GENERAL CONDITIONS

GENERAL CONDITIONS OF CONTRACT

1. Definitions :

In the contract (as hereinafter defined) the following expressions will have the meanings hereby assigned to them.

(a) APPROVED/APPROVAL : Means approved in writing.

(b) CONSTRUCTION PLANT :

Means all equipments appliances of things of whatsoever nature required for the execution, completion or maintenance of the work or temporary work but does not include materials or other things intendent to from or forming part of the permanent work

(c) CONTRACT :

Means the instruction and information for tenderers, general and special conditions of contract specifications, drawings, tender, (including the schedules of quantities and tender prices) the formal agreement and agenda and attachments related to the above.

(d) CONTRACTOR :

Means the particular person, firm or corporation with whom the contract has been made for executing the works.

(e) WORK :

The word “work (or works)” wherever used in this document shall be hold to comprise not only works to be executed in accordance with contract but also accessories thereto.

(f) DAY :

Means a day from midnight to midnight.

(g) DRAWINGS :

Means the drawings referred to in the specifications any modifications of such drawings approved in writing by the Executive Engineer and such other drawings as may from time to time be furnished or approved in writing by the Executive Engineer.

(h) SPECIFICATONS :

The word "specification" shall mean, collectively all the terms and stipulations contained in this documents.

(i) EXECUTIVE ENGINEER :

Means the Executive Engineer-in-Charge of the work or specified parts of the work under the contract or such other departmental assistants or subordinates to whom the Executive Engineer may have delegated certain, duties acting separately within the scope of the particular duties entrusted to them.

It is however, to be distinctly understood that no delegation of powers shall be made to such departmental assistants or subordinate respect of supervision to ensure compliance of the contract conditions.

(j) GOVERNMENT OF JHARKHAND:

Means Government of Jharkhand, Department of Water Resources (Irrigation), Employer or Owner.

(k) I.S.S. :

Means Indian Standard Specifications.

(l) MONTH:

Means from the beginning of a given date of a calendar month to the end of the proceeding date of the next calendar month.

(m) SITE :

Means the lands and other places on, under in or through which the works are to be executed or carried out and any other lands or places provided by the owner for the purpose of the contract together with such other places as may be specifically designated in the contract or subsequently approved as forming part of site.

(n) SUPERINTENDING ENGINEER :

Means the Superintending Engineer of the circle in overall charge of the work.

(o) TEMPORARY WORKS :

Means all temporary works of every kind required for the performance for the contract.

(p) WEEK :

Means seven consecutive days.

(q) CHIEF ENGINEER :

Means the Chief Engineer, Water Resources (Irrigation) Department,_____(place to be mentioned).

(r) M.TON :

The word "M.Ton" used in the @ Specification shall mean a matric ton of 1,000 Kg.

(s) ELEVATION/REDUCED LEVEL :

Wherever figures are shown after the word "elevation/reduced level" or an abbreviation thereof or when figures representation "elevation or reduced level" are given, they shall mean the height above the mean sea level.

(t) DEPARTMENT :

"Department" shall mean the Water Resources Department of the Government of Jharkhand.

(u) SECURITY DEPOSIT :

"Security Deposit" shall mean all deposit whether in cash or Government securities pledged to the Government for adjustment in case of compensation or penalties & Which may stand forfeited either in part of or whole as the situation demand.

(v) CONTRACT PRICE :

"Contract price" means the sum accepted, on the sum calculated in accordance with the price in the contract and or the contract rates payable to the contractor for the full and entire execution and completion of the works:

(w) DEVIATION ORDER :

"Deviation order" means an order given by the Engineer-in-Charge effect additions and alteration.

(x) E/I :Means Engineer Incharge.

(y) WORK ORDER :

Work order means authorization by the competent authority of the department to start Work.

2. INTERPRETATIONS :

Words importing the singular only also include plural, he includes he and vice-versa unless this repugnant to the context.

Wherever the terms "SPECIFICATIONS" is used apart form a specified specification, it shall mean the specification or plan prepared for a particular item as instructions to the contractor in executing that item of work.

3. PERIOD OF COMPLETION :

The period of completion shall be mentioned in the B.O.Q. irrespective of whether the contract award is given in slices or in package.

4. LANGUAGE OF THE CONTRACT :

All written material and correspondence in connection with the contract shall be in English or Hindi.

5. EARNEST MONEY & SECURITY DEPOSIT :

The earnest money @ 2% of the estimated amount shall be deposited at the time of filing tender. At the time of executing agreement by the successful contractor, they will have to deposit as a security money @ 5% of the agreement value, so that it becomes not less than 5% of Agreement amount 5% deduction from running bill/final bill shall be done except mentioned above. In accordance to letter no. 430 dated 19.11.2020 of Chief Engineer (Monitoring), Water Resources Department, Jharkhand and in compliance to letter no. 2146(S) dated 09.09.2020 issued by Road Construction Department, Jharkhand, the rate below 10% from the cost of BOQ is acceptable. The additional performance security for the tender below 10%, it will be –(i) from 10% to 20% below rate from the cost of bill of quantity @ 20% additional performance security (ii) More than 20% below rate from the cost of bill of quantity @ 30% additional performance security will be applicable. Regarding this provision Jharkhand PWD Code is amended by Clause 172(a) after deleting Clause 163(a).

The Security deposit less any amount due shall be returned to the Contractor after the defect liability period is over and subject to the Executive Engineer certifying that no liability attend to the Contactor.

6. NOTICE AND INSTRUCTIONS :

The Contractor shall furnish the postal address of his site office. Any notice or instruction to be given to the Contractor under the terms of the contract shall be deemed to have been served if it has been delivered to his authorized agent or representative at site, or sent by registered letter to the site office: or to the address of the firm last provided by the contractor.

7. TOOLS, PLANT AND EQUIPMENTS :

The Contractor shall provide at his own expense all Tools, plants and equipments required for the execution of the work.

8. PURPOSE OF DRAWING, SPECIFICATION AND CONFORMANCE THERETO:

The contract drawings read together with the contract specification are intended to show and explain the manner of executing the work and to indicate the type and class of materials to be used.

The work shall be carried out in accordance with the directions of the Executive Engineer in accordance with the drawings and specifications which form part of the contract & in accordance with such further drawings, details and instructions may from time to time be given by the Executive Engineer.

It shall be responsibility of the Contractor to promptly bring to the notice to the Executive Engineer any error, discrepancy in the contract documents & obtain his orders thereon. Only stated dimensions are to be taken and those obtained from scaling the drawing. In case of any discrepancy between the description of items in the schedule of quantities and the specification the latter shall prevail. In case of any feature of the work is not fully described and set forth in the drawing and specifications, the Contractor shall forthwith apply to the Executive engineer for further instruction, drawings and specification.

9. MODIFICATION :

The Executive Engineer/Competent Authority may order modifications, at any time, before the completion of the work no modifications shall be made unless so ordered.

10. SIGNED DRAWINGS NO AUTHORITY TO THE CONTRACTOR :

Signed drawings along shall not be deemed to be an order for work unless it is entered in the agreement or schedule or drawings under proper attestation of the Contractor and the Executive Engineer or unless it has been sent to the Contractor by the Executive Engineer with a covering letter confirming that drawing is an authority for work in the contract.

