diatomaceous fine sandy & silty soils elastic silts.	Smooth wheel roller, diesel road rollers of 8 to 10 tones capacity pneumatic tyred rollers.
	2. Clay (inorganic) of High Plasticity fat clays.	
	3. Orgnic clays of high plasticity	-do-

The compacting equipment shall conform to relevant Indian specification below.

- (i) Smooth wheeled roller should conform to I.S. 5502-1969.
- (ii) Sheep foot roller should conform to I.S. 4616-1968
- (iii) Pneumatic tyred roller should conform to I.S. 5501-1969.
- (iv) Vibratory plate compactor should conform to I.S. 5889-1970.
- (v) Vibratory roller should conform to I.S. 5500-1970

The methods of compaction shall conform to clauses 7.2.1,7.2.2,7.2.3 of I.S.4701-1982.

Unless otherwise specified compaction shall be done by the mechanical Contractors like standard sheep foot roller hauled by the dozer or tractor. While specifications below provide that equipment of particular and type and size is to be used, the use of improved compaction shall be encouraged. Tamping rollers used for compaction of earth fill shall conform to the following requirements.

(A) ROLLER DRUMS

Double drum sheep foot rollers shall be used for compaction. Each drum of a roller shall have an outside diameter not less than 142.25 cm and shall not be less than 122 cm in length. The space between two adjacent drums, when on level surface, shall not be less than 30 cm and not more than 38 cm. Each drum shall be free pivot about an axis parallel to the direction of travel.

(B) TAMPING FEET

The total number of feet per drum shall be 88. At least one tamping foot is to be provided for 867 sq.cm of the drum surface area. The length of each tamping foot from the drum surface shall be maintained at not less than 18 cm. The cross-sectional area/bearing surface area of each tamping foot shall not be less than 25.80 sq. cm and not more than 64.5 sq. cm at plain normal to the axis of shaft 15 cm from surface.

(C) ROLLER WEIGHT

The weight of the roller when fully loaded shall not be less than 7091 kg and the ground pressure when fully loaded shall not be less than 40 kg/sq.cm. Appropriate equipment for hauling the rollers should be used which can pull the rollers satisfactorily at a speed of 4 km

per hour when drums are fully loaded. The space between the tamping feet shall be kept clear of material striking the drum as the same can reduce the effectiveness of the tamping roller.

(D) ROLLING

When each layer of material has been prepared to have the proper moisture content uniformity distributed throughout the material, it shall be compacted by passing the tamping roller. The exact number of passes for layer to obtain specific density shall be designated by Field Laboratory tests and tests conducted on the borrowed material. The layers shall be compacted in strips over lapping not less than 0.6 m. Rolling shall commence at edges and progress towards center longitudinally. The rollers of loaded vehicles shall travel in direction parallel to the axis of the dam and canal. Turns should be made carefully to ensure uniform compaction. Rollers shall always be pulled.

3.6.6 TAMPING

Rollers will not be permitted to operate within one meter of concrete masonry structures. In the following locations where compaction of the earth fill materials by means of roller is impracticable or undesirable the earth fill shall be specially compacted as specified further below.

- (i) Portion of the earth fill in embankment adjacent to masonry structures and embankment foundations designated on the drawing as specially compacted earth fill.
- (ii) Earth fill in embankment adjacent to steep abutments.
- (iii) Earth fill at specifically designated locations.

Earth fill shall be spread in layer of not more than 10 (ten) cm in thickness when loose and shall be moistened to have the required moisture content as specified. After each layer of material has been conditioned to have the required moisture content, it shall be compacted to the specified density by special rollers, pneumatic/ hand tampers or by other approved methods. The moisture control and compaction shall be equivalent to that obtained in the earth fill actually placed in the embankment with the specifications.

3.6.7 TESTING

Density tests shall be carried out after rolling to ascertain the state of compaction which should be measured in terms of dry density. Standard proctor density test shall be carried out at the regular intervals (To account for variations in the borrow area material. Not less than three tests shall be conducted to indicate variation in the standard proctor density attained in the laboratory.

Density test shall be conducted from time to time at site to ascertain whether compaction is attained as specified. For every 1500 cum of compacted earth fill. at last, one field density test shall be conducted. However, minimum four density tests shall be made per day irrespective of quantity of earthwork. In case the tests show that the specified densities are not attained, suitable action shall be taken either by moisture correction or by additional rolling, so as to obtain the specified density which shall be checked again by taking fresh tests at the same locations. The test locations should be so chosen as to represent the whole layer under test. Each layer should be tested for proper compaction before a fresh layer is allowed to over it.

The density to be attained after compaction should be at least the% of proctor density as mentioned in the BOQ.

3.6.8 SETTLEMENT ALLOWANCE

In the mechanically compacted earth fill, settlement allowance of 2% should be provided, In case of earth fill of canal which has not been mechanically compacted, settlement allowance at 12% of heights should be provided. Settlement allowance shall be calculated after embankments are subjected to natural compaction of one full monsoon. For short duration works, necessary adjustment is to be made to take care of natural settlement due to rains. Accordingly extra heights should be provided taking into account of settlement, the base width of the embankment shall not be increased to maintain the design slope indicated in the drawings for additional height as settlement allowance, but the following procedure shall be adopted.

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 embankment at the increased elevations (including settlement) when joined with the point where the slope has changed earlier below, shall give the slope to be adopted for construction.

3.6.9 SLOPE DRESSING

The slopes of particular reach of the dam and canal, which has been completed in the manner described earlier, shall be dressed neatly to the designed line and grade. Extra earthworks done at sides are to be dressed and reused in the embankment.

3.6.10 MEASUREMENT AND PAYMENTS

The cost of compacting earth materials as described in this paragraph shall be paid separately in the price bid in the bill of quantities for watering and earth work in dam and canal embankment under these specifications. The unit rate of this item shall be for labours engaged for collection of samples for testing and rectification during compaction as may be required.

ii) Rate for payment

The rate for compaction of embankment under Item No.: 05 provides all costs for labour, material, tools and plant taxes, equipment and all incidental necessary to complete the compaction to specification requirements and drawings and as directed by the Engineer-in-Charge including (I) All necessary arrangement for conveyance of water, watering including coffer dam and pipe lines etc. (ii) spreading in thinner layers at required places (iii) compaction with suitable compactors other than sheep foot roller at required placed (iv) Restricted working at required site and working narrow width of the embankments, (v) The department may supply water at one point on ground level on payment of Rs.2.00 per cum of compacted earth. The contractor is responsible for internal distribution of water from point of supply to work area at his own cost.

3.7.3 ROUGH STONE DRY PACKING FOR APRONS AND REVETMENTS

1. The bed or slopes to receive the packing shall first be provided as specified and passed by the Engineer-in-Charge. In case where the work of preparation of bed and slopes such as cutting out high bound, filling in hollows, etc. or the digging of the well foundations is rather extensive, separate items should usually be provided for such subsidiary kinds of work. in the schedule the agreement. But if the work involved in such subsidiary item is very little, no separate provision need made and in the absence of such provision, the Contractor shall understand that his tender rate is inclusive of all such work without extra charge. If the backing is to be laid on made up ground which is objectionable it shall, so far as possible, not to be laid till the ground has completely settled if a backing of gravel, quarry rubbish or other material is to be given, it will be specified in a separate schedule item.

The size of the stone to be used for dry stone revetment should be 225 mm and 300mm thick or as specified.

2. The stone shall be perfectly sound, as regular in shape as possible free from cracks and decay and with their lengths equal to the thickness of the required apron or revetments and each stone shall not be less in size than 0.05 cubic meter unless otherwise specified or ordered by the Engineer-in-Charge having regard to the nature of the stone along quarried. The smaller size stones required for filling interstice and wedging shall only be supplied to the actual requirements for the work as defined in clause (4) below and shall not be used in 2 or 3 layers as a substitute for the full thickness stone specified in clause (3) below. The stone shall be obtained from the quarry specified.
3. The stones shall be laid closely in position on the prepared bed and firmly set with their broadest end downwards. So that they may meet all round their bases and with the top of the stone, level with the finished surface of packing. The stone shall be laid breaking joints so far as possible the direction of the flow of water. The stones are to be placed perpendicular to the finished surface i.e., perpendicular to the slope for revetments.

4. Interstices between adjacent stones shall be filled in with stones of proper size, well driven in with crowbars to ensure tight packing and complete filling of all interstices. Such filling shall be carried simultaneously with the piling in position of large stones and shall in no case be permitted to fall behind. The final wedging shall be done with the largest size chip practicable, each chip being well driven home with a hammer so that no chip is possible of being picked up or removed by hand.
5. Profiles of strings and pegs are to be put up to ensure that the pitching is done true , straight and to proper slope throughout and revetments are in all cases to be built up from the foot of the bund to be reverted. Care is necessary that a strong toe wall or other protection is always given to the revetment which protective measures shall be shown on the plans.
6. On completion the surfaces presented by the apron or revetment shall be even throughout free from irregularities to the required length. breadth and slope as specified or shown on the plans.

MEASUREMENT AND PAYMENT

Measurement and payment for rough stone dry packing for apron and revetment will be in the unit of cubic meters. The payment will be made on the relevant unit price bid in bill of quantities and the unit price shall include cost of furnishing, hauling of all materials and labour involved in all the operation specified for rough stone dry packing

CHAPTER - 4

CONCRETE WORKS

SECTION 4.1 CONCRETE STRUCTURES

4.1.1 CONCRETE IN STRUCTURES

- a. Concrete in structures shall conform to the requirements of paragraph 6.2.1 through 6.2.23.
- b. Measurement and payment for concrete in structure shall be made as prescribed in paragraphs 6.2.22 and 6.2.23.

4.1.2. 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 6.2. Pipe and fittings miscellaneous metal work, mechanical and electrical equipment and other items forming a part of the structure are provided for elsewhere in these specification.

The structure will be located on the various points along the canal as 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 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.

SECTION 4.2

General Concrete Requirements

4.2.1 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 by weight or by concrete mixture by volume and brought to the proper consistency. Batching plant shall conform 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 is uniform in colour and consistency. The time of mixing shall be as shown in table I of I.S. 457-1957 reproduced below.

Capacity of Mixer	Minimum Time of Mixing	
	Natural Aggregates	Manufactured Aggregates
All mixture	2 minutes	2 ½ minutes

(C) NORMAL MAXIMUM SIZE OF AGGREGATES

For 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 volume. Water shall be either measured by volume in calibrate tanks or weighed. Batching plant shall conform 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. Adjustments 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 15 of I.S. 456-1978.

The net water cement ratio exclusive of water absorbed by the aggregate shall be sufficiently low to provide adequate durability in concrete. The water cement ratio or various grades of concrete shall be 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 for concrete). Any difference in actual cement level determined by mix design with estimated cement level as above shall not lead to any financial claim or recovery.

(E) CONSISTENCIES

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

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

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

iii. Lining with slip form machine 60 to 70 mm slump and 50 mm slump 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 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 will be required.

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

4.2.2 CONCRETE QUALITY CONTROL MEASURES AND CONCRETE QUALITY ASSURANCE TEST PROGRAM

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. Compressive strength of concrete specimens will conform to I.S. 516-1959.

SAMPLING PROCEDURE AND FREQUENCY

A. 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.

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 from the site of laying concrete in accordance with reference clause I.S. codes.

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 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.

4.2.3. CEMENT

(A) GENERAL

Cement shall conform to clause 4 of I.S. 456 - 2000 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 puzzolana cement conforming to I.S. 1489-1976.
- e. High strength ordinary Portland cement conforming to I.S. 8112-1976.
- f. Hydrophobic cement conforming to I.S. 8043-1978.

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 specifications required for the works. Transportation 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, 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 delivered to the, job site. All storage facilities shall be subject to approval of 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 POZZLLONA

Pozzolana added to the concrete as an admixture shall be sampled and tested as per I.S. 9103-1979.

(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.

4.2.3.1 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 formwork, 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 be the average of strength of three specimens. The individual variation should not be more than +15% of the average.

4.2.3.2 STANDARD DEVIATION:

Standard Deviation Based on Test Results

- Number of test result. The total number of test results required to constitute and 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 used for the first time.
- 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:

- Concrete of each grade shall be analyzed separately to determine its standard deviation.
- 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.

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

Where

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

- 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.

c. 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.

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TABLES 6 ASSUMED STANDARD DEVIATION (Clause 14.5.3)	
Grade of Concrete	Assumed Standard Deviation (N/Mm ²)
M10	2.3
M15	3.5
M20	4.6
M25	5.3
M30	6.0
M35	6.3
M40	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.

d. 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 deviation: and
2. 0.80 times the characteristic strength:

and the average strength of all the samples is not less than the characteristic strength plus.

$$\left[1.65 - \sqrt{\frac{1.65}{\text{number of samples}}} \right] \times \text{times the standard deviation.}$$

The concrete shall be deemed not to comply with the strength requirements If:

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

4.2.3.3. 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.

In case of doubt regarding the grade of concrete use, either due to poor work man ship or based on results of cube strength tests, compressive strength of concrete on the basic of cube test and / or load test may be carried out.