11. COPIES OF DRAWINGS & SPECIFICATIONS :

Copies of the drawings, any modified or supplementary drawings and one specifications shall be furnished free of cost to the contractor.

12. PLANS AND DRAWINGS :

The Contractor shall submit the following information, in triplicate, to the Executive Engineer for approval within the time stipulated against each tem below

(a) A general layout plan of construction plant and equipment for the execution of work within fourteen days from the date of notice to proceed with the work and.

(b) Drawings or prints showing the location of major plants and other facilities which he propose to put up at the site, including any changes in the general layout, atleast, fourteen days prior to the commencement of the respective work.

13. CONTRUCTION PROGRAMME :

The contractor shall submit a detailed year wise construction programme within *07 days* of the date of notice to proceed with the work. This programme may be reviewed and revised every year at the beginning of the working season.

14. REFERENCE MARKS AND BENCH MARKS :

The basic centre lines, reference points and bench marks will be fixed by the department. The Contractor shall establish at his cost, at suitable points, additional reference lines and bench marks as may be necessary. The Contractor shall remain responsible for the sufficiency and accuracy of all his bench marks and reference lines. He shall take precautions to see the all the lines. Points and bench marks fixed by the department are not disturbed by his work and shall make good any such damage.

15. SUPPLY OF MATERALS BY THE GOVERNMENT :

All the materials are to be supplied by the contractor except the materials available in the departmental stores as directed by the E/I and for which the contractors shall be the responsibility of the following :-

(i) The Contractor shall be responsible for all transport and storage of the Govt. Supplied materials from the place of issue and shall bear all the related costs.

The Executive Engineer or his authorized representative shall be entitled at any reasonable time to inspect or examine all such materials. The Contractors shall provide reasonable assistance for such inspection examination as may be required.

(ii) All materials issued to the Contractor and not used on the work shall remain the property of the Government. The Contractor shall not remove such material from the site without the permission of the Executive Engineer.

(iii) The Contractor shall keep an accurate record of use of government material used on the works in a prescribed manner.

(iv) Whenever materials issued to the Contractor are in excess of the requirements, the Contractor shall return such surplus materials to the place of issue at his cost. The materials returned by the Contractor shall be credited to him at the rates at which they were originally issued less the value of any while in the custody of the Contractor. On completion of the work, if the Contractor fails to return the surplus materials, the Executive Engineer, in addition to any other liability which the Contractor will incur as a result of his failure to return these materials, by a written notice to the Contractor, may charge him for such surplus materials not retuned, at penal rate of the market rate or prevailing schedule of rate at the time of effecting recovery plus 10% whichever is higher as per rules provided that same is not returned back by him in good and acceptable conditions to the departmental stores at his own cost.

16. MATERILAS AND WORKMANSHIP :

(a) Quality: All materials, articles workmanship shall be of the most suitable quality for the work.

(b) Tests inspection rejection of defective materials and work :

The Contractor shall without extra cost provide samples and co-operate in the testing of materials and inspection of the works. The Executive Engineer shall have access at all times to the places where materials are being made for use under the contract to determine that manufacture is proceeding in accordance with the drawings and specification and to the place of storage. The Executive Engineer or Assistant Engineer may reject at any stage any work which he

considers to be defective in quality and he shall not be debarred from rejecting wrought materials by reason as office having previously passed them in an unworked condition. Any portion of the work or materials rejected shall be removed form the work site at the Contractor's expense upon written instructions to that effect by the Executive Engineer. Replacement of such work or materials shall be made at the Contractor's expense.

In lieu of removing work or materials which are not in accordance with the contract, the Executive Engineer may allow such work of materials to remain, and in that case work may be paid at the reduced rates as may be decided by the Executive Engineer/or as per department rules.

(c) Covering of Works ;

No work shall be covered up or put out of view without the approval of the Executive Engineer and the Contractor shall provide full opportunity for examination and measurement of such work before it is covered up or put out of view. The contractor shall give the due notice to the Executive Engineer whenever such work is ready for examination and the Executive Engineer shall with in a reasonable period arrange for examination and measuring such work, unless he considers it unnecessary and advises them accordingly.

(d) Opening of work for inspection :

The Contractor shall at request of Executive Engineer open for inspection any work covered up. In the case or work so opened up the Executive Engineer shall promptly, after the receipt of a notice form the Contractor that the works has been opened, make or cause the inspection thereof to be made. If the contractor refuse or neglect to comply with such a request the Executive Engineer may cause such work to be opened up. If the said work has been covered up in contravention of the Executive Engineer instructions, or if on being opned up it be found not in accordance with the contract requirements, the expenses of opening and replacing it shall be borne by the Contractor. If the work has been covered up in contravention of such inspection or if on being opened up it be found to be in accordance with the contract requirements, the expenses shall be borne by the Government.

(e) Defect Liability :

The Contractor shall be responsible to make good (at his own expense) with in such period as may be squatted by the Executive Engineer any defect which may develop or may be noticed before the expiry of *180 days* from the certified date of completion and which is attributable to the Contractor. All notices of such defects shall be given to the contractor promptly. In case the Contractor fails to make good the defects, the Executive Engineer may employ other person to make good such defects and all expenses consequent thereof and incidental thereto shall be borne by the Contractor.

In the event Government takes over portions of work as they are completed, the liability of the Contractor under this clause of those portions shall extend to a ……*(period)* from the actual dates on such portions of the work are taken over.

(f) Contractors Superintendence and Supervision :

The contractor shall provide all necessary superintendence during the execution of works and as long thereafter may be necessary for the proper fulfilling of the Contractor's obligations under the contract. The contractor or a competent and authorized agent or representative approved on in writing by the Executive Engineer, which approval may at any time be withdrawn is to be constantly present on the works and shall give his whole time to the superintendence of the same.

The contractor shall provide and employ sufficient number of qualified man for supervision on all aspects of work as per department rules/guidelines .

(g) Construction Plant :

The Contractor shall provide and install all necessary construction plant and shall use such methods and appliances for the performance of all the operations connected with the work embraced under the contract as will secure a satisfactory quality of work and rate of progress which will ensure the completion of the work within the time specified.

(h) Setting out work :

The contractor shall be responsible for the correct setting out of all works at his cost. The contractor shall execute the work true to alignment, grade and levels as shown in the drawings and as directed by the Executive Engineer and shall check these at frequent intervals.

The Contractor shall provide, all facilities like labour and instruments, and shall cooperate with the Executive Engineer to check all alignments grades, levels and dimensions, Such checking shall not absolve the Contractor of his own responsibility or maintaining the accuracy of the work.

17. INFORMATION AND DATA :

The information and data furnish herein relative to the work and site Connections are general. It shall be responsibility of the Contractor to fully acquaint himself with the location of works quarries, local conditions and other aspects which are relevant to the work.

18. USE AND CARE OF SITE :

The Contractor will be permitted to use without charge the site and the land shown in the drawing for execution of work, labour staff colonies, site offices work shop or store and related activities. The Contractor shall not commence any operation on such lands except with the approval of the Executive Engineer if these lands are not adequate, the Contractor may have to make his own arrangements for additional lands.

The Contractor shall not demolish, remove or alter the structures, trees or other facilities on the site without prior approval of the Executive Engineer.

All rubbish shall be burnt or removed from the site at it accumulates. All surface and soil drains be kept in a clean, sound and workman like state. All the areas of the Contractor's operations shall be cleared before returning them to the Executive Engineer.

19. PROTECTION AND ADJOINING PREMISES :

The contractor shall protect adjoining sites against structural, decorative and other damages that could be caused by the execution of these works and make good at his cost for any such damages.

20. LOCAL ROADS :

The existing public roads near the site of work and the roads contracted by the Government in the works area are shown in drawings. The Contractor may construct and maintain additional roads if required at his own expenses.

21. ACCIDENTS :

It shall be the Contractor's responsibility to protect against accidents on the work. He shall indemnify the Government against any claims for damage of for injury to persons or properties resulting form and in the course of work and also under the provision of the workmen's compensation Act.

On the occurrence of an accident arising out of the works which results in death or which is so serious as to be likely to result in death, the Contractor shall within twenty four hours of such accident. report in writing to the Executive Engineer the facts stating clearly and in sufficient details the circumstances of such accidents and the subsequent action. All other accident on the works involving injuries to persons or damage to property other than that the Contractor shall be promptly reported the Executive Engineer, stating clearly and sufficient details the facts and circumstances of the accidents and the action taken. In all cases the Contractor shall indemnify the Government against all loss or damage resulting directly or indirectly from the contractor's failure to report in the manner aforesaid. This include penalties or fines, if any payable by the Government as a consequence of failure to give notice under the Workmen's Compensation Act, or failure to the provisions of the said compensation may become payable under the workmen's compensation Act VII of 1923 including all modifications there of whether such compensation may become payable by the Contractor or by the Government as principal employer, The Executive Engineer may retain out of money due and payable to the contractor such sum or sums of money as may, in the opinion of the Executive Engineer be sufficient to meet such liability. On receipt of award from the Labour Commissioner in regard to quantum of compensation the difference in amount will be re-imbrued to or recovered from the contractor.

22. REMOVAL OF CONTRACTOR'S MEN:

The Contractor shall, on the written direction of the Executive Engineer immediately remove from the works any persons employed thereon, who may in the opinion of the Executive Engineer be incompetent or has misconducted himself, Such person shall not be employed again, on the works, without the written permission of the Executive Engineer.

23. CERTIFICATE OF COMPLETION OF WORKS :

As soon as the work is completed, the contractor shall give notice of such completion to the Executive Engineer and within ……(period) of receipt of such notice, the Executive Engineer shall furnish the Contractor with a certificate of completion or otherwise.

24. TOOLS AND DUTIES :

The contractor shall, unless otherwise specifically provided in the contract pay all duties tolls fees, royalties and other taxes on materials and articles that he my use.

25. OLD CURIOSITIES :

All old curiosities relies, coins minerals and any other item of archeological importance found in excavation on pulling down shall be the property of the Government and shall be handed over to the Executive Engineer, Should any structures be uncovered the Executive Engineer's instructions shall be obtained before its demolition or removal.

26. ENGINEER'S DECISION :

It shall be accepted as an inseparable part of the contract the in matter regarding materials, workmanship, removal of improper work, interpretation of the contractor drawings and contract specifications, mode of procedure and the carrying out of the work, the decision of the Superintending Engineer, which shall be given in writhing shall be final and binding on the Contractors.

The Superintending Engineer's final authority applies to technical considerations and does not include decisions regarding sums due to or from the Contractor or extension of time.

27. OTHER CONTRACTORS :

When two or more contractors are engaged on work in the same vicinity, they shall work together in a spirit of co-operation and accommodation. The Contractor shall not take or cause to be taken any steps or action that may cause disruptions discontent or disturbance to the works, labour and arrangements of other Contractors in neighboring project localities. In case of any difficulties amongst the Contractors. The Executive Engineer shall direct the manner in which contractor shall conduct his work so far as it effects the others.

28. OTHER WORKMEN :

The Executive Engineer shall have full authority to depute workmen on the work site to execute other works not included in the contract. The Contractors shall afford every reasonable facility, during working hours, to enable such workmen to carry out the other works provided that such works shall be carried out in such a manner as not to liable the progress of the work included in the contract. The Contractor, however, shall not be liable for any damage which may happen to or be occasioned by such other works, provided he complies with the instructions in connection there with and provide that the damage is not caused by the Contractor on his workmen.

29. SCHECULE OF QUANTITIES :

Variation in the quantities of work in the bill of quantities shall not vitiate the Contract. The rates quoted for the individual items shall apply for the quantities of work increased or decreased should quantities of work actually involved under any item exceed quantities provide in the tender the rate of such excess quantity provided in the tender may be revised in accordance with the procedure indicated under clause Extra Items' However, the said revised item rate shall not exceed the item rate quoted. Should the quantity of work actually involved under any item be reduced no claim on this account is admissible.

30. EXTRA ITEMS :

Extra items of work shall not vitiate the contract. The Contractor shall be bound to execute extra items of works as directed by the Executive Engineer. The rates for extra items are to be decided according to department rules/guidelines.

31. PAYMENTS AND CERTIFICATES :

Payment for the work done by the Contractor will be based on measurement recorded at various stages of the work. The Contractor or his authorized agent or representative shall be present at the time of recording of each set of measurements and sign the measurement book or level field book as the token of their acceptance.

If for any reason the Contractor or his authorized agent is not available and the work is suspended by the Executive Engineer to avoid recording of measurements during the absence of the Contractor or his authorized representatives, the Deptt. shall not entertain any claim from the Contractor for any loss incurred by him on him on this account. If the Contractor or his authorized agent or representative does not remain present at the time of such measurements after the Contractor has been given a three days notice in writing, such measurements may be taken in his absence and shall be deemed to be accepted by the Contractor.

Payment will be made to the Contractor at monthly intervals. The Contractor shall submit his bills for the work done to the Executive Engineer on or before the last day of the month. The Executive Engineer shall thereafter verify the claim in the bill, arrange for admissible payment as far as possible within ten days of the presentation of the bill after deducting there from all the amounts as per terms of the contract.

On completion of the entire work, the Contractor will submit his final bill. Payment of his bill shall not be considered contusive evidences as to the sufficiency of any work or materials or correctness of measurements to which it relates, not shall it relieve the Contractor from his liabilities arising from any defects.

All interim payments shall be treated as advance payments. All payments will be made by cheque.

32. RECOVERIES :

Any recovery advised by the Government, shall be recovered from any bill or money retained from this contract.

33. RELEASE OF CLAIMS :

After completion of work and prior to final payment, the contractor shall furnish to the Executive Engineer, a release of claims against the Government arising out to the contract, other than claims specifically identified evaluated and excepted from the operation of the release by the Contractor.

34. OBSERVANCE OF LAWS, LOCAL REGULATIONS AND ATTACHMENTS:

The contractors shall confirm to all laws of the land, and the regulations and by-laws of any local authority, and water or lighting companies with whose system the structures in proposed to be connected. He shall before making any variations form the drawings or specifications that may be necessitated for so confirming, give to the Executive Engineer written notice specifying the variations proposed to be made and the reasons for making them and apply for instruction thereon.