4.2.3.4 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 tasted.

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 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 Concrete	Cement level required with coarse aggregate of maximum size (MSA)	
		40mm & downgraded	20mm & downgraded
1.	M10	207 Kg/M3	221 Kg/M3
2.	M15	259 Kg/M3	288 Kg/M3
3.	M20	329 Kg/M3	366 Kg/M3
4.	M25	-	403 Kg/M3

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 work ability and characteristic strength stipulated in the following table.

TABLE - B

Sl. No.	Grade of Concrete	Compressive test strength in N/mm ² on 150mm cube conducted in accordance with IS : 456 - 2000	
		Minimum at 7 days	Minimum 28 days.
1.	M10	7	10
2.	M15	10	15
3.	M20	13.5	20
4.	M25		25

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 predetermined 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.

4.2.4 ADMIXTURES

The Contractor shall use Air entering 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.

4.2.5 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.456-1978.

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)	200 mg/liter for plain concrete work and 100 mg/liter for RCC work
5.	Suspended matter	200 mg/liter

The PH value of water shall generally be not less than 6 (six).

If any water to be used in concrete, mortar, or grout is suspected by the Engineer-in-Charge of exceeding the permissible limits for solids, samples of water shall be obtained and tested by the Engineer-in-charge in accordance with I.S. 3025-1964.

4.2.6 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 coarse material as permitted in clause 4.3 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 gradings.

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 - 2000).

(B) QUALITY

The sand shall be consisting 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).

Sand shall be screened before use. If sand brought to sight is not clean it must be washed clean in water. Fine draft sand or sea sand or sand containing saline impurities shall on no account to be used.

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 from 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.

4.2.7 COARSE AGGREGATE

(A) GENERAL

For the purposes of the specifications, the term "Coarse Aggregate" designate clean well graded aggregate must of which is retained on 4.75mm is 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 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 neignorages, 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 9.2.3 of 456-1978 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 evens 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 then 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 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 IS. 2386 (part-IV) 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 quantity of deleterious materials in coarse aggregates shall not exceed the limits specific in Table I of I.S. 383- I 970 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 rewashed 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 so mounted that 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 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 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 confirm 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 (Part-I) 1963 shall confirm 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).

4.2.8 PRODUCTION OF SAND AND COARSE AGGREGATE

(A) GENERAL

Sand and coarse aggregate for concrete and sand for mortar and grout, shall be obtained from the approved sources mentioned in the contract documents. The approval of the deposits by the Engineer-in-Charge shall be constructed as consisting the approval of all or any quality for all such materials used in the work.

Tests performed on sample of sand and coarse aggregate obtained from the approve 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 confirm 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 tests the approval of deposits, the Engineer-in- Charge may lest 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 subjected to the approval by the Engineer-in-Charge. Any royalties required for materials taken from deposits either owned by the State Govt. or controlled by the Department of Mines and Geology, Govt. of India or owned by any other portion 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 and controlled by the Director of Mines and Geology, Government of India and not used in the work covered by these specifications shall be deposited 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 paragraph 6.2.6 and 6.2.7 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 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 aggregate may be used in sand. Crushed stone, sand, crushed gravels and crusher fines if used shall be predominantly cubical in shape and shall be blended uniformly 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.

4.2.9 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 authorized 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 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 aggregate 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, 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. 456-2000.

Cement and aggregates are hauled from a central batching plant to the mixture. Each batch shall be protected during transit to prevent loss and to limit the pre-hydration of cements. 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 exposed to moisture and delays occur between batching 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.

4.2.10 MIXING

(A) GENERAL

The concrete ingredients shall be thoroughly mixed in batching plant & transit mixer designed to positively ensure uniform distribution of all the component materials throughout the concrete at the end of the mixing period. Mixing shall be done as per 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 discharge from the batching plant 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 authorized 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 segregation after unloading, the concrete should be mixed further.

Any 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 rate capacity of the mixer unless otherwise authorized by the Engineer-in-Charge.

(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 not less than the time specified by the Engineer-in-Charge. The minimum mixing time shall be 2 minutes. The minimum mixing time specified is based on average mixer performance. The Engineer-in-Charge 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 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 mixers.
- 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 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 of revolutions of the drum from each batch. Each mixer shall have affixed thereto a metal plate on which the drum operations in term of value 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 mixture as uniform in colour, inconsistency to the satisfaction of the Engineer-in-Charge. In no case shall the design water content be exceeded. Concrete shall be discharged within half an hour after the introduction of the water and cement into the mixture. 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.

4.2.11 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 and 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 a thermometer in the concrete immediately after sampling at the site 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 at 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.

4.2.12 FORMS

(A) GENERAL

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

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-in-Charge and shall be in sufficient number and properly installed as determined by the Engineer-in-Charge. 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, form 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 be beveled except where indicated on the drawings.

Suitable struts or stiffeners or ties shall be used for the form work wherever necessary. All support shall be braced and cross braced into two directions. All splices and braces shall be secured by the 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.

- a) The form work shall be well seasoned timber or steel. When timber forms are used, they shall be lined 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-in-Charge and got approved before erection.
- b) 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 subsequent lifts. No steel ties or wires used for securing this form work shall be left exposed on the face of the finished work.
- c) Suitable inserts for block outs for electrical and other service fixtures where necessary shall be provided in the required locations as specified.
- d) Cleaning and Oiling of Forms: At the time of the concrete is placed on forms, 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 faces 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 slopping surfaces shall be performed at once and be followed immediately by the permitted curing.

To avoid injury appearance of concrete that might result from swelling of forms, wood forms for wall openings shall be loaded 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 4.2.21.

(G) COST

The cost of furnishing all materials and performing all work for constructing forms, including any necessary treatment of costing of forms will be paid at applicable price bid in the schedule

4.2.13 TOLERANCE FOR CONCRETE CONSTRUCTIONS

(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 established tolerance 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 tolerance set forth herein if such tolerance impair the structure action, operational function or 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 tolerance are not specified for particular structure, tolerance shall be those specified for a similar work. As an exception to clause 2 of the general provisions, specific tolerance shown herein in connection with any dimension shall govern. The Contractor shall be responsible for finishing the concrete forms within the limits necessary to ensure 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 DIMENSION.

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 as (+) indicate a permitted actual position up or down and in or out from the specified position in plan. Variations not designated as plus or minus indicate the maximum deviation permitted between designated successive points on the completed 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

Variations-from Specified Lines, Grades and Dimensions

A.	TOLERANCE FOR CANAL LINING, EXCAVATION
1.	EXCAVATIONS
a.	Departure from established alignment $\pm 20\text{mm}$ on straight sections, $\pm 50\text{mm}$ on tangents, and $\pm 100\text{ mm}$ on curves
b.	Departure from established grade $\pm 20\text{mm}$
2.	LINING
a.	Departure from established alignment $\pm 20\text{mm}$ on straight reaches $\pm 50\text{mm}$ on partial curves on tangents
b.	Departure from established grade $+ 20\text{mm}$
B.	TOLERANCE FOR CANAL STRUCTURES
1.	Deviations from specified dimensions of cross section of columns, beams, piers and slabs $[(-) 6\text{ mm to } (+) 12\text{ mm}]$
2.	Deviations from dimensions of columns, beams, piers and slab footings.
a.	Dimensions in plan = $(-) 12\text{mm to } (+) 50\text{mm}$.
b.	Eccentricity $(\pm) 0.02$ times width of footing in the direction of deviation but not more than 50mm
c.	Thickness = $(\pm) 0.05$ 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 herein 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 edge 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 here in as bulges and depression resulting in gradual changes on the concrete surface being examined. The magnitude of the gradual surface irregularities is defined herein as measures of the rate change in slopes of the concrete surface.
	The surface irregularities shall not exceed 6mm for bottom slab and 12 mm for side slopes when tested with a straight edge of 1.5 meter 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 surface as determined necessary to insure compliance with such specifications.

(D) REPAIR OF HARDENED CONCRETE NOT WITHIN SPECIFIED TOLERANCE

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 6.2.2 I 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 the Engineer-in- Charge regarding the method of repair will be performed.

Concrete shall be finished in a manner, which will result in concrete surface with a uniform 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 real cement work shall then 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 surfaced exposed after removal of the forms cannot be satisfactory dealt with 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 HARDENED CONCRETE NOT WITHIN SPECIFIED 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-in-Charge reserves the right to delay concrete placement until the Contractor implement such preventive actions which are approved by the Engineer-in-Charge,

4.2.14 REINFORCEMENT 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 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 the 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 500 conforming to I.S. 1786-1985 specification for high yield strength deformed steel bars and wire for concrete reinforcement.

(C) PLACING

Reinforcement shall be sent 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 may alter subject to written approval of the Engineer-in-Charge.

Subject to the written approval the Engineer-in-Charge, the Contractor may, for his convenience, 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 be exceed 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 centerline 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 clause 11.3 of I.S. 456-2000 unless otherwise specified by the Engineer-in-Charge, reinforcement shall be placed with the following tolerances.

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

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

Reinforcement shall 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 disturbance 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 clause 11.4 of I.S 456-2000. Chairs, hangers, spacers and other supports for reinforcement shall be of 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 conforming with requirements of Clause 11.4 of IS 456-2000.

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 conform to IS: 814 (Part-1) 1974 and IS: 814 (Part-II) 1974. Mid steel filler rods for Oxy-acetylene welding shall conform 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 provision for the work shall 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, whichever is practicable.

Butt welding of reinforcing bars shall be performed either by the gas pressure or flash pressure welding process or by the electric arc method 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 size 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 strength and welds so staggered that at any section

not more than 20% of rods are welded. Approval of such additional splices will generally be restricted to splices not closer than 8 meters in horizontal bars or 4 meters in vertical bars measured between midpoint of laps.

(E) REINFORCEMENT DRAWINGS

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

(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, ties or other approved supports & of cutting, bending, cleaning, securing & maintaining in position reinforcing bars as shown on drawings. Chairs space bars and lapping shall be considered for payment as unit price.

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 4.2.1 of I.S. 1786) of that size or rod.

4.2.15 DOWELS

The dowels shall be of same HYSD bars of grade FE 500 conforming 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 displaced 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.

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 include the cost of furnishing all the materials and for placing the dowels as required.

4.2.16 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.

The Contractor shall supply concrete placement checkout cards (Placement Register) satisfactory to the Engineer-in-Charge and shall provide a water tight container for 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 authorized 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 checkout card (placement register). Approval of preparation for placement will not be complete until the Contractor or his representative and above authorized 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 adjustment 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 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 15 cm or to impermeable material whichever is less before 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 cannot be incorporated integral with that previously placed. The provision of construction joints shall conform to clauses 12.4.1 and I.S. 456-2000.

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 15 mm 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 or 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 15mm. In thickness shall first be placed and shall be well recommend against old work, particular attention being paid to corners and close spots, and work thereafter shall proceed in the normal way.

(D) CONTRACTION JOINTS

Contraction joints serve to provide for volumetric shrinkage of monolithic concrete and or movement between monolithic unit at 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 materials by scraping, chipping or other means approved by the Engineer-in-Charge. Water stops, reinforcing bars and other embedded items shall be free of curing compound when adjoining concrete is placed.

4.2.17 PLACING

(A) GENERAL

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

authorized 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 4.2.16.

Re-tempering 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 and shall not be subjected to 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 flow in such a manner that the lateral movement will cause 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 4.2.12 and 4.2.13.

All concrete except canal lining shall be placed in approximately horizontal layers. The depth of layers shall not exceed 15 mm. The Engineer-in-Charge reserves the right to require lesser depths of layers where concrete cannot otherwise be placed and consolidated in accordance with the requirements of these specifications. 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 accordance with clause 12.2 of I.S. 456-2000.

If concrete is placed monolithically around openings having vertical dimension greater than 60 cm or if concrete in decks, floor slabs, floor slabs, or other similar part 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 slab, 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 or bevels shall be placed with a 50 mm 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 no-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 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 be 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 joint may necessarily result from prolonged heavy rainfall.

There shall not be 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. 456-2000.

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

Concrete shall be deposited as particular to its final position. The use of Aluminum pipe or Aluminum 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 4.2.10.

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 IS.456-2000.

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 honeycomb 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 consolidated.

Form vibrators shall be used in conjunction with slip form lining machined to consolidate concrete in canal linings. 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.

4.2.18 FINISHES AND FINISHING

The requirements of finishing of concrete surface shall be as specified in this paragraph, paragraph 4.2.12 and 4.2.13, or as otherwise indicated on 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

602013 where necessary to determine whether the concrete surface is within the specified tolerances. Finished concrete, which is not within the specified tolerances, shall be repaired in accordance with paragraph 4.2.12.

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 or power-driven equipment. Floating shall be started as soon as screed 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 roadway slabs concrete bridges, have been 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 be in accordance with clause 5.7 of I.S. 3873-197. The finished surface shall be equivalent in evenness, smoothness and free from work rock pockets and surface voids to that obtainable by effective use of a long-handled steel trowel. Where the surface produced by a lining machine meets the specified requirements, no further finishing operations will be required.

4.2.19 PROTECTION

The Contractor shall protect all 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 of concrete until adequate provisions for protection against weather are made.

All fresh concrete surfaces shall be 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.

4.2.20 CURING

(A) 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 seven days and by sprinkling water for another 21 days will straw canvass, hessian or similar materials cover over slab.

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 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 form 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 surfaces to be cured shall be kept wet covering them with water saturated materials by using a system of perforated popes, 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 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.

4.2.21 REPAIR OF 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 4.3.13 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 shall be reinforced and chopped and towed to the surface of the openings. 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

4.2.22 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 the various parts the work shall be made to the lines shown on 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.

4.2.23 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 from work shall be made at the respective unit prices bid therefore in the schedule.

SECTION 4.3 SPECIAL REQUIREMENTS FOR CONCRETE STRUCTURES

4.3.1 A) METAL SELING STRIP

The contractor shall furnish all materials for metal sealing strip of copper, materials for brazing for metal sealing, confirming to the relevant IS code and place in position as shown on the approved drawing or as directed by the Engineer-in-charge.

b) 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, pigments, 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.

4.3.2a) METALIC BEARING

The contractor shall furnish and place the metallic bearing at proper location shown in the drawing and as directed by the Engineer-in-charge.

The specification shall conform to all the requirements of IRC/MOST or any other international codes with the materials specifications to the relevant I.S. Code/B.S. Code etc.

b) 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 open 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.

4.3.3. PLACEMENT OF CRAFT PAPER

The top surface of masonry piers and abutments should be leveled and painted with brush, with asphaltic emulsion of 20/30 grade, such that the bearing surface is perfectly smooth and uniform. Over this surface, draft 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.

4.3.4. 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.

4.3.5 PROVIDING THE FIXING R.C.C. NON-PRESSURE NP²/NP³ PIPE AS PER DRAWINGS WITH SPIGOT AND SOCKED 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 manufactures or his trade mark or both
- d. IS Specification mark

(B) HANDLING AND LAYING OF PIPES

Work shall be done as per I.S. 7833-1959 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 para 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 45 cm over the pipe except as may be necessary for filling 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, 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.

CHAPTER - 5

FINE DRESSING AND TURFING

- 5.1. DESCRIPTION:** This work shall consist of supplying and laying live sods on the slope and other locations as ordered by the Engineer in accordance with the following specifications.

- 5.2. MATERIALS:** The sods shall consist of a dense well rooted growth of permanent and desirable grasses. Indigenous to the general locality where it is to be used, and shall be practically free from weeds or undesirable grasses. At the time the sods is out. The grass on the sod shall have a length of approximately 2 inches (if longer, the grass shall be cut to approximately this length and the sod shall have been raked from debris).

The sod shall be cut in uniform strips not larger than it is convenient for handling and transport. The thickness of the sod shall be as uniform as possible approximately $\frac{3}{4}$ inch or more depending on the nature of the sod, so that practically all of the dense root system of the grasses will be retained but exposed in the sod strip and so that the sod can be handled without undue tearing or breaching.

In the event the sod which is to be cut is in a dry condition, so as to cause crumbling or breaking during cutting operations, the contractor at his own expense, shall at least 12 hours before cutting the sod, apply water to the same in sufficient quantity to provide a well moistened condition of the sod to the depth to which it is to be cut.

Top soil of the area to be turfed shall consist of soil of the area to be turfed shall consist of soils adopted to the sustenance's of plant life.

- 5.3. CONSTRUCTION METHOD:**

Preparation of the earth bed:

All areas desired to be covered with sod shall be fine dressed to required contour, to an extent such that the finished work after laying sod with necessary top soil incorporated in the bed will be in accordance with required lines, grades, slopes and cross section.

The area to be sodded shall be free from stones, roots or other undesirable foreign materials.

The soil of the area to be sodded shall be loosened to a depth of approximately not less than and top soil shall be spread evenly over the prepared bed to a depth of 2 inches and the clods and lumps shall be broken down to provide a uniform texture to the soil.

- 5.4. PLACING THE SOD:**

The earth bed upon which the sod to be placed shall be moistened to the depth, manipulated, if naturally not sufficiently moist, and the sod after the same has been cut and shall be properly protected and sprinkled with water until placed be laid in horizontal strips beginning at the bottom of the slopes and working onwards, when placing sods the length to the strips shall be laid at right angles to the direction of flow of water. Sods shall be laid so that the joints caused by abutting ends of sods strips were not continuous, each sod strip shall be so laid to about against the strip previously laid.

As the sod is being laid shall be firmly and lightly tamped with suitable wooden or metal tampers to press the sod into the underlying soil. After tamping, the sod shall present a smooth even surface free from bumps or depressions, at such point. Where water will start flowing over a sodded area the upper edge of the sod strip shall be turned into the soil and layer of earth placed over this, which earth shall be thoroughly compacted to conduct the surface water over the upper edge of the sod. No sods shall be laid during the dry months of March to July.

5.5. WATERING

The sod shall be thoroughly watered immediately after placing and shall be kept thoroughly wet for a period of atleast seven days after laying and shall be maintained in a satisfactory condition.

5.6. METHOD OF MEASUREMENT AND PAYMENT

Measurement of turfing shall be made after full and satisfactory growth of the turfing. The unit and price shall contain all the specification as mentioned in the tender schedule.

Sod shall be measured by units of 100 square meters and will be paid for at the contract unit price of 100 square meter of sod in place which shall be full compensation for preparing the earth bed, for furnishing, placing, top dressing and watering the sod and for all labour, equipment, tools and incidentals necessary to complete the work in accordance with contract.

CHAPTER -6

OTHER ITEMS

6.1. WEEP HOLES: Providing weep holes and placing in position 10 cm dia. Asbestos Cement pipes with non-corroding jally as per design and drawings.

6.2. GENERAL

- a) Weep holes of the size as shown on the drawings shall be provided and they shall extend through the full width of the masonry with a slope of about 1 vertical to 20 horizontal towards the draining face to drain moisture from the backfilling, the spacing of holes shall be as per the drawings in either direction staggered. The sides and bottom of weep holes in the interior shall be made up in the stones/ concrete having fairly plain surface as channel so formed slabbed over with stones/ concrete lintels not less than 150mm and each side including centering and shuttering. In stone masonry, generally the height of weep holes shall be the same as the height of the course in which they are formed. Filters behind weep holes with jally shall be provided to the dimensions and grades as shown on the drawings with inverted backing of approved quality filter materials in back filling side.
- b) In case the length of the pipe falls short of the standard length of the pipe, it shall be joined with necessary collars in cement mortar 1:3 of as per the instruction of the Engineer to form continuous hole in the body of wall. Defective pipes or defective work shall not be measured and paid. These shall be removed and replaced by the contractor. The interior of all pipes shall be free from sand, mortar or dirt and other foreign matter. Care shall be taken to prevent entrance of any foreign matter into the pipes during progress of work.

SECTION - 6
GOVERNMENT
CIRCULAR

Government of Orissa
Works Department

Office Memorandum

File No. FA-R-3/02 4666 MW Dated 12.12.08

Sub:- Validation and enablement of procurement process through e-procurement by Government of Orissa – Issue of orders there of.

1. The Information Technology Act, 2000 provides legal recognition for transactions carried out by means of electronic data interchange and other means of electronic communication, commonly referred to as 'Electronic Commerce'. As a part of its e – Governance initiatives vis-à-vis "Reforms in the Procurement Process", the Government of Orissa desires to introduce procurement in the electronic mode i.e. 'e-procurement' and has taken up 'e-procurement project' as one of the core IT initiatives. To fulfill the objective, the Government of Orissa has set up an 'e-Procurement Mission' and has sought the service of National Informatics Center, New Delhi to design, develop & customise the software. E-Procurement Mission and PMU of OCAC will do the overall programme management. The project shall cover the procurement of 'civil works' costing Rupees three crores or more in the pilot phase and shall be implemented in the N.H wing of the Works Department and Water Resources Department. Subsequently the e-procurement shall be extended to all the departments for all types of 'work' including procurement of 'goods' & 'services', costing above Rs.10 lakhs.
2. In the event of successful completion of the pilot and readiness to roll out e-procurement across all Government Departments and organizations, Government of Orissa authorized the Water Resources, Rural Development, Housing & Urban Development Department and other wings do Works Department to adopt e-procurement processes in place of conventional processes for works costing more than Rs.3.00 crores. Till such time conventional process will be in force in all other Government Departments except the projects identified by the respective Administrative Department for inclusion in the pilot phase. But pilot phase being a transition phase, the bids

will be received both online and offline. The e-procurement system in general shall cover the activities but not limited to the following:

- a. Publishing notices inviting bids/ tenders
- b. Release / sale of bid/ tender documents
- c. Receipt of bids (with DSC authentication)

3. The prevalent procurement practice (manual mode) has already been documented as the "As Is" process and the desired end product, here in after known as the "To Be" process, has already been firmed up and a plan of action regarding what would now be processed and preserved in the electronic form and the rules/ code provisions/ GOs that need to be amended in order to provide legal validity to the e-procurement process, have been identified. The e-procurement shall be operated compliant to relevant provisions of OGFR/ OPWD code/ Accounts code/ Government statues including any amendments brought from time to time to suit to the requirement of the best national practice.

4. The Government in Works Department after careful consideration and detailed examination hereby decided to undertake Procurement through electronic processes defined initially in the firmed up "To Be processes" in the roll out phase covering works valued upto Rs.10.00 lakhs and above and any amendment to be brought in to remove any deficiencies. The Government has further decided that notwithstanding any existing provisions of the Orissa Public Works Department code as well as other orders and executive instructions in force, e-procurement processes shall be valid for procurement of 'works' and for entrustment of contracts for all civil engineering projects on the strength of this Office memorandum. **Specific process shall be notified by the Works Department in due time.**

5. The Government desires to provide a smooth transaction to the e-procurement and thereby considers that the bids for the 'Works' which will be taken up during the pilot phase, will be received both in the conventional method (Offline) and electronic mode (Online) till such time the Government declares to stop bids in conventional method.

6. The e-procurement market place, during this pilot phase, shall provide an online self-service registration facility, herein after known as the portal enrollment/ portal Registration, to such of the contractors, who are already registered with Government of Orissa. As an incentive for early portal enrollment, basic registration by contractors, that allows them to participate effectively in the e-procurement process, shall be enabled by the software without levy of any extra registration or subscription fee initially.
7. However, the e-procurement market place, may levy charges for such value-added services. Contractors registered out side Orissa, can participate after necessary portal enrollment but have to subsequently undergo registration with the appropriate authority of the State Government before award of the work as per the available registration norms.
8. Works Department shall issue necessary amendments/ changes in the existing procedure as deemed necessary for switching over from the conventional/ existing procurement processes to equivalent e-procurement process. Pending the issue of necessary amendments/ changes after successful completion of the pilot phase, the present Office Memorandum would be construed to authorize the implementing Departments to deploy e-procurement for their procurement functions, beyond the ceiling earmarked here in above.
9. All the sub-ordinate offices shall constitute a 'Procurement Cell' to oversee the procurement process of implementation. The 'e-procurement Mission' of Orissa and OCAC & NIC as the service provider shall initially guide the 'Cell' to identify logistic supports, train the staffs and Contractors and above all 'hands on experience' during pilot phase.
10. The digital signature certificate will be issued to the Department users, through the NICCA (Agency of NIC) on payment of usual cost. The contractors/ suppliers/ service providers shall obtain the DSC's from any of the certifying Authorities by CCA e.g. TCS, n-Code & Sify etc. with immediate effect.

11. The electronically submitted bids may be permitted to be opened by a Bid Inviting Authority or a member of the BID Security Committee from their new location if they are transferred after the issue of Notice Inviting Bid and before bid opening and the new incumbent is yet to obtain his digital signature. Further, action on bid documents shall be taken by the new incumbent of the post.
12. In case any bidder asks for a clarification on the bid documents before 48 hours of the opening of the bid, the Bid Inviting Authority shall ensure that a reply is sent and copies of the reply to the clarification sought shall be communicated to all those who have purchased the bid documents without identifying the source of the query and upload such clarification to the designated website for the information of those who have downloaded the bid documents from the website.
13. The bid document shall be permitted to be submitted to the designated website while documents such as EMD, certificates may be sent in physical form.
14. The Bid Inviting Authority shall ensure that adequate arrangements are made for the proper receipt and safe custody of the bids at the place indicated for receipt of the bids. Such of the bids that are received through electronic mail shall be kept electronically locked. Orders on the procedure for e-procurement if Bid Security/ Earnest Money Deposit which have to be made through e-payment gateway shall be issued separately once the e-submission of bids become fully operational.
15. Any bid received beyond the closure time shall not be opened and shall be returned unopened to the bidders and in case of bids submitted through e-procurement, a report on the late submission of bids shall be granted and the same shall be sent back to the bidder's concerned.
16. Provision of this order will be reviewed at the end of the pilot project.

17. This has been concurred in by the Department of Information Technology in their UOR No.2/IT, dated 11.1.2008, Law Department in their UOR No.73/L, dated 14.1.2008 and Finance Department in their UOR No.10-ES-3/F, dated 15.1.2008.