In case the Contractor shall not receive such instructions within seven days he shall proceed with the work confirming to the provision, regulation of by laws in question and any variations in the drawings specified so necessitated shall be dealt with under clause 'Extra item'. The Contractor shall give all notice required by the said Acts, regulation or by-laws and pay all fees in connection therewith. He shall also ensure that no attachments are made against materials of works related to the contract. The Contractor shall protect and indemnify Government against all claims or liabilities arising from or based on the violation of such laws ordinance regulations by-laws, decree or attachments by him or by his employees.

35. LABOUR

The Contractor shall not employ child labour.

The Contractor shall furnish to the Executive Engineer information on the various categories of labour employed by him in the form and at such internals as may be specified.

The Contractor shall in respect of labour employed must comply with or cause to be complied with the provision of the various labour was and regulations as applicable to them in regard to all matters provided therein and shall indemnify the Government in respect of all claims that may be made against the Government for non compliance thereof by the Contractor, Not with standing anything containing herein, the Executive Engineer may take such action as may necessary for compliance of the various labour laws and recover the cost thereof from the Contractor.

In the event of the Contractor committing a default or breach of any of the provision of the labour laws and ruled and regulations as applicable, the Contractor

shall without prejudice to any other liabilities under the acts pay to Govt. a sum not exceeding Rupees on hundred per day for each day of default subject to a maximum of 1% of contract amount.

36. SAFETY PROVISIONS:

The Contractor shall at his own expense arrange for the safety in his operation as required including the provision in the Safety Manual published by the Central Water Commission New Delhi (latest edition). In case the Contractor fails to make the such arrangement the Executive Engineer shall be entitled to cause them to be provided and to recover the cost thereof from the Contractor.

For failure to comply with the provision of the safety manual the Contractor shall without prejudice to any other liability pay to the Government……(amount)/per day each day of the default.

37. WORK DURING NIGHT OR SUNDAY & HOLIDAYS :

Unless otherwise provided, none of the permanent works shall be carried out during night Sunday and authorized holidays without permission in writing. However, when work is unavoidable or necessary for the safety of life and property of works. the Contractor shall taken necessary action immediately and advise the Executive Engineer accordingly.

38. INCOME TAX:

During the course of the contract period, deduction of Income Tax be made *@2% (Two)* percent of the gross amount of such bill in excess ……..(amount) or as per Income Tax rules.

39. SALES TAX :

The rates quoted by the contractor shall be inclusive of Sales Tax 4% of the value of work will be deducted from each on account bill/final bill or as per the norms prescribed by Sales Tax department. The Contractor will be required to produce sales tax clearance certificate before clearance of the final bill prescribed by Sales Tax department. The Contractor will be required to produce sales tax clearance certificate before clearance of the final bill.

39. SALE TAX CLEARANCE CERTIFICATE :

If the Contractor is not liable to sales tax assesses he should produce a valid sales tax clearance certificate before the payment of the bill otherwise the final payment to the Contractor will be with held.

(a)

40. CONTRACTOR DYING, BECOMING INSOLVENT, INSANE OR IMPRISONED :

In the event or death or insanity of the contractor the contract may be terminated by notice in writing pasted at the site and advertised in one issue of the local newspapers. All acceptable works shall thereafter be paid at appropriate rates after recovering all the Contractor's dues to Government, to the persons entitled to receive and given a discharge for such payment.

If the contractor is imprisoned, become insolvent compound with his creditors, has a receiving order against him or carried on business under a receiver for the benefit of the creditors or any of them or being a partnership firm becomes dissolved, or being a corporation goes into liquidation or commences to be wound up not being a voluntary winding up for the purpose only amalgamation or reconstruction the Department shall be at liberty.

(a) to give such liquidator, receiver or the person in whom the contract may become vested the option of carrying out the contract or a portion thereof to be determined by the Department subject to his providing an appropriate guarantee for the performance of such contract or.

(b) to terminate the contract forthwith by notice in writing to the Contractor, the liquidator, the receiver or person in whom the contract, any become vested and take further actions as provided in the clause. Default by Contract treating as if this termination is order under the clause.

41. FOR CLOSURE OF WORKS BY GOVERNMENT :

If at any time after award of the contract the Government at any reason what-sc ever does not require the whole or any part of the work to be carried out the Executive Engineer, shall give notice in writing to that effect to the Contractor. The contractor shall not have claim to any compensation what-so-ever. on account of any profit or

advantage which as certified by the Executive Engineer for the items here under mentioned which could not fully utilized on the work because of the for closure:

(a) Preliminary site work as temporary access roads temporary labour huts staff quarters and the site offices, storage accommodation and water storage tanks.

(b) Contractor's materials either brought to site or for which the Contractor is legally bound to accept delivery from the suppliers, provided however, that the quantities of such materials are not in excess of reasonable requirement of works. The decision of the Executive Engineer in respect of reasonable quantity required for works will be final and conclusive.

(c) Materials supplied by Government except for normal wastage shall be returned at rates at which this were originally issued less allowance for any deterioration or damage which may have been caused while those materials were in the custody of the contractor. The Contractor shall also be paid the cost of transporting such materials from Government stores to the site and from the site to Government stores, the case may be.

(d) Transporting of Contractor's tools and plants from the Contractor's permanent stores to site and from the site to the Contractor's permanent stores.

(e) Mobilization and repatriation of Contractor's site and imported labour.

The Contractor shall, if required by the Executive Engineer furnish him books of account and other relevant documents as may be necessary to enable him to certify the reasonable amount payable under this condition.

42. DEFAULT BY CONTRACTOR :

If, the Contractor shall neglect or fail to proceed with the works with due diligence or he violates any of the provisions of the contract the Executive Engineer, may give the Contractor a notice, identifying, deficiency in performance and demanding corrective action. Such notice shall clearly state that it is give, under the provision of the clause. After such notice is given to the Contractor shall not remove from the site, any plant, equipment and materials. the Government shall have a lien of all such plant, equipment and materials, form the date of such notice, till the deficiencies have been corrected.

If the Contractor fails to take satisfactory corrective action within *15 days* after receipt of the notice the Executive Engineer will terminate the contract in whole or in

dart in case the entire contract is terminated, the amount of security deposit together with the value of the work done but shall not paid stand forfeited to the Government. The plant equipment and materials held under lien shall then be at the disposal of the Government.

The Executive Engineer may also take possession of the whole or part of the works, site plant, equipment and materials brought or place thereon and cause the whole or part of the work to be completed by utilizing them through other agencies, at the cost of the contractor. In such case the value of the work done through such agencies shall be credited to the Contractor to his contract prices.

On completion of such work if the expense incurred for carrying out such works as certified by the Executive Engineer are in excess of the value of the work credited to the contractor the difference shall be paid by the Contractor to the Government. He shall also be liable for the liquidated damages under the Contract.

The Executive Engineer may direct that part or the whole of such plant, equipment and materials be removed from the site within a stipulated period. If the Contractor fails to do so the Executive Engineer may cause them to be sold holding the new proceeds of such sale to the credit of the Contractor. After completion of works and settlement of amounts the lien by the Government of the Contractors plant equipment and balance of materials shall be released.

Termination of the Contract either in whole or in part shall be adequate authority for the Executive Engineer to demand discharge of the obligations from the security for performance.

43. LIQUIDATED DAMAGES :

If the contractor fails to complete the work or a designated part thereof by the stipulated completion date for the work or for that part he shall pay liquidated damage at one twentieth (1/20) of 1% of contract value for complete part per day of delay in completion and handing over to the Government. Delays required payment of liquidated damage in excess of the amount of security for performance will be sufficient cause for termination of contract and forfeiture of all security performance.