Memo No. 4667 EIC - cum- Secretary to Government
W, Dated. 12.3.08
Copy forwarded to P.S. to Hon'ble Minister, Finance, Orissa/ P.S. to Hon'ble Minister, Works, Housing, Orissa for information and necessary action.

Memo No. 4668 FA- cum-Addl. Secy. to Govt.
W, Dated. 12.3.08
Copy forwarded to OSD to Chief Secretary, Orissa/ P.S. to Development Commissioner- cum-Additional Chief Secretary, Orissa/ P.S. to Principal Secretary to Chief Minister, Orissa for information and necessary action.

Memo No. 4669 FA- cum-Addl. Secy. to Govt.
W, Dated. 12.3.08
Copy forwarded to Finance Department/ Department of Water Resources/ Housing & Urban Development Department/ Rural Development Department/ Panchayati Raj Department/ Department of Information Technology/ Law Department/ all other Departments/ Managing Director, OB & CC Ltd./ Managing Director, O CC Ltd for information and necessary action.

Memo No. 4670 FA- cum-Addl. Secy. to Govt.
W, Dated. 12.3.08
Copy with soft copy forwarded to the Head, State Portal Group, IT Centre, Ground Floor, North Annexe of Secretariat for information and necessary action.
He is requested to display this office memorandum in the web-site of State Government.

FA- cum-Addl. Secy. to Govt.

Government of Odisha
Works Department

Office Memorandum

File No.07556900052014 -

16

W, dated,

01/01/2015

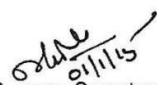
Sub: - Acceptance of Single Tender.

After careful consideration Government have been pleased to make following modification to Notes- (iii) of Para-3.5.18 of O.P.W.D. Code, Volume-I & Rule-29 of Appendix-IX of O.P.W.D. Code, Volume-II for Acceptance of Single Tender in response to a Notice Inviting Tender.

Notes- (iii) of Para-3.5.18 – 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.

Rule-29 of Appendix-IX – when in response to a notice calling for tenders, only a single tender is received in the first time, the tender shall be cancelled without opening of the bid and fresh tender be invited publicly. If single tender is received, even after retendering then the approval of the next higher authority should be obtained, if the tender is otherwise in order and acceptable.

1. This shall take effect from the date of issue of this Office Memorandum.
2. This has been concurred in by the Finance Department vide their U.O.R. No.254-WF-I Dt.13.11.2014.


EIC - cum- Secretary to Government

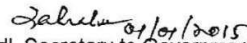
Memo No.

17

W, dated,

01/01/2015

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


FA - cum- Addl. Secretary to Government

(P.T.O.)

-2-

Memo No. 18 W, dated, 01/01/2015
Copy forwarded to OSD to Chief Secretary, Odisha / P.S. to Development Commissioner- cum-Additional Chief Secretary, Odisha for information and necessary action.

Jalabum 01/01/2015
FA - cum- Addl. Secretary to Government

Memo No. 19 W, dated, 01/01/2015
Copy forwarded to All Departments / Managing Director, OB & CC Ltd., Bhubaneswar / Managing Director, OCC Ltd., Bhubaneswar for information and necessary action.

Jalabum 01/01/2015
FA - cum- Addl. Secretary to Government

Memo No. 20 W, dated, 01/01/2015
Copy forwarded to All Chief Engineers, Odisha / All Superintending Engineers / All Executive Engineers (under Works Department) for information and wide circulation among subordinate offices.

Jalabum 01/01/2015
FA - cum- Addl. Secretary to Government

Memo No. 21 W, dated, 01/01/2015
Copy forwarded to the Accountant General (A&E), Odisha, Bhubaneswar / Accountant General, Odisha, Puri Branch, Puri for information and necessary action.

Jalabum 01/01/2015
FA - cum- Addl. Secretary to Government

Memo No. 22 W, dated, 01/01/2015
Copy forwarded to the Luminous Infoways Pvt. Ltd., N-6 / 373, Jaydev Vihar, Bhubaneswar email: support @ lipl.in for information and necessary action.
They are requested to display it in the web-site of State Government.

Jalabum 01/01/2015
FA - cum- Addl. Secretary to Government
(P.T.O.)

Memo No. 23 W, dated, 01/01/2015
Copy forwarded to the Director, Printing, Stationary & Publication, Odisha, Cuttack for information and necessary action.
He is requested to publish this amendment in the next issue of Odisha Gazette.

Memo No. 24 W, dated, 01/01/2015
FA - cum- Addl. Secretary to Government
Copy forwarded to A/C-I Section / A/C-II Section / Road Section / Plan Section / Building Section / Budget Section / N.Hs. Section / FC & AA Section / PPP Cell / EAP Cell, Works Department for information and necessary action.

FA - cum- Addl. Secretary to Government

GOVERNMENT OF ODISHA
DEPARTMENT OF WATER RESOURCES

IM- 4/2015
Memo No. 660 W.R., Dated. 9/1/15
Copy forwarded to E.I.C, Water Resources/E.I.G (P & D)/ All CE & BMs/All CEs/All CCEs for information and necessary action.

5 spare copies to Guard file.

FA-Cum-Joint Secretary

Government of Odisha
Works Department

Office Memorandum

File No.-075569000162015 - 10224

W, dated, 1.9.15

Sub: - Amendment to Codal / Contractual provisions.

After careful consideration Government have been pleased to add the following Para to the existing Clause-36 of Appendix-IX of OPWD Code, Volume-II.

"If the rate quoted by the SC and ST category contractors comes to 14.99% (decimals up to two numbers will be taken for all practical purposes) less than the estimated cost after availing 10% price preference as per Para-2 of Works Department Resolution No.27748 dt.11.10.1977, then the tender shall be finalised by the tender accepting authority through a transparent lottery system along with other category of contractors whose rates are 14.99% less than the estimated cost".

1. This shall take effect from the date of issue of this Office Memorandum.
2. This has been concurred in by the Finance Department vide their U.O.R. No.130-WF-I dt.03.06.2015.

[Signature]
EIC - cum- Secretary to Government

Memo No. 10225

W, dated, 1.9.15

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

[Signature]
FA - cum- Addl. Secretary to Government

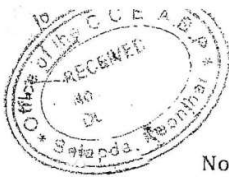
Memo No. 10226

W, dated, 1.9.15

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

[Signature]
FA - cum- Addl. Secretary to Government

(P.T.O.)



2955 W.R.
19/9/15
GOVERNMENT OF ODISHA
DEPARTMENT OF WATER RESOURCES

No. 20415 /DoWR, Bhubaneswar, Dated 14-9-2015
IIM-4/2015



From

Sri Nihar Ranjan Swain,
F.A-cum-Joint Secretary to Government

To

The EIC, Water Resources, Odisha, Bhubaneswar/
Chief Engineer, Minor Irrigation, Odisha, Bhubaneswar/
All Chief Engineer & Basin Managers/
All Chief Construction Engineers/
Managing Director, M/s. OCC Ltd., Bhubaneswar.

Sub: Issue of General Instructions to Contractors.

Sir,

In inviting a reference to the subject mentioned above, I am directed to say that during the course of Project Review and Tender Committee meeting of the Department of Water Resources, it has come to the notice of Government that proposals for grant Extension of Time (EoT) are received on flimsy grounds. This has resulted in further grant of Escalation and Differential cost of Cement and Steel to the Contractor involving huge sums of money.

There are other irregularities in Tender & Contract Management such as acquisition of land, canal closure programme etc., which are also hampering execution of project works and ultimately resulting in time and cost over run. A general guideline has been prepared for instruction to contractors to avoid certain irregularities in contract management, which is enclosed with this letter.

By e-mail You are requested to circulate this instruction to the Divisional Offices and the instruction should form a part of the Detail Tender Call Notice.

Memo No. 24010 / Dt. 12.9.15

Copy to FMS, O.C.A. / I.T. / SEs of EC-I / EC-II / EC-III / CIC, BSR

BIC, Baniapada / SIC, Beshampur / WIC, Bhawanipatna

Angul Dr. Circle / Balangir Dr. Circle / Hirakud Dam Circle

Sundergarh Dr. Circle and CEs of UKP / ABP, Solapad

Encl: as above. 2 n/a.

By e-mail

Memo No. 24010 / Dt. 12.9.15

Copy to all CEs under whose circles for info. & n/a. The FMS of instructions are to be incorporated in the DTCN positively.

Yours faithfully,

Pathe

15/9/15

Asst to CE ERM, LMB

Pathe

15/9/15

Asst to CE ERM, LMB

GENERAL INSTRUCTIONS TO CONTRACTORS

- 1) Any Agency or Contractor executing a work should be aware about the local festivals like Makar Sankranti, Raja Sankranti, Chaiti Parba, Danda Nata or any such festivals which may affect 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.
- 2) 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 workforce and to employ the existing workforce during morning and afternoon hours as per Government orders.
- 3) 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 the nature.
The same applies for borrow areas pending also. The Contractor should foresee possible ponding of borrow area in monsoon and likewise lift more quantity of soil/other materials during dry period, so as to complete the work as per schedule.
- 4) The Contractor should take up the work with due diligence in the acquired land without waiting for acquisition of the entire land. This should be completed in proportionally less period depending on the quantum of available work front.
- 5) 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.
- 6) There will 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 Divisional Officers.
- 7) Only the day(s) of elections to the Local Bodies / Assembly / Parliament will be treated as a non-working day (s).

GOVERNMENT OF ODISHA
WORKS DEPARTMENT

OFFICE MEMORANDUM

File No.07556900012016-

6785

/W, dated,

9/5/2017

Sub: **Electronic receipt, accounting and reporting of Cost of Tender Paper including VAT, Earnest Money Deposit and Additional Performance Security 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 including VAT, Earnest Money Deposit and Additional Performance Security 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 including VAT, Earnest Money Deposit and Additional Performance Security 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 including VAT, Earnest Money Deposit and Additional Performance Security 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 including VAT, Earnest Money Deposit and Additional Performance Security 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 including VAT, Earnest Money Deposit and Additional Performance Security 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 including VAT/EMD/ Additional Performance Security by bidder :

- a) **Log on to e-Procurement Portal:** 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, dt.23.07.2013.
- c) **Electronic payment of tender paper cost including VAT/EMD/ Additional Performance Security:** 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 including VAT:

- a) **Cost of Tender Paper including VAT:** In respect of Government receipts on account of **Cost of Tender Paper including VAT**, 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 and VAT collected with reference to **Bid Identification Number**. The State Procurement Cell shall generate Bank-wise-head-wise challans separately for **Cost of Tender Paper and VAT** and instruct the designated Banks to remit the money to the State Government account under different heads. 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 including VAT**, 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 and VAT collected with reference to **Bid Identification Number**. The State Procurement Cell shall generate Bank-wise list of challans separately for **VAT** and instruct the designated Banks to remit the money through the Odisha Treasury portal under the Head 0040-Taxes on Sales etc.-00-111-Value Added Tax Receipts-0222-State Value Added Tax-01049-Receipt under Odisha Value Added Tax Act, 2004. 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 including VAT, 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 including VAT, Earnest Money Deposit and Additional Performance Security on submission of bids is enclosed in the Annexure.

7. **Settlement of Earnest Money Deposit and Additional Performance Security on submission of bids:**
- a) The Bank will remit the Earnest Money Deposit and Additional Performance Security 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 and Additional Performance Security on submission of bid of defaulting bidder is occasioned for various reasons
- a) In case the Earnest Money Deposit and Additional Performance Security 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 and Additional Performance Security 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 and VAT 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 and VAT 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 VAT and 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 and the VAT 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 :

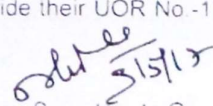
- a) The State Procurement Cell, Odisha, National Informatics Centre, Odisha and the e-FPB will have an effective procedure for dealing with, public complaint for e-Receipt related matters. In case, any mistake is detected by any of the stakeholders in reporting of receipt of tender paper cost including VAT/EMD/APS, 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 and additional performance security will be applicable for electronic submission of bids through e-procurement portal. Existing provisions regulating cost of tender paper, earnest money deposit and additional performance security 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. This has been concurred in by the Finance Department vide their UOR No.-176-WF-I dt.14.10.2016


EIC - cum- Secretary to Government

Memo No. 6786 W, dated, 9/5/17

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

Jahat 9/5/17
FA - cum- Addl. Secretary to Government

Memo No. 6787 W, dated, 9/5/17

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

Jahat 9/5/17
FA - cum- Addl. Secretary to Government

Memo No. 6788 W, dated, 9/5/17

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

Jahat 9/5/17
FA - cum- Addl. Secretary to Government

Memo No. 6789 W, dated, 9/5/17

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

Jahat 9/5/17
FA - cum- Addl. Secretary to Government

Memo No. 6790 W, dated, 9/5/17

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

Jahat 9/5/17
FA - cum- Addl. Secretary to Government

Memo No. 6791 W, dated, 9/5/17

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

Jahat 9/5/17
FA - cum- Addl. Secretary to Government

Memo No. 6792 W, dated. 9/5/17

Copy forwarded to the Luminous Infoways Pvt. Ltd., N-6 / 373, Jaydev Vihar,
Bhubaneswar email: support @ lipl.in for information and necessary action.

They are requested to display it in the web-site of State Government.

Memo No. 6793 W, dated. 9/5/17
FA - cum- Addl. Secretary to Government

Copy forwarded to the Director, Printing, Stationary & Publication, Odisha, Cuttack
for information and necessary action.

He is requested to publish this amendment in the next issue of Odisha Gazette.

Memo No. 6794 W, dated. 9/5/17
FA - cum- Addl. Secretary to Government
Copy forwarded to A/C-I Section / A/C-II Section / Road Section / Plan Section /
Building Section / Budget Section / N.Hs. Section / FC & AA Section / PPP Cell / EAP Cell,
Works Department for information and necessary action.

FA - cum- Addl. Secretary to Government

Office Memorandum

File No. 07556900012013- 14299/W, dated,

03/10/2017

Sub: Amendment to Para-3.5.5 (v) of OPWD Code, Vol.-I.

After careful consideration Government have been pleased to make amendment to Para-3.5.5 (v) of OPWD Code, Vol.-I with following modification.

"Additional Performance Security shall be obtained from the bidder when the bid amount is less than estimated cost put to 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 exact amount of differential cost i.e. estimated cost put to tender minus the quoted amount as Additional Performance Security (APS) in shape of Demand Draft/Term Deposit Receipt pledged in favour of the Divisional Officer within seven days, otherwise the bid shall be cancelled and the security deposit shall be forfeited. Further, proceeding for blacklisting shall be initiated against bidder".

1. This amendment shall take effect from 24th July, 2017.
2. The Works Department Office Memorandum No.5288/W dt.04.05.2016 (Annexure-I-A) stands modified accordingly pursuant to the judgment dated, 24.07.2017 of the Hon'ble High Court of Orissa.
3. This has been concurred in by the Law Department and Finance Department vide their U.O.R. No.1668/L dt.19.08.2017 & U.O.R. No.56-WF-I dt.24.08.2017 respectively.

10
EIC - cum- Secretary to Government

Memo No.

14300

W, dated,

03/10/17

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

FA - cum- Addl. Secretary to Government

Memo No.

14301

W, dated,

03/10/17

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

FA - cum- Addl. Secretary to Government

(Cont.-2)

Memo No. 14302 NW, dated, 03/10/17
 Copy forwarded to the Principal Accountant General (A&E), Odisha, Bhubaneswar,
 Principal Accountant General (E & S R Audit), Odisha, Puri Branch, Puri for information and
 necessary action.

FA - cum- Addl. Secretary to Government

Memo No. 14303 NW, dated, 03/10/17
 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. 14304 NW, dated, 03/10/17
 Copy forwarded to EIC (Civil), Odisha / All Chief Engineers, Odisha / All
 Superintending Engineers / All Executive Engineers (All under Works Department) for
 information and wide circulation among subordinate offices.

FA - cum- Addl. Secretary to Government

Memo No. 14305 NW, dated, 03/10/17
 Copy forwarded to the Director, Printing, Stationary & Publication, Odisha, Cuttack
 for information and necessary action.

He is requested to publish this amendment in the next issue of Odisha Gazette.

Memo No. 14306 NW, dated, 03/10/17
 Copy forwarded to A/C-I Section / A/C-II Section / Road Section / Plan Section /
 Building Section / Budget Section / N.Hs. Section / FC & AA Section / PPP Cell / EAP Cell /
 OSWAS Control Room, Works Department for information and necessary action.

FA - cum- Addl. Secretary to Government

OFFICE MEMORANDUM

File No.07556900222018- 14459 W, dated, 20-09-2018

Sub:- Amendment to Para-3.5.5(v) of the OPWD Code, Volume-I.

After careful consideration Government have been pleased to make amendment to Para-3.5.5(v) of the Odisha Public Works Department Code, Volume-I with the following modification.

"Additional Performance Security shall be obtained from the bidder when the bid amount is less than estimated cost put to 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 exact amount of differential cost i.e. estimated cost put to tender minus the quoted amount as Additional Performance Security (APS) in shape of Term Deposit Receipt pledged in favour of Divisional Officer/Bank Guarantee in favour of the Divisional Officer from any Nationalized/Scheduled Bank in India counter guaranteed by its local branch at Bhubaneswar within seven days of issue of Letter of Acceptance (LoA) by the Divisional Officer (by e-mail) to the successful bidder otherwise the bid of the successful bidder shall be cancelled and the Earnest Money Deposit/Bid Security shall be forfeited. Further, proceeding for blacklisting shall be initiated against the bidder."

1. This shall take effect from the date of issue of this Office Memorandum.
2. The codal provision exist~~s~~ in Works Department Office Memorandum No.14299/W dt.03.10.2017 stand~~s~~ partially modified to the above extent with effect from the date of issue of this Office Memorandum.
3. This has been concurred in by the Finance Department vide their U.O.R. No.1530-ACSF Dt.21.08.2018.

[Signature]
EIC - cum- Secretary to Government

Memo No. 14460 W, dated, 20-09-2018

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

[Signature]
FA - cum- Addl. Secretary to Government

(P.T.O.)

Government of Odisha
Works Department

OFFICE MEMORANDUM

File No.07556900222018- 14468/W, dated, 20-09-2018

Sub:- Amendment to Para-3.5.19(a)(b) of the OPWD Code, Volume-I.

After careful consideration Government have been pleased to make amendment to Para-3.5.19(a)(b) of the Odisha Public Works Department Code, Volume-I with the following modification.

"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/ Kissan Vikas Patra/ Bank Guarantee in favour of the Divisional Officer from any Nationalized/ Scheduled Bank in India counter guaranteed by its local branch at Bhubaneswar towards E.M.D/initial security deposit /any other security deposit from the contractor or supplier".

1. This shall take effect from the date of issue of this Office Memorandum.
2. This has been concurred in by the Finance Department vide their U.O.R. No.1530-ACSF Dt.21.08.2018.

Memo No. 14469 W, dated, 20-09-2018
EIC - cum- Secretary to Government

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

Memo No. 14470 W, dated, 20-09-2018
FA - cum- Addl. Secretary to Government

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

Memo No. 14471 W, dated, 20-09-2018
FA - cum- Addl. Secretary to Government

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

FA - cum- Addl. Secretary to Government

(P.T.O.)

Memo No. 16264 W, dated, 30-10-2018
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 Department for information and necessary action.

S. K. Singh 29.10.18
FA - cum- Addl. Secretary to Government

Memo No. 16265 W, dated, 30-10-2018
Copy forwarded to the Principal Accountant General (A&E), Odisha, Bhubaneswar / Principal Accountant General (E & S R Audit), Odisha, Puri Branch, Puri for information and necessary action.

S. K. Singh 29.10.18
FA - cum- Addl. Secretary to Government

Memo No. 16266 W, dated, 30-10-2018
Copy forwarded to All Departments / Managing Director, OB & CC Ltd., Bhubaneswar / Managing Director, OCC Ltd., Bhubaneswar for information and necessary action.

S. K. Singh 29.10.18
FA - cum- Addl. Secretary to Government

Memo No. 16267 W, dated, 30-10-2018
Copy forwarded to EIC (Civil), Odisha / All Chief Engineers, Odisha / All Superintending Engineers / All Executive Engineers (under Works Department) for information & necessary action and wide circulation among subordinate offices.

S. K. Singh 29.10.18
FA - cum- Addl. Secretary to Government

Memo No. 16268 W, dated, 30-10-2018
Copy forwarded to OSWAS Control Room with a request to upload it in the web-site of Works Department.

S. K. Singh 29.10.18
FA - cum- Addl. Secretary to Government

Memo No. 16269 W, dated, 30-10-2018
Copy forwarded to the Director, Printing, Stationary & Publication, Odisha, Cuttack by e-mail (deputydirectorpp@rediffmail.com) for publication of this Office Memorandum in the next issue of Odisha Gazette and supply 20 (Twenty) copies to this Department for official use.

S. K. Singh 29.10.18
FA - cum- Addl. Secretary to Government

Memo No. 16270 W, dated, 30-10-2018
Copy forwarded to A/C-I Section / A/C-II Section / Road Section / Plan Section / Building Section / Budget Section / N.Hs. Section / FC & AA Section / PPP Cell / EAP Cell, Works Department for information and necessary action.

S. K. Singh 29.10.18
FA - cum- Addl. Secretary to Government

RESOLUTION

File No.07556900142018- 16262 W, dated, 30-10-2018

Sub:- Grant of Concession (s) to Scheduled Caste and Scheduled Tribe Contractors.

Government have extended certain concessions to the Scheduled Caste and Scheduled Tribe Contractors regarding award of P.W.D. Works vide Resolution No.27748/W dt.11.10.1977. On the basis of the recommendation of Codes Revision Committee, it has now been decided to modify the aforesaid Resolution and allow the following facilities to the individual Scheduled Caste and Scheduled Tribe contractors for execution of P.W.D. Works.

1. The Scheduled Caste and Scheduled Tribe applicants desirous of enrolling themselves as Contractors are required to deposit 50% of the amount specified for various Classes of Contractors under Rule-7 of Appendix-VIII (P.W.D. Contractors' Registration Rules, 1967) of O.P.W.D. Code, Volume-II.

2. The concessions / facilities for 10% Purchase Preference shall be allowed only to the individual registered contractors belonging to Scheduled Caste and Scheduled Tribe having Registration Certificate up to "B" Class.

3. If the Tender of the individual registered contractors belonging to Scheduled Caste and Scheduled Tribe is within 10% of the rate quoted by the lowest tenderer for any work, the work may be considered for award to him/her at the lowest tendered rate in relaxation of Rule-18 of Odisha General Financial Rules (O.G.F.R.), Volume-I and Para-3.5.14 of O.P.W.D. Code, Volume-I.

4. The Security Deposit (Earnest Money, Initial Security and Performance Security) at half the usual rate may be deposited/realized by/from the Scheduled Caste or Scheduled Tribe Contractors coming under the Categories up to "B" Class only as against the prescribed percentage under Rule-13 of Appendix-VIII (P.W.D. Contractors' Registration Rules, 1967) of O.P.W.D. Code, Volume-II.

5. The above concession will take effect from the date of issue of this Resolution.

6. This order shall supersede Works Department Resolution No.27748/W dt.11.10.1977.

7. This has been concurred in by the Finance Department vide their U.O.R.No.92/WF-I dt. 09.10.2018.

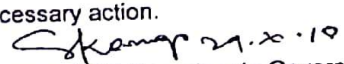
Memo No.

16263

W, dated, 30-10-2018


EIC - cum- Secretary to Government

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


FA - cum- Addl. Secretary to Government

(P.T.O.)

Government of Odisha
Works Department

OFFICE MEMORANDUM

File No.07556900142018- 12934 W, dated, 23-08-2018

Sub:- Insertion of Provision of Contractor Data Base Management System (CDMS) in
Appendix-IX (A) of the Odisha Public Works Department Code, Volume-II .

After careful consideration Government have been pleased to insert the provision of Contractor Database Management System (CDMS) in OPWD Code to bring all contractors into one Database for smooth functioning of e-Procurement system.

The provision shall be newly inserted as Para-12.4 below Para-12 in Appendix-IX(A) of OPWD Code Volume-II as follows:-

"Registration in the Contractors Data Base Management System(CDMS) available at www.cdmsodisha.gov.in by all Contractors is mandatory."

1. This shall take effect from the date of issue of this Office Memorandum.
2. This has been concurred in by the Finance Department vide their U.O.R. No.969-PSF Dt.16.05.2018.

Sd/-
21/8/18
EIC - cum- Secretary to Government

Memo No. 12935

W, dated, 23-08-2018

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

Sd/-
21.8.18
FA - cum- Addl. Secretary to Government

Memo No. 12936

W, dated, 23-08-2018

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

Sd/-
21.8.18
FA - cum- Addl. Secretary to Government

Memo No. 12937

W, dated, 23-08-2018

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

Sd/-
21.8.18
FA - cum- Addl. Secretary to Government

(Contd....P-2)

o/c

GOVERNMENT OF ODISHA
WORKS DEPARTMENT

OFFICE MEMORANDUM

File No. -07556900242019- 15847 W, dt. 19-11-19

Sub:- Codal / contractual provisions regarding Price Adjustment in works contract.

Codal / contractual provisions regarding Price Adjustment in works contract was under active consideration of Government. After careful consideration, Government have been pleased to make the codal/ contractual provisions regarding Price Adjustment clause due to increase or decrease in rate and price of labour, materials, fuels & lubricants and plant & machineries spare component to be incorporated in DTCN / condition of Contract as per Annexure-"A".

- 1- This Office Memorandum shall be a part of the relevant clauses of DTCN and Agreement and shall take effect from the date of issue.
- 2- This has been concurred in by Finance Department vide their File No. FIN-WF1-MISC-0031-2019 (OSWAS) dt.23.10.2019 and Law Department vide their UOR No.2218/L dt.29.10.2019.