44. FORCE MAJEURE :

Neither party shall be liable to the other for any loss or damage occasioned by or arising out of acts of GOD such as unprecedented flood volcanic eruption earthquake or other convulsion of nature and other acts soon as but not restricted to general strikes invasion, the act of foreign countries hostilities or warlike operations before or after declaration of war, rebelion military or usurped power which prevent performance of the contract and which could not have been foreseen or avoided by a prudent person.

45. ASSIGNMENT OF CONTRACT :

Assignment of the contract is not permissible.

46. SUB-LETTING :

The Contractor shall not without the written consent of the Executive Engineer sublet any portion of the contract any subletting shall in no way absolve the Contractor of any of his responsibilities under this contract.

47. EXTENSION OF TIME :

Time shall be considered as the essence of the contract if however, the failure of the Contractor to complete the work as per the stipulated dates referred to above arises from delays on the part of the Government in supplying the materials or equipments, it has undertaken to supply under the contract or from delays in handling over sites or from increase in the quantity of work to be done under the Contract, or force majored an appropriate extension of time will be given. The Contractor shall request such extension with one month of the cause of such delay and in any case before expiry of the contract period.

48. SETTLEMENT OF DISPUTES :

If the Contractor considers any work demanded of him to be outside the requirements of contract, or considers any drawings record or ruling of the Executive Engineer on any matter in connection with or arising out of the contract or the carrying out of work to be unacceptable. he shall promptly ask the Executive Engineer shall give him written instructions or decision with a period of thirty days of such request.

Upon receipt of the written instruction or decision, the Contractor shall promptly proceed without delay to comply with such instruction or decision.

If the Executive Engineer fails to give his instructions or decision in writing within a period of thirty days after being requested or if the Contractor is dissatisfied with the instructions or decision of the Executive Engineer the Contractor may within thirty days after receiving the instruction of decision, appeal to Superintending Engineer, who shall afford an opportunity to the Contractor to be heard and to offer evidence in support of his appeal. This officer shall give a decision within a period of sixty days after the Contractor has been given the said evidence in support of his appeal. If the dispute is not settled the matter will have to be referred to State Government.

49. CONTRACT DOCUMENT AND MATTER TO BE TREATED AS CONFIDENTIAL :

All documents, correspondence, decision and orders concerning the contract shall be considered as confidential and restricted in nature by the Contractor and he shall not divulge or allow access to them by any unauthorized person.

50. JURISDICTION OF COURT :

In case of any legal implications, the jurisdictions for taking any case to the court of law, if found necessary shall be limited within the district where the project is situated.

51. DEVIATION :

All tenderers are cautioned, that tenders containing any deviation from the contractual terms & conditions, specification or other requirement will be rejected as non-responsive.

52. GENERAL POSITIONS OF LAND ACQUISITION :

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53. WATER SUPPLY :

The arrangement of water supply at work site shall be the responsibility of the contractor,

54. FACILITY OF DEPARTMENTAL MACHINES :

As per stipulation of the tender, the equipments shall have to be managed by the Contractor himself without any commitment, however the department may consider the request for any specific machine, if available with department near work site.

55. The Schedule rate for carriage of materials has been derived from the nearest quarry, if the Contractor brings good material from nearer quarry rate shall be reduced accordingly. No extra payment shall be made, if the contractor bring from longer distance.

Executive Engineer,
Irrigation Division, Deoghar

TECHNICAL SPECIFICATIONS
EARTH WORK

1.0 PREPARATION OF WORK AREAS

1.01 The centre line of the canal is to be marked on the ground at 30 metre intervals in straight reaches, and at 10 meter interval in the curve portions. The extent of bed width shall have to be marked at similar intervals on both sides. And at other suitable portions for checking of the alignment and gradient of the canal.
This will be done by the Contractor at his own cost and under the guidance of the Engineer-in-Charge or his authorized representative. Bench mark value of permanent pillar will be supplied by the Executive Engineer. for record and guidance. Labour, materials and tools etc. required for the job shall have to be provided by the Contractor, at his own cost.

1.02 All shrubs etc. lying along the alignment, and in the entire width of canal area shall have to be cut destumped, aprooted and removed by the Contractor within item rate of excavation or stripping. The disposal of these materials shall have to be done as per direction of Engineer-in-Charge.

1.03 The degbelling of the canal showing different location, like centre line edged of canal service road spoil, bank drains, berms etc. shall have to be done in the field by the Contractor at his own cost under the direction of the Engineer-in-Charge or his authorized representatives.

1.04 All measurements. Drawing and plans shall have to be prepared and kept for records. No separate payment will be made for these works.

2.0 STRIPPING :

2.01 Wherever the canal runs in partial cutting or filling carthen embankment is to be provided as per approved plan, drawings and directions of E/I. The area of land falling under the such embankments with an additional margin of 3 meter on either side shall have to be stripped to suitable depth by means of manual or Mechanical methods. All top soil, organic materials weathered rocks, stumps and roots of trees upto 300mm girth, bushes etc. or these stripped earth shall have to be done beyond 160 meters including all lifts and at places indicated by the Engineer-in-Charge. The stripping works done with in the canal banks will be paid at item rates. But no payments for stripping in borrow area will be as this rate is including in the rate of borrowing of fill materials.

3.0 EXCAVATION WORKS :

The sub-surface logging has been indicated in the longitudinal section of the canal as carried out during explorations studies. This information is furnished only as an indication of nature of soil to be met with – Payment will however, be made on actual classification of soil met with during excavation.

The item rates include the cost of dewatering and all other drainage arrangements. The excavation rate also provides for the excavation to be done in most conditions which lie below water table for no separate item rate is provided.

3.01 EXCAVATION OF SOIL :

This shall comprise of vegetable or organic soil, turf, sand, loam clay, mud peat black cotton soil, soft shale for loose moorum, a mixture of these and similar materials which yield to be ordinary application of pick and shovel rack or any other moulder materials having diameter in any one direction not exceeding 300mm. occurring such start shall be deemed to be covered under this category.

This shall also include:

i. Stiff, heavy, hard shale or compact moorum requiring tools, or pick or both and shovel closely applied.
ii. Gravel and cobble stone heaving 300mm maximum diameter in one direction.
iii. Soling of roads paths, etc. and hard core.
iv. Macadam surfaces such as water bound and bitumen tar bound.
v. Lime concrete, stone asonary in lime mortar and brick work in lime cement mortar mud mortar below ground level.
vi. Soft conglometerial which requires the close application of picks or scarifier to loosen and not offering reistance to digging greater than the hardness of any soil mentioned in (i) to (ii) above.

3.02 EXCAVATION IN SOFT ROCK:

Soft rock excavation shall include only excavation in rocks in hardness and texture as can be carried or split with crowbars. This shall include.

i) Lime stone and stone, laterite, hard conglomerate or other disintegrated rock which may be carried or split with crowbars.
ii) Unreinforced cement concrete which may be broken up with crowbars on picks and stone masonry in cement mortar below ground level.
iii) The classification of excavation shall be decided by the Engineer-in-charge and his decision shall be final and binding on the contractor. Hereby the use of explosive in excavation will not be considered as a reason for higher classification.

3.03 EXCAVATION IN HARD ROCK:

This will include all solid rock in place which can not be removed until loosened by blasting and wedging and all boulders or detached pieces of solid rocks of having dimension of not less than 300 mm. The rock should be such hardness and texture that it can not be loosened or broken down by ‘Sabals’. Blasting shall be resorted only after it has been certified by the Engineer-in-charge that blasting is necessary.

The hard rock shall comprise of :

i) Any rock or cement concrete for the excavation of which the use of compressor, Jack manner and blasting is required.

ii) Reinforced cements concrete reinforcement thought but not separated from the concrete below ground level.

iii) Boulders having minimum diameter of 300 mm. requiring blasting, Hard rock requiring blasting as described above but where blasting is prohibited for any season. Excavation has to be carried by chiseling, wedging or any other agreed method, blasting will be permitted only when proper precautions are taken for the protect on of life and all other properties and any damage done to the work or the property of life blasting shall be made good by the Contractor at his expense. No extra Payment shall be made for this.

Blasting shall have to be done in case where removal of hard rock is necessary is bulk.

Blasting near the finished section shall be done with light changes so as not to disturb the sub grade and the bed and slop finished. The blasting so done shall not create checks of fissures lower down as this may result. In. the hard rock so obtained will be nearly stacked by the contractor in sizeable and leveled stacks. No hard rock in such stake should be of size more than 300 mm. in any direction. They will be subject to inspection and no extra payment for stacking or further breaking shall be made. This material will be the property of the department. The same may be issued to the contractor if required.

The rock needed for work of pitching, filter or stone chips etc. shall be utilized out of the excavated hard rock and will be issued by the department at recovery rates decided by the department.

The rock needed for work of pitching, filter or stone chips etc. shall be utilized out of the excavated hard rock and will be issued by the department at recovery rates, decided by the department.

Excavation in hard rock is supposed to be carried out by use of mechanical meaas in some and by blasting in general case. The mode of measurement of excavation of hard rock shall be as under:

i) If the area to be excavated comprises of visible hard rock this shall be marked out in specified way in block level plan and the excavated hard rock as calculated by block level and as calculated by stock measurement (deducting voids) shall be correlated by variation worked out. The stack measurement of hard rock shall not ordinarily be less than 90% the maximum 10% difference may be left out for wastage in blasting and carriage which stall be ascertained but the Engineer-in-charge & a certificate therefore shall be recorded in measurement book. If a higher variation is found after being got verified by the Executive Engineer, a report shall be forwarded to the Superintending Engineer for approval.

ii) For mixed zone where ordinary (soft) rock, moorum etc. and hard rock are so mixed that separate measurement of hard rock by block level is not possible, excavation shall be carried out in usual way by ordinary tools and by blasting. The excavated rock shall be

picked up to 150mm. size and properly stacked. For size 150mm. and below separatestacks shall be made and accounted for which shall be the part of void as discounted and not payment shall be allowed in it. Soft rock and murum etc. shall however be disposed off in suitable way as instructed by Engineer-in-charge.

The total excavation shall measured by block level and quantity worked out for the composite excavation, quantity of hard rock shall be permissible only to the extent of stack measurement.

iii) In case of stack measurement of hard rock as mentioned para (i) and (ii) the volume shall be computed after making 25% deduction for voids therefrom.

iv) Wherever blasting is done a proper account of blasting materials has to be kept by the agency and shown to Engineer-in-charge whenever required.

3.04 SEQUENCE OF EXCAVATION WORKS:

After the area has been properly dagbelled and reference points depending upon the contour of the area fixed up and all other arrangements completed. The contractor shall take up work of excavation, work shall be taken up staring form one end of the allotted reach proceeding awards the other end. Only ¼ length will be taken up the slope due to rains, storms of any natural happenings shall be done by the Contractor at his own cost.

3.05 SIDE SLOPES AND GRADES:

The side slopes of the canal is to be excavated and finished as per approved plan, section as indicated in the original drawings or subsequently revised one. It will be better to leave a cover of 30 cm. to 60 cm. over the ultimate finished side slopes in case of earth in the initial stage. This portion may be taken up lather in when the canal is completely excavated upto hed level. In case the canal is to be cut in rock portion the specified slopes shall be completed, true to shape and finished as and when the excavation proceed.

The deep cutting, the side slopes above the 1st beam of the canal will depend upon the strata conditions. Suitable berms and drains are to be provided as per approved drawings,
The side slope may be as follow between 1st berm and 2nd berm:

In all kinds of soil	1.25	H: 1 vertical
In soft rock	1.00	H:1 vertical
In hard soil	1.25	H: 1 vertical
In between and berm to ground level :		
In all kinds of soil	1	: 1
In soft rock	0.75	H:1 vertical
In hard soil	0.25	H: 1 vertical

Similar slopes & berms are to be provided at botn the ends of the allotted reach. In portions of high water table where the side slope is likely to be deshaped earl, the excavation in side slope shall be done so that a cover of 30 cm. to 60 cm. is soft over the finished profiles.

This cover will be removed only when lining work will be taken up.

3.06 DEWATERING AND DRAINAGE:

The item rates of excavation include the cost of dewatering and all other drainage arrangements. Pumps of requisite horse power shall be arranged so that the progress is maintained proportionately. The water is to be discharged in the nearest valley through suitable drains or pipes. The process of dewatering is to continued till the excavations is completed true the profit and section and till the reach is handed over to the department.
Drainage arrangement during construction period shall be done so as to keep the area also free from rain water. These drains shall be provided along the outer toe of the spoil bank or embankment portions at a distance of not less than 2.5 meters at the toe and the inner slope of spoil or embankment are also to be provided to drain the low lying areas where slope is met in the drains suitable stone pitching shall be done to save the soil from deep cuts and erosion.

3.07 SPOIL BANK:

When the earth of obtained from cutting is in excess of the requirement of canal bank the same shall be disposed on side bend the service in safe of squire band. At place it may be practical to disposed the squire on one side only depending upon the line available. Therefore the actual disposed of the shall be made as per direction of the engineer –in –charge. No spoil bank is to be formed out of the excavated earth when the same can be in the embankment before any earth or soft crock disposed in safe of spoil bank . Written permission of Executive Engineer shall be taken point this surplus Earth may also be utilized in filling ditches or other shallow areas as directed by the project Engineer. The areas where spoil is to be made at disposed. It to marked and approved. Suitable profiles are to be made at regular intervals by means of shall not exceed 6 metres above the natural ground level and will depend the depth of cutting and width and the volume of spoil earth.

The formatting of spoil bank shall be made by disposing soil or soft in layers not exceeding 22 cm. (9”from the outer edge. After one layers is spread uniformly the next layers will be spread. The outer slopes shall be finally dressed up when the spoil is brought to correct profiles and grade. The inner edge of the spoil bank is to be kept straight as for as practicable

3.08 MODE OF MEASUREMENT AND PAYMENT FOR EARTH WORK IN EXCAVATION:

The quoted rate for item of earth work shall include:

(a) Ground work including demarcation. layout measurement. making profile of canal selection etc.
(b) Removing grass vegetable organic matter and uprooting trees below 30 cm girth at ground level
Providing machine equipments and tools and plants required for the work

(c)Providing labour amenities. such as Hutments, Kitchen ,Latrines, Water Supply Lightning etc. as per prevalent labour etc.