Commissioner - cum- Secretary to Government

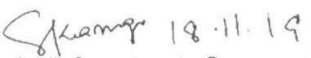
Memo No. 15848 W, dated, 19-11-19

Copy with copy of enclosure forwarded to Principal Secretary to Hon'ble Chief Minister, Odisha for information and necessary action.


FA - cum- Addl. Secretary to Government

Memo No. 15849 W, dated, 19-11-19

Copy with copy of enclosure forwarded to P. S. to Hon'ble Minister, Works, Odisha / P. S. to Hon'ble Minister, Finance, Odisha for information and necessary action.


FA - cum- Addl. Secretary to Government

(P.T.O)

Memo No. 15850

W, dated, 19-11-19

Copy with copy of enclosure forwarded to OSD to Chief Secretary, Odisha / Sr. P.S. to Development Commissioner-cum-Additional Chief Secretary, Odisha / Sr. P.S. to Principal Secretary, Finance Department for information and necessary action.

S. K. Singh 18.11.19
FA - cum- Addl. Secretary to Government

Memo No. 15851

W, dated, 19-11-19

Copy with copy of enclosure forwarded to the Principal Accountant General (A&E), Odisha, Bhubaneswar / Principal Accountant General (E & S R Audit), Odisha, Puri Branch, Puri for information and necessary action.

S. K. Singh 18.11.19.
FA - cum- Addl. Secretary to Government

Memo No. 15852

W, dated, 19-11-19

Copy with copy of enclosure forwarded to All Departments / Managing Director, OB & CC Ltd., Bhubaneswar / Managing Director, OCC Ltd., Bhubaneswar / Chief Architect, Odisha, Bhubaneswar for information and necessary action.

S. K. Singh 18.11.19
FA - cum- Addl. Secretary to Government

Memo No. 15853

W, dated, 19-11-19

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

S. K. Singh 18.11.19
FA - cum- Addl. Secretary to Government

Memo No. 15854

W, dated, 19-11-19

Copy with copy of enclosure forwarded to OSWAS Control Room with a request to upload it in the web-site of Works Department

S. K. Singh 18.11.19.
FA - cum- Addl. Secretary to Government
(P.T.O)

Memo No. 15855

W, dated, 19-11-19

Copy with copy of enclosure forwarded to the Director, Printing, Stationary & Publication, Odisha, Cuttack by e-mail (deputydirectorpp@redifmail.com) for publication of this Office Memorandum in the next issue of Odisha Gazette and supply 20 (Twenty) copies to this Department for official use.

S. K. Singh 18.11.19

FA - cum- Addl. Secretary to Government

Memo No. 15856

W, dated, 19-11-19

Copy with copy of enclosure forwarded to A/C-I Section / A/C-II Section / Road Section / Plan Section / Building Section / Budget Section / N.Hs. Section / FC & AA Section / EAP Cell / Legal Cell, Works Department for information and necessary action.

S. K. Singh 18.11.19

FA - cum- Addl. Secretary to Government

Clause 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 or 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, if any, during the month, less the amount of secured advance recovered, if 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 include 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:

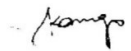
$$V_M = 0.85 \times P_m / 100 \times R \times (M_1 - M_0) / M_0$$

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 preceding 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.


12.11.19

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

Price adjustment for increase or decrease in the 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 the 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

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

$$V_s = 0.85 \times P_s / 100 \times R \times (S_1 - S_0) / S_0$$

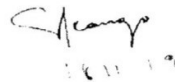
V_s = Increase or decrease in the cost of work during the month under consideration due to changes in the rates for steel

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 the 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 the 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 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 the 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 Whole sale 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} = All India Whole sale 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.


18/11/19

31(b): Adjustment of Labour Component

Price adjustment for increase or decrease in the 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

(v) Price adjustment for increase or decrease in cost 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 the 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.

S. K. Singh
18.11.20

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

- (vi) Price adjustment for increase or decrease in the 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 the 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 Port land cement
2.	Bars & rods	Rebars	Mild steel long products
3.	Heavy Machinery & parts	Construction Machinery	Manufacture of machinery for mining, quarrying & construction.

S. K. Singh
18.11.19.

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 alteration in the price of such material, wages of labour and /or price of P.O.L. 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 a position to supply.

Percentage Table

Sl No.	Category of works		% Component (cost wise)		
			Labour (P _l)	POL (P _r)	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).

S. K. Singh
14.11.19

**Appendix to Bid
Schedule of Adjustment Data**

[For all works, adjustment factor for Labour and POL shall be considered @ 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]

Cl. No- 31 of F2/ P1 Contract Sl. No	Index descripti on	Source of index	Base value*	Base Date*	Weighta ge of Item**
31 (a)(i)	Other Materials	All India Whole sale price index (all commodities) as published by the Economic Advisor to the Govt. of India, Ministry of Commerce and Industry.			
31 (a)(ii)	Cement	Whole sale price index for Cement (Ordinary Portland Cement) as published by the office the Economic Advisor to the Govt. of India, Ministry of Commerce and Industry.			
31 (a)(iii)	Steel	Whole sale 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)	Official retail price of bulk bitumen at the nearest IOC/ HPCL depot			
31 (a)(v)	Pipes	Whole sale price index for the type of Pipe under consideration, as published by the office 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 depot.			5%
31 (d)	Plant and Machinery	Whole sale price index for Manufacture of Machinery for Mining, Quarrying and Construction as published by the office the Economic Advisor to the Govt. of India, Ministry of Commerce and Industry.			
Total					100%

* Values to be filled up at the time of drawl of contract

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

S. K. Singh
18/11/19

**GOVERNMENT OF ODISHA
WORKS DEPARTMENT**

* * *

No. 07559600192022-1437 Bhubaneswar, Dated the 31-1-2023

OFFICE MEMORANDUM

Sub:- Amendment to Codal Provision under Clause 36 of Appendix-IX of OPWD Code, Volume-II.

After careful consideration and in supersession of codal provision under Clause-36 of Appendix-IX of OPWD Code, Volume-II vide Works Department O.M. No.12366/W dated 08.11.2013, Government have been pleased to make following provision.

Clause 36 of Appendix-IX of OPWD Code, Volume-II

If the rate quoted by the bidder is less than 15% of the amount put to tender, then such a bid shall be rejected and the tender shall be finalized basing on merits of rest bids. But, 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.

1. This amendment to the codal provision shall take effect from the date of issue of the order.
2. Accordingly, the relevant existing codal/ contractual provision stands modified with effect from the date of issue of this O.M.
3. This has been concurred in by Finance Department in their OSWAS File No.FIN-WF1-MISC-0042-2022.

By order of the Governor

(Vir Vikram Yadav, IAS)

Principal Secretary to Government

Memo No. 1438 /W., Dated, 31-1-2023

Copy forwarded to Private Secretary to Hon'ble Chief Minister, Odisha / Private Secretary to Hon'ble Minister, Works, Steel & Mines, Odisha for kind information of Hon'ble Chief Minister, Odisha & Hon'ble Minister, Works, Steel & Mines, Odisha.

FA-cum-Additional Secretary to Government

Memo No. 1439 /W., Dated, 31-1-2023

Copy forwarded to OSD to Chief Secretary, Odisha / Sr. Private Secretary to Development Commissioner-cum-Additional Chief Secretary to Govt. / Sr. Private Secretary to Principal Secretary to Govt., Finance Department for kind information of Chief Secretary / Development Commissioner-cum-Additional Chief Secretary/ Principal Secretary, Finance Department.

FA-cum-Additional Secretary to Government

(P.T.O)

Memo No. 1440 /W., Dated, 31-1-2023

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


31/01/2023
FA-cum-Additional Secretary to Government

Memo No. 1441 /W., Dated, 31-1-2023

Copy forwarded to All Departments of Government / EIC-cum-Managing Director, OB&CC Ltd., Bhubaneswar / Managing Director, OCC Ltd., Bhubaneswar / Managing Director, OSPH&WC, Bhubaneswar for information and necessary action.


31/01/2023
FA-cum-Additional Secretary to Government

Memo No. 1442 /W., Dated, 31-1-2023

Copy forwarded to EIC (Civil), Odisha / EIC, Water Resources, Odisha / EIC (Rural Works), Odisha / All Chief Engineers, under the Administrative Control of Works Department, R.D. Department, Water Resources Department and H&UD Department / All CCEs (under Works Department) / All Superintending Engineers (under Works Department) / All Executive Engineers (under Works Department) for information.


31/01/2023
FA-cum-Additional Secretary to Government

Memo No. 1443 /W., Dated, 31-1-2023

Copy forwarded to OSWAS Control Room with a request to upload in the website of Works Department.


31/01/2023
FA-cum-Additional Secretary to Government

Memo No. 1444 /W., Dated, 31-1-2023

Copy forwarded to the Director, Printing, Stationary & Publication, Odisha, Cuttack by e-mail (deputydirectorpp@rediffmail.com) for publication of this Office Memorandum in the next issue of Odisha Gazette and supply 20 (Twenty) copies to this Department for official use.


31/01/2023
FA-cum-Additional Secretary to Government

Memo No. 1445 /W., Dated, 31-1-2023

Copy forwarded to Accounts-I Section / Accounts-II Section / Road Section / Plan Section / Building Section / Budget Section / NHs Section / FC & AA Section / EAP Section for information and necessary action.


31/01/2023
FA-cum-Additional Secretary to Government

GOVERNMENT OF ODISHA
WORKS DEPARTMENT

File No. 07554600032022-1499 /W., dated. 01.02.2023

OFFICE MEMORANDUM

Sub:- Amendment to Para-3.5.19 (a) (b) of the OPWD Code, Volume-I.

After careful consideration, Government have been pleased to make amendment to Para-3.5.19 (a) (b) of the Odisha Public Works Department Code, Volume-I with the following modification.

"Security for the due fulfilment 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 Scheduled 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."

1. This shall take effect from the date of issue of this Office Memorandum.
2. This has been concurred in by Finance Department vide their OSWAS File No. FIN-WF1-MISC-0033-2022.

By order of the Governor

(Vir Vikram Yadav, IAS)
Principal Secretary to Government

Memo No. 1500 /W., Dated, 01.02.2023

Copy forwarded to Private Secretary to Hon'ble Chief Minister, Odisha / Private Secretary to Hon'ble Minister, Works, Steel & Mines, Odisha for kind information of Hon'ble Chief Minister, Odisha & Hon'ble Minister, Works, Steel & Mines, Odisha.

FA-cum-Additional Secretary to Government

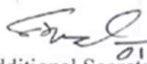
Memo No. 1501 /W., Dated, 01.02.2023

Copy forwarded to OSD to Chief Secretary, Odisha / Sr. Private Secretary to Development Commissioner-cum-Additional Chief Secretary to Govt. / Sr. Private Secretary to Principal Secretary to Govt., Finance Department for kind information of Chief Secretary / Development Commissioner-cum-Additional Chief Secretary/ Principal Secretary, Finance Department.

FA-cum-Additional Secretary to Government

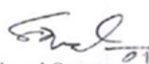
Memo No. 1502 /W., Dated, 01.02.2023

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


01/02/2023
FA-cum-Additional Secretary to Government

Memo No. 1503 /W., Dated, 01.02.2023

Copy forwarded to All Departments of Government / EIC-cum-Managing Director, OB&CC Ltd., Bhubaneswar / Managing Director, OCC Ltd., Bhubaneswar / Managing Director, OSPH&WC, Bhubaneswar for information and necessary action.


01/02/2023
FA-cum-Additional Secretary to Government

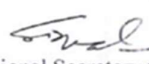
Memo No. 1504 /W., Dated, 01.02.2023

Copy forwarded to EIC (Civil), Odisha / EIC, Water Resources, Odisha / EIC (Rural Works), Odisha / All Chief Engineers, under the Administrative Control of Works Department, R.D. Department, Water Resources Department and H&UD Department / All CCEs (under Works Department) / All Superintending Engineers (under Works Department) / All Executive Engineers (under Works Department) for information.


01/02/2023
FA-cum-Additional Secretary to Government

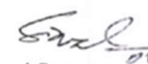
Memo No. 1505 /W., Dated, 01.02.2023

Copy forwarded to OSWAS Control Room with a request to upload in the website of Works Department.


01/02/2023
FA-cum-Additional Secretary to Government

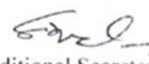
Memo No. 1506 /W., Dated, 01.02.2023

Copy along with soft copy forwarded to Gazette Cell, Commerce & Transport (Commerce) Department, Bhubaneswar with a request to publish Notification in extra ordinary issue Gazette and supply 10 (Ten) copies to this Department for official use.


01/02/2023
FA-cum-Additional Secretary to Government

Memo No. 1507 /W., Dated, 01.02.2023

Copy forwarded to Accounts-I Section / Accounts-II Section / Road Section / Plan Section / Building Section / Budget Section / NHs Section / FC & AA Section / EAP Section for information and necessary action.