Final measurement shall be done on the basis of detailed sectional measurement. For this longitudinal section at every 30 meters along the center line of the canal and across section at every 15 meters (or at closer interval wherever required) shall be taken before starting of the work. The cross selection will extend upto 15 meters beyond the proposed outer line of the bank. The long section and cross selection shall be taken in the presence of the

Contractor and plotted and got signed by the Contractor in token of acceptance of the correctness of preconstruction level . Wherever . the original ground may have undulation . the cross section and level shall from the basis for the final measurement , these shall be recorded on the measurement book and got signed by Contractor before starting the work . All cutting should be initialed in full with date and no erasing shall be done . the books containing such measurement along with the plottings, level books (in original) shall be submitted to the superintent Engineer concerned, who will keep the same in safe custody Certified copy of the same will be kept by the Executive Engineer, who be responsible for check and payment after verification of the finally recorded measurement of the work actually executed. The quantity of earth work to be paid finally will be worked out with reference to the initial section and the final section limited to if the Engineer-in-charge thinks it proper it shall be got restored to the designed section excess of work so found shall be removed departmentally at Contractors cost.

Payments at full rate shall be allowed only for the complete section of the embankment payment for incomplete works on aforesaid sectional measurement basis can be made on reduced rate as decided by the Engineer-in-Charge, if work is found acceptable otherwise.

EARTH WORK IN CANAL EMBANKMENT:

4.00 BORROW AREA (*General*)

All materials required for the construction of impervious, semi-impervious of pervious zones of the embankment and backfill and which are not available from canal excavation or other required excavation, shall be obtained from the designated borrow area as shown in drawing or as designated by the field laboratory.

The limits of each borrow area to be used in the various zones of embankment shall be lagged in the field and materials from each borrow area shall be placed only in the zones for which it has been specified.

The depth of cut in all borrow area will be designated by the E/I. and the cut shall be made to such designated depth only. No shallow cuts will be permitted. Each designated borrow area shall be fully excavated before switching over to the next designated borrow area. Haphazard excavation of borrow pits shall not be permitted.

The type of equipment used and the operations in the excavation of materials in borrow area shall be such as will produce the required uniformity of mixture of materials of the embankment. Borrow pits shall not be opened with a distance of five times the height of the embankment from the outer toe. Borrow pits shall be operated from the outer limit towards the inner limit of the borrow area so that the distant materials will be utilized forest. The surface of wasted materials shall be left in reasonably smooth and level condition.

Unless otherwise prohibited, initially earth for making canal embankments shall be obtained manually from the adjoining area upto 160 m. leving an undisturb strip of 15m. from the cuter toe of the embankments. As these areas will mainly be paddy fields, the depth of excavation shall not exceed 0.45m. ensuring the depth of good earth left for agriculture is in no case less than 0.5m. such adjoining areas are not designated as borrow area, as discussed in the paragraph above and shall be left properly leveled by the Contractor, so that it does not affect the subsequent use of the land for agriculture. If the contractor leaves these areas unleveled, it will made good by the department at the cost of the contractor.

4.01 PREPARATION OF BORROW AREA:

All areas required for borrowing earth for embankment shall be cleared of all stumps rootshushes rubbish and other objectionable materials. Particular case shall be taken to exclude all organic matter from the materials to be placed in the canal embankment. All cleared organic materials shall be completely burnt to ashes or disposed off as directed. Areas shall be maintained free of vegetable growth during the progress of the work. No tree or standing crops are to be cut or destroyed.

4.02 STRIPPING OF BORROW AREA:

Borrow are shall be stripped off top soil sod and another materials which is unsuitable for the purpose of filling. Stripping operation shall be limited only to designed borrow areas. Materials from stripping shall be disposed in exhausted borrow areas of in the preparation of haul roads, cofferdarns, (for water storage) etc or as directed by the Executive Engineer.

4.03 BORROW AREA WATERING:

Borrow areas watering will be doing wherever necessary. It shall be prepared by irrigating the borrow area 48 hours in advance, so that materials may be carried with adequate moisture preferable at O.M.C. determined for the particular type of soil by the laboratory.

The initial moisture content of materials in the borrow area shall be estimated with the help of laboratory tests. The optimum moisture content for the materials in the particular borrow area shall be obtained from the field laboratory. From the optimum moisture content and initial moisture content the amount of additional water required shall be decided. The required additional moisture so decided shall be introduced into the borrow area by watering well in advance of the excavation of ensure uniformity of misture content. If in any location of a borrow area before or during excavation there is excessive moisture, step shall be taken reduce the moisture closest to the optimum by excavation of drainage ditches, by allowing adequate tune for drying for by any other means to aboard formation of pools in the borrow area. During excavation operation drainage ditches from borrow area to the outlet shall be excavated wherever necessary.

No extra a payment shall be admissible for stripping the borrow area of top soil etc as indicated.

Construction and maintenance of approach roads and haulage road will be the responsibility of the contractor for which no extra payment will be made. The department would have full right of way to those roads for inspection purpose. Proper roads signs as directed have to be provided for safety at no extra cost. Contractor shall as directed provide adequate lighting in borrow area and on haulroad. No extra payment will be made for extension of L.T. power line to the borrow area.

4.04 DAM/EMBANKMENT:

The embankment shall be constructed to the lone and grades shown in the drawings. The Dam/canal embankment is divided into zones within which fill materials having different characters area to be placed. The placement of fill within those zones as per the drawings shall be performed in an ordinary sequence and in efficient and workmen like manner, so as to

produce with each zone, fill having such qualities of density strength and permeability as will ensure he highest practicable of stability and performance or the whole embankment.

No bushes, roots suds or other perishable or unsuitable materials shall be placed in the embankment. The suitability of each part of the foundation for placing embankment materials there on and on all materials which are to be used in embankment construction will be determined by the field laboratory. The difference in elevation between core and shall zones of the embankment at any cross section above the embankment foundation shall not exceed 0.6m unless specifically authorized by the Executive Engineer.

The embankment for each zone shall be maintained in continuous and approximately horizontal layers in the reach programme for construction in that section. The embankment may be constructed in the discontinuous portion or reaches provided that the slopes of the benching surface parallel to canal exist between previously completed portion of the embankment and materials to be placed in such zone shall not be steeper than 3 to 1 core and 21/2 to 1 in the other zones having suitable benches in intervals.

The striping over old existing earth work also includes benching as an where required as per the direction of Engineer Incharge.

4.05 PLACING EARTH FILL:

The distribution and gradation of the materials throughout the earth fills shall be as shown on the drawings or as directed. The fill shall be free from lenses pockets, strakes or layers of materials differing substantially in texture or gradation from the surrounding materials .the combined excavation and placing shall be such that the material when compacted in the earthfill will be blended sufficiency to produce the practicable degree of compaction and ability. No excessive loads of materials than needed for one layers shall be dumped on the earthfill so as to produce the best practicable distribution of the materials. For this purpose the location in the earthfill where the individual loads shall be deposited with a view to ensuring that the placed on the outer shoulders be decided earlier.