01/02/2023
FA-cum-Additional Secretary to Government

GOVERNMENT OF ODISHA
WORKS DEPARTMENT

No.07556900052021(Pt.)

5992

W., Dated 27.04.2021

OFFICE MEMORANDUM

Subject: Performance Security

To ensure due performance of contract **Performance Security** is to be obtained from the successful bidder who is awarded the contract as per codal provision under Rule-13 of Appendix-VIII of OPWD Code, Volume-II. As per Rule-13 of Appendix-VIII of OPWD Code, Volume-II, the contractor has to deposit 1% of the bid amount at the time of drawal of Agreement as initial security deposit. Besides, contractors of Super, Special, A and B Classes will be required to furnish Security Deposit by way of deduction from their bills at the rate of 5% of the gross amount of each bill whereas in case of C & D Class Contractors, such deduction will be made at the rate of 3% of the gross amount of each bill. As per Note-I of Para 3.5.19 of OPWD Code, Volume-I, in case of execution of work under Special Contract Agreement, an insurance policy of guarantee bond from two well known wealthy persons of probity, nominated by the contracting firm and approved by the Chief Engineer for a sum equivalent to 10% of the contract amount may be taken.

2. On account of slowdown in economy due the Pandemic COVID-19, the State Government is in receipt of many representations that there is acute financial crunch among many commercial entities and contractors, which in turn is affecting timely execution of the contracts. It has also been represented that this may affect the ability of the contractors to bid in tenders and hence reduce competition. Requests are being received for reduction in quantum of Security Deposits in the Government contracts. Besides, Government of India have also reduced the rate of Performance Security from **five to ten per cent** to three percent of the value of the contract.

3. In view of the above, **the State Government is pleased to reduce Performance Security from existing five to ten per cent to three per cent of the value of the contract for all existing contracts.** However, the benefit of reduced Performance Security will not be given in the contracts under dispute wherein arbitration / court proceedings have been already started or are contemplated.

4. All tenders / contracts issued / concluded till **31.12.2021** should also have the provision of reduced Performance Security.

5. In all contracts where Performance Security has been reduced to 3%, in view of the above stipulations, the reduced percentage of Performance Security shall continue for the entire duration of the contract and there should be no subsequent increase of Performance Security even beyond **31.12.2021**. Similarly, in all contracts entered into with

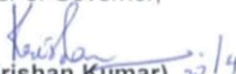


the reduced percentage of Performance Security of 3%, there will be no subsequent increase in Performance Security even beyond 31.12.2021.

6. Wherever, there is compelling circumstances to ask for Performance Security in excess of three per cent as stipulated above, the same should be done only with the approval of the next higher authority to the authority competent to finalise the particular tender. Specific reasons justifying the exception shall be recorded.

7. The relevant provision of the OPWD Code stands amended accordingly.

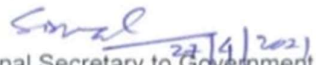
By order of Governor,


(Dr. Krishan Kumar) 27/4

Commissioner-cum-Secretary to Government

Memo No. 5993 /W., Dated 27-04-21

Copy forwarded to Private Secretary to Hon'ble Chief Minister, Odisha/Private Secretary to Hon'ble Minister, Works, Steel & Mines, Odisha for kind information of Hon'ble Chief Minister, Odisha & Hon'ble Minister, Works, Steel & Mines, Odisha.


FA-cum-Additional Secretary to Government

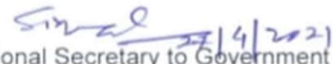
Memo No. 5994 /W., Dated 27-04-21

Copy forwarded to OSD to Chief Secretary, Odisha/Sr. Private Secretary to Development Commissioner-cum-Additional Chief Secretary, Odisha/ Sr. Private Secretary to Principal Secretary, Finance Department for kind information of Chief Secretary/Development Commissioner-cum-Additional Chief Secretary/Principal Secretary, Finance Department.


FA-cum-Additional Secretary to Government

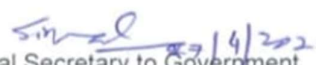
Memo No. 5995 /W., Dated 27-04-21

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


FA-cum-Additional Secretary to Government

Memo No. 5996 /W., Dated 27-04-21

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


FA-cum-Additional Secretary to Government

Memo No. 5997 /W., Dated 27.04.21

Copy forwarded to EIC (Civil), Odisha/EIC (Buildings), Odisha/EIC, Water Resources, Odisha/EIC (Rural Works), Odisha/All Chief Engineers, under the Administrative Control of Works Department, R.D. Department, Water Resources Department and H&UD Department/All Superintending Engineers (under Works Department)/All Executive Engineers (under Works Department) for information and wide circulation among subordinate offices.

Signed 27/04/2021
FA-cum-Additional Secretary to Government

Memo No. 5998 /W., Dated 27.04.21

Copy forwarded to OSWAS Control Room with a request to upload in the web-site of Works Department.

Signed 27/04/2021
FA-cum-Additional Secretary to Government

Memo No. 5999 /W., Dated 27.04.21

Copy forwarded to the Director, Printing, Stationary & Publication, Odisha, Cuttack by e-mail (deputydirectorpp@redifmail.com) for publication of this Office Memorandum in the next issue of Odisha Gazette and supply 20 (Twenty) copies to this Department for official use.

Signed 27/04/2021
FA-cum-Additional Secretary to Government

GOVERNMENT OF ODISHA
WORKS DEPARTMENT

OFFICE MEMORANDUM

No. 07554600032022- 1739 W., Dated. 3-2-2023

Sub: Codal/ Contractual provisions regarding Price Adjustment in Works Contract

Codal/Contractual provisions regarding Price Adjustment in Works Contract was under active consideration of Government for some time past. After careful consideration, Government was pleased to make the codal/ contractual provisions regarding Price Adjustment clause due to increase or decrease in rate and price of Labour, Materials, Fuels and Lubricants and Plant and Machineries, Spare Components vide Works Department O.M No. 15847/W Dtd. 19.11.2019.

2. Now, in continuation of Works Department O.M No. 15847/W dtd. 19.11.2019, Government have been pleased to make the following provisions in place of existing provision relating to "Schedule of Adjustment Data under Appendix to Bid".

[For all works, adjustment factor for Labour and POL shall be considered at the rate of 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.]

This has been concurred in by Finance Department vide their OSWAS File No. FIN-WF1-MISC-0033-2022.

By order of the Governor

(Vir Vikram Yadav, IAS)
Principal Secretary to Government

Memo No. 1740 /W., Dated, 3-2-2023

Copy forwarded to Private Secretary to Hon'ble Chief Minister, Odisha / Private Secretary to Hon'ble Minister, Works, Steel & Mines, Odisha for kind information of Hon'ble Chief Minister, Odisha & Hon'ble Minister, Works, Steel & Mines, Odisha.

Final 03/02/2023

FA-cum-Special Secretary to Government

Memo No. 1741 /W., Dated, 3-2-2023

Copy forwarded to OSD to Chief Secretary, Odisha / Sr. Private Secretary to Development Commissioner-cum-Additional Chief Secretary to Govt. / Sr. Private Secretary to Principal Secretary to Govt., Finance Department for kind information of Chief Secretary / Development Commissioner-cum-Additional Chief Secretary/ Principal Secretary, Finance Department.

Final 03/02/2023

FA-cum-Special Secretary to Government

Memo No. 1742 /W., Dated, 3-2-2023

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

Final 03/02/2023

FA-cum-Special Secretary to Government

Memo No. 1743 /W., Dated, 3-2-2023

Copy forwarded to All Departments of Government / EIC-cum-Managing Director, OB&CC Ltd., Bhubaneswar / Managing Director, OCC Ltd., Bhubaneswar / Managing Director, OSPH&WC, Bhubaneswar for information and necessary action.

Final 03/02/2023

FA-cum-Special Secretary to Government

Memo No. 1744 /W., Dated, 3-2-2023

Copy forwarded to EIC (Civil), Odisha / EIC, Water Resources, Odisha / EIC (Rural Works), Odisha / All Chief Engineers, under the Administrative Control of Works Department, R.D. Department, Water Resources Department and H&UD Department / All CCEs (under Works Department) / All Superintending Engineers (under Works Department) / All Executive Engineers (under Works Department) for information.

Final 03/02/2023

FA-cum-Special Secretary to Government

Memo No. 1745 /W., Dated, 3-2-2023

Copy forwarded to OSWAS Control Room with a request to upload in the web-site of Works Department.

Final 03/02/2023

FA-cum-Special Secretary to Government

Memo No. 1746 W., Dated, 3-2-2023

Copy along with soft copy forwarded to Gazette Cell, Commerce & Transport (Commerce) Department, Bhubaneswar with a request to publish Notification in extra ordinary issue Gazette and supply 10 (Ten) copies to this Department for official use.

[Signature]
03/02/2023

FA-cum-Special Secretary to Government

Memo No. 1747 W., Dated, 3-2-2023

Copy forwarded to Accounts-I Section / Accounts-II Section / Road Section / Plan Section / Building Section / Budget Section / FC & AA Section / EAP Section for information and necessary action.

[Signature]
03/02/2023

FA-cum-Special Secretary to Government

GOVERNMENT OF ODISHA
WORKS DEPARTMENT

OFFICE MEMORANDUM

No. 07764600022025 173 /W., Bhubaneswar Dt. 03/01/20

Sub:- Amendment of Codal & Contractual Provisions.

After careful observation, Government has been pleased to abolish the extant provisions of threshold negative bid caps (14.99%) introduced in Appendix-IX, Clause 36 of OPWD Code Volume-II in the procurement of works undertaken by the Govt of Odisha and its agencies to ensure the procurement process results in a viable and successful manner with adoption of following incremental **Additional Performance Security(APS)** system:

1. 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.

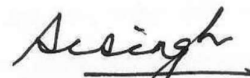
VI. Justification for abnormally low bids shall be scrutinized by the Departmental Technical Committee and recommended to the competent authority of the Administrative Department for the approval of the Additional Performance Security(APS). An abnormally low bid is one in which the Bid price, in combination 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.

2. These amendments shall take effect from the date of issue of the O.M.

3. Accordingly, the relevant existing codal/contractual provision stands modified with effect from the date of issue of this O.M.

4. This has been concurred in by the Finance Department vide **File No. FIN-WF1-MISC-0102-2025**

By order of the Governor

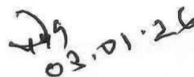


Principal Secretary to Government

Memo No. 174 /W, dated 03/01/26

Copy along with soft copy forwarded to Gazette Cell, Commerce and Transport (Commerce) Department, Bhubaneswar, for information and necessary action.

They are requested to publish the Office Memorandum in the extraordinary issue of the Gazette and supply 20 (twenty) copies to this Department.

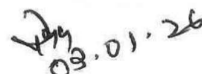


03.01.26

EIC-cum-Special Secretary to Government

Memo No. 175 /W., Dt. 03/01/26

Copy forwarded to the P.S. to the Hon'ble Chief Minister, Odisha for the kind information of the Hon'ble Chief Minister.



03.01.26

EIC-cum-Special Secretary to Government

Memo No. 176 /W., Dt. 03/01/26

Copy forwarded to the P.S. to the Hon'ble Minister, Law, Works, Excise, Odisha for the kind information of the Hon'ble Minister.

Jh
03.01.26

EIC-cum-Special Secretary to Government

Memo No. 177 /W., Dt. 03/01/26

Copy forwarded to the OSD to the Chief Secretary, Odisha, for the kind information of the Chief Secretary, Odisha.

Jh
03.01.26

EIC-cum-Special Secretary to Government

Memo No. 178 /W., Dt. 03/01/26

Copy forwarded to Sr. P.S. to the DC-cum-ACS, Odisha, for the kind information of the DC-cum-ACS, Odisha.

Jh
03.01.26

EIC-cum-Special Secretary to Government

Memo No. 179 /W., Dt. 03/01/26

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

Jh
03.01.26

EIC-cum-Special Secretary to Government

Memo No. 180 /W., Dt. 03/01/26

Copy forwarded to P.S. to the Principal Secretary to Govt., Finance Department/ H & UD Department for the kind information of the Principal Secretary, Finance Department/ H & UD Department respectively.

Jh
03.01.26

EIC-cum-Special Secretary to Government

Memo No. 181 /W., Dt. 03/01/26

Copy forwarded to P.S. to the Commissioner-cum-Secretary to Govt., RD Department/ PR&DW Department for the kind information of the Commissioner-cum-Secretary, RD Department/ PR&DW Department respectively.

Jh
03.01.26

EIC-cum-Special Secretary to Government

Memo No. 182 /W., Dt. 03/01/26

Copy forwarded to the Finance Department/ H & UD Department/ RD Department/ PR&DW Department/DoWR/ all other Departments for information and necessary action.

Jh
03.01.26

EIC-cum-Special Secretary to Government

Memo No. 183 /W., Dt. 03/01/26

Copy forwarded to the FA-cum-Special Secretary to Government, Works Department for kind information and necessary action.

Jm
03.01.26

EIC-cum-Special Secretary to Government

Memo No. 184 /W., Dt. 03/01/26

Copy forwarded to all Collectors & DMs for information and necessary action.

Jm
03.01.26

EIC-cum-Special Secretary to Government

Memo No. 185 /W., Dt. 03/01/26

Copy forwarded to EIC(Civil-cum-Roads), Odisha /EIC, Water Resources, Odisha/ EIC, Rural Works, Odisha/ EIC (PH), H&UD Department/ EIC (RWSS) PR&DW Department/ EIC, DPQ, Odisha/ EIC, NHs, Odisha/ EIC-cum-Managing Director, OB & CC Ltd., Bhubaneswar, Odisha/ Chief Engineer, Roads-I & II, Odisha / Chief Engineer, Buildings-I & II, Odisha / Chief Engineer, NHs, Odisha/ Chief Engineer, Bridges, Odisha / Chief Engineer, P&IP, Odisha / Chief Engineer, RD &QP, Odisha /Chief Engineer, RW- I & II, Odisha / Chief Engineer, PH (Urban), Odisha / Chief Engineer, Electricity, Odisha / Managing Director, OCC Ltd., Bhubaneswar/ all State PSUs for kind information and necessary action.

Jm
03.01.26

EIC-cum-Special Secretary to Government

Memo No. 186 /W., Dt. 03/01/26

Copy forwarded to all CCEs/ SEs/ EEs of the Works Department for kind information and necessary action.

Jm
03.01.26

EIC-cum-Special Secretary to Government

Memo No. 187 /W., Dt. 03/01/26

Copy forwarded to Roads Section/ A/C-I Section /A/C-II Section/ Plan Section / Building Section / Budget Section / N.H. Section / FC & AA Section, Works Department for information and necessary action

Jm
03.01.26

EIC-cum-Special Secretary to Government

GOVERNMENT OF ODISHA

WORKS DEPARTMENT

OFFICE MEMORANDUM

No. 07764600022025 632 /W., Bhubaneswar Dt. 2.1.26

Sub- Clarification on Works Department Office Memorandum No.173 dt 03.01.2026 regarding Amendment of Codal and Contractual Provisions.

The following clarifications are issued on Works Department Office Memorandum No. 173 dated . 03.01.2026

1. The phrase " **to abolish the extant provisions of threshold negative bid caps (14.99%) introduced**" in the first para of the Works Department OM No. 173 dated. 03.01.2026 may be read as " **to abolish the extant provisions of threshold negative bid caps of 15 % introduced vide Works Department OM No. 12366/W dt. 08.11.2013 and amended vide Works Department OM No. 1437 dt, 31.01.2023**"
2. 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 the concerned bidders/their authorized representatives, the concerned SE/EE of the concerned Division and Divisional Accounts Officer (DAO) will remain present.
3. 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.
4. As regards the bidding process in which the tender has been floated before the issue of Works Department Office Memorandum No.173 dt 03.01.2026, the bid shall be finalized as per the earlier provisions in Appendix-IX, Clause 36 of OPWD Code Volume-II.
5. This has been concurred in by the Finance Department in File No **FIN-WF1-MISC-0102-2025**

By order of the Governor



Principal Secretary to Government

FIN-WF1-MISC-0102-2025/1/2026

Memo No. 633 /W, dated 9.1.26

Copy along with soft copy forwarded to Gazette Cell, Commerce and Transport (Commerce) Department, Bhubaneswar, for information and necessary action.

They are requested to publish the Office Memorandum in the extraordinary issue of the Gazette and supply 20 (twenty) copies to this Department.

Dec
09.01.2026

EIC-cum-Special Secretary to Government

Memo No. 634 /W., Dt. 9.1.26

Copy forwarded to the P.S. to the Hon'ble Chief Minister, Odisha for the kind information of the Hon'ble Chief Minister.

Dec
09.01.2026

EIC-cum-Special Secretary to Government

Memo No. 635 /W., Dt. 9.1.26

Copy forwarded to the P.S. to the Hon'ble Minister, Law, Works, Excise, Odisha for the kind information of the Hon'ble Minister.

Dec
09.01.2026

EIC-cum-Special Secretary to Government

Memo No. 636 /W., Dt. 9.1.26

Copy forwarded to the OSD to the Chief Secretary, Odisha, for the kind information of the Chief Secretary, Odisha.

Dec
09.01.2026

EIC-cum-Special Secretary to Government

Memo No. 637 /W., Dt. 9.1.26

Copy forwarded to Sr. P.S. to the DC-cum-ACS, Odisha, for the kind information of the DC-cum-ACS, Odisha.

Dec
09.01.2026

EIC-cum-Special Secretary to Government

Memo No. 638 /W., Dt. 9.1.26

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

Memo No. 639 /W., Dt. 9.1.26

EIC-cum-Special Secretary to Government

Copy forwarded to P.S. to the Principal Secretary to Govt., Finance Department/ H & UD Department/ Works Department for the kind information of the Principal Secretary, Finance Department/ H & UD Department/ Works Department respectively.

EIC-cum-Special Secretary to Government

Memo No. 640 /W., Dt. 9.1.26

Copy forwarded to P.S. to the Commissioner-cum-Secretary to Govt., RD Department/ PR&DW Department for the kind information of the Commissioner-cum-Secretary, RD Department/ PR&DW Department respectively.

EIC-cum-Special Secretary to Government

Memo No. 641 /W., Dt. 9.1.26

Copy forwarded to the Finance Department/ H & UD Department/ RD Department/ PR&DW Department/ DoWR/ all other Departments for information and necessary action.

EIC-cum-Special Secretary to Government

Memo No. 642 /W., Dt. 9.1.26

Copy forwarded to the FA-cum-Special Secretary to Government, Works Department for kind information and necessary action.

EIC-cum-Special Secretary to Government

Memo No. 643 /W., Dt. 9.1.26

Copy forwarded to all Collectors & DMs for information and necessary action.

EIC-cum-Special Secretary to Government

Memo No. / 644 W., Dt. 9.1.26

Copy forwarded to EIC(Civil-cum-Roads), Odisha /EIC, Water Resources, Odisha/ EIC, Rural Works, Odisha/ EIC (PH), H&UD Department/ EIC (RWSS) PR&DW Department/ EIC, DPQ, Odisha/ EIC, NHs, Odisha/ EIC-cum-Managing Director, OB & CC Ltd., Bhubaneswar, Odisha/ Chief Engineer, Roads-I & II, Odisha / Chief Engineer, Buildings-I & II, Odisha / Chief Engineer, NHs, Odisha/ Chief Engineer, Bridges, Odisha / Chief Engineer, P&IP, Odisha / Chief Engineer, RD &QP, Odisha /Chief Engineer, RW-I & II, Odisha / Chief Engineer, PH (Urban), Odisha / Chief Engineer, Electricity, Odisha / Managing Director, OCC Ltd., Bhubaneswar/ all State PSUs for kind information and necessary action.

09.01.2026
EIC-cum-Special Secretary to Government

Memo No. / 645 W., Dt. 9.1.26

Copy forwarded to DDG & State Informatics Officer. National Informatics Centre, Odisha State Centre, Bhubaneswar, Email- sio-ori@nic.in for information and necessary action.

09.01.2026
EIC-cum-Special Secretary to Government

Memo No. 646 /W., Dt. 9.1.26

Copy forwarded to the Chief Executive Officer (Administrative), Odisha Computer Application Centre(OCAC), Bhubaneswar, for information and necessary action.

09.01.2026
EIC-cum-Special Secretary to Government

Memo No. 647 /W., Dt. 9.1.26

Copy forwarded to all EICs/CEs/CCEs/ SEs/ EEs of the Works Department for kind information and necessary action.

09.01.2026
EIC-cum-Special Secretary to Government

Memo No. 648 /W., Dt. 9.1.26

Copy forwarded to Roads Section/ A/C-I Section /A/C-II Section/ Plan Section / Building Section / Budget Section / N.H. Section / FC & AA Section, Works Department for information and necessary action

09.01.2026
EIC-cum-Special Secretary to Government

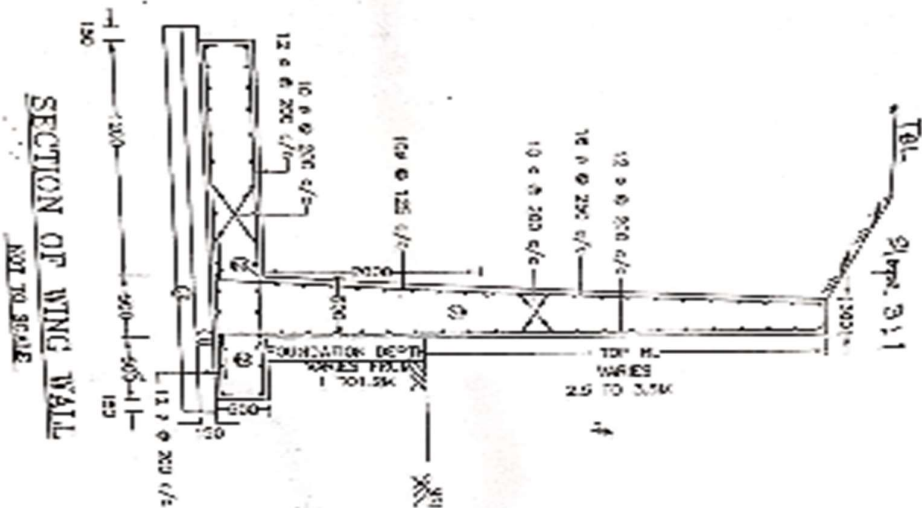


FIN-WF1-MISC-0102-2025/1/2026

SECTION – 7
DRAWING

SPECIFICATION

1. CEMENT CONCRETE M12 GRADE WITH HARD GRANITE CRUSHER BROKEN COARSE AGGREGATE OF MAXIMUM NOMINAL SIZE OF 40MM AND DOWN GRADED (AS PER IS-455-2002)
2. R.CEMENT CONCRETE M25 GRADE WITH HARD GRANITE CRUSHER BROKEN COARSE AGGREGATE OF MAXIMUM NOMINAL SIZE OF 20MM AND DOWN GRADED (AS PER IS-455-2002)
3. COARSE SAND FILING OF 150MM THICK



STANDARD DRAWING OF R.C.C. RETAINING WALL 2.5M TO 3.5M OF DEO IRRIGATION PROJECT.

GOVERNMENT OF KARNATAKA
DEPARTMENT OF WATER RESOURCES

DEO IRRIGATION PROJECT

DESIGN -

[Signature]
S. S. Srinivas
(A.E.E.)

SUPERV -

[Signature]
S. S. Srinivas
(Superintending Engineer)

APPROVED

[Signature]
S. S. Srinivas
(Superintending Engineer)

CHKD -

[Signature]
S. S. Srinivas
(A.E.E.)

RECHK -

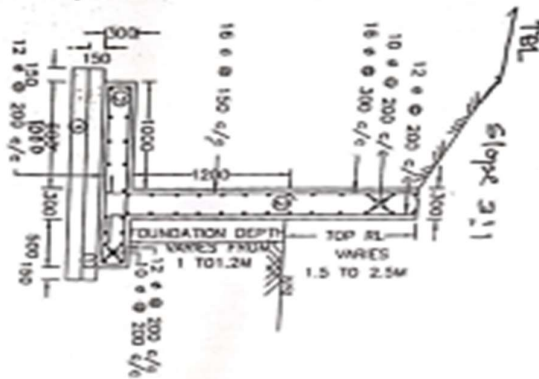
[Signature]
S. S. Srinivas
(Superintending Engineer)

DEO CANAL DIVISION, KARNATAKA, MYSURU REGION

FILE NO -

YEAR - 2023

002-02-84/2023-24
12-08-2023



SECTION OF WING WALL

NOT TO SCALE

SPECIFICATION

1. CEMENT CONCRETE M15 GRADE WITH HARD GRANITE CRUSHER BROKEN COARSE AGGREGATE OF MAXIMUM NOMINAL SIZE OF 40MM AND DOWN GRADED (AS PER IS-456-2000)
2. REINMENT CONCRETE M25 GRADE WITH HARD GRANITE CRUSHER BROKEN COARSE AGGREGATE OF MAXIMUM NOMINAL SIZE OF 20MM AND DOWN GRADED (AS PER IS-456-2000)
3. COARSE SAND FILLING OF 15MM THICK

STANDARD DRAWING OF R.C.C. RETAINING WALL 1.5M TO 2.5M OF DEO IRRIGATION PROJECT.

GOVERNMENT OF ODISHA
DEPARTMENT OF WATER RESOURCES,
DEO IRRIGATION PROJECT

DSGN. -

Dr. A. K. Kishor
(AEC)

SUBM. - 16/06/23
Dr. A. K. Kishor
(Superintending Engineer)

APPROVED

CHD. -

Dr. A. K. Kishor
(AEC)

RECM. - 16/06/23
Dr. A. K. Kishor
(AEC P.A. to C.E.C.)

Dr. A. K. Kishor
(Chief Construction Engineer)

DEO CANAL DIVISION, KARANJA, MAYURBHANJ

FILE NO. -

YEAR-2023

CHD.NO. - 83/2023-24
19.08.2023