The movement of trucks, tippers shall be so guided that they do not pass along the same route, otherwise no proper bond between successive layers will be achieved. The vehicle should have separate to and from path of travel at the levels. Particular care shall be taken to ensure the materials are not so placed as will be conductive to the formation of intermittent relatively impervious blankets in the shall zones, which will interfere with the satisfactory drainage.

No stones, pebbles or rock fragments, having maximum dimension of more than 13 cms.(5”) shall be allowed to get mixed with the earthfill. Such stones and pebbles shall be removed either at the borrow pits or canal excavation before being transported to the embankments in any case this shall be removed before materials in the earthfill are rolled and compacted. Such stones or pebbles shall be used in the rip-rap or rock toe of the embankment it suitable or wasted as directed. The materials shall be placed in the earthfill in the continuous horizontal layers, is not more than 22 cms. In thickness to be rolled to 15 cim. or minimum of specified proctors efficiency. The layers shall be so laid to avoid pools of water from in the embankment due to rains. If it is felt that the rolled surface of any layer of earthfill is too dry or smooth to bond properly with the layers of materials to e placed on it the same shall be moistened or be worked with borrower, scarifier or any other suitable equipment, to a sufficient depth as directed Engineer-in-charge, so as to provide satisfactory bonding before the next succeeding layer or earthfill materials is placed. If the rolled surface of any earthfills found to be too wet for proper

compaction of the layers of earthfill materials to be placed thereon, it shall be rocked up and allowed to dry or be worked with borrower scarifier or any other suitable equipment to reduce the moisture content to the required amount, and than it shall be compacted before the next succeeding layer of earthfill materials is placed, when compacting the soil against step rock abutment or wells or masonry or concrete structure and if the foundation surface is too irregular to allow the used of large roller directly against a structure of rock out crop the large roller shall be used to compact the soil as close to the structure of the out crop as possible and the portion of the embankment directly against the rock or the structure shall be completed with pneumatic hand tempers within layers contents of the earthfill placed against the rock or the structure shall be slightly above the optimum to allow it to be compacted in all irregularities of the rock ad this shall be determined b the ield laboratory. In placing the earthfill or rock foundation the foundation shall first be prepared as detailed earlier. Care shall be taken in placing the first employed for compaction. The soil for the first layer shall be placed in embankment at moisture content sufficient to enable satisfactory bonding of the fill with the bottom surface.

4.06 WEATHER CONDITIONS:

Embankment materials shall be placed only when the weather conditions are satisfactory to permit accurate control of the moisture content in the Embankment materials, during 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 moistend or allowed to dry as necessary and approved by the Engineer - in - Charge for resumption.

4.07 MOISTURE CONTROL:

The water content of the earthfill materials prior to and during compaction shall he distributed uniformly throughout earth layers of materials and shall he between 2 to 17 or the optimum moisture content. Moisture determination of soils as well as needle moisture determination of soil shall be carried out as per designation of E 9 and E-22 of USBR/Earth Manual (JULY 60). Laboratory investigation may impose some restrictions on the lower limits of the practicable moisture contents on the basis of studies on consolidation characteristic of soil in embankment. Hereinafter, the term range of optimum practicable moisture content shall refer to the value as described above. As far as practicable the materials shall be brought to the proper moisture content in the borrow the before excavation. If additional moisture is greater than requires, the materials shall be spread and allowed to dry before starting rolling. Moisture control shall be strictly adhered to. The moisture content shall be relatively uniform through out the layer material. If necessary, ploughing. Disking, borrowing 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 and adding of further level shall be stopped. Further work shall be started again only when the above conditions are satisfied.

4.08 COMPACTION EQUIPMENTS:

While the specification below provide details of some compaction equipments however, the equipment of particular type and size to be encouraged as may be must suited to the prevailing condition and the programme of construction.

Tamping rollers use for compacting earthfill shall conform to the following requirement.

4.09 ROLLER DRUMS:

Double drum sheep foot rollers shall be used for compaction. Each drum of a roller shall have an out side diameter not less than 140.25cms. (56”) shall not be less than 122 cms. (48”) in length. The space between two adjacent drums when on level surface shall not be less than 30 cms. (12”) not more than 33 cms. (15”). Each drum shall be free to pivot about an axis parallel to the direction of travel.

4.10 TAMPING FEET:

The total number of feet per drum shall be 88. Atless one tamping foot shall be provided for 860 cm^2 (150 sq. inches) of the drum surface area. The length of each tamping foot from the outside surface of the drum shall be maintained at not less than 18 cms. (7”). The cross section area, bearing surface area of each tamping feet shall not be less than 25.80 sq.(4 sq. inches) not more than 645 sq. cms. (10 sq. inches) at plane normal the axis of shank 15 cms. (6”) from surface.

4.11 ROLLER WEIGHT :

The weight of the roller when full loaded shall not less 7091 kg. (15.500 lbs.) and the ground pressure when fully loaded shall not be less than 40 kg/cm^2 (570 psi).

The loading use in the roller drum shall be required to obtain the desired compaction. Tractor use for pulling rollers shall be 50 HP to 65 HP power to pull the rollers satisfactorily at speed of 5 km. per hour when the drums are fully loaded with wet sand blast during operation of rolling. The spaces between the tamping foot shall be kept clear of materials sticking to the drum which could impair the effectiveness of the tamping rollers.

4.12 ROLLING:

When each layer of materials has been conditioned so as to have the proper moisture content uniformly distributed throughout the material, it shall be compacted by passing the sheep foot rollers, the exact number of passes shall be designated by the field laboratory after necessary test. The layers shall be compacted in strips overlapping not less than 0.6 m. The rollers or loaded vehicles shall travel in a direction parallel to the axis of the dam/canal. Turns shall be made carefully to ensure uniform compaction, rollers shall always pulled. Density test shall be made after rolling. Dry density obtained shall satisfy the compaction standards specified on catteries for control of compacted canal embankment of U.S. Bureau of Recalmation (Table-4, Page-275 of earth manual of Bureau of reclamation).

4.13 TAMPING:

Rollers will not be permitted to operate within 1 metre of concrete and masonry structures.
The locations where compaction of the earthfill materials by means of the roller is impracticable or undesirable, the earthfill shall be compacted as specified here under.

1. Portions of the earthfill in dam/canal embankment adjacent to masonry structures and embankment foundation designated to be treated as specially compacted earthfill.
2. Earthfill in dam/canal embankment adjacent to sheep abutments.
3. Earthfill in location specially designated.

Earthfill shall be spread in layers not greater than 15 cms. In thickness when loose and shall be moistened to have the required moisture content in accordance with paragraph 4.6. when each layer of materials has been conditioned to the required moisture content. It shall be compacted to specific density by special rollers, pneumatic tampers or by other approved equipment based on evidence of actual performance and filled compaction tests. The moisture control and compaction shall be equivalent to that obtained in earthfill actually placed in the canal embankment in accordance with para 4.6.

4.14 DRESSING SLOPES :

The outside slopes of the embankment shall be neatly dressed to lines as the placing of fill progress. Compaction shall extend over the full designed with of the embankment and materials in earth slopes shall also be compacted to ensure proper compaction of the edge. The cross section of the fill during construction shall be kept suitable wider and the cross section dressed on the designed requirement only after proper compaction.

All humps and hollows varying more than 15mm (6”) from the neat lines of the embankment shall be regarded. Materials used to fill depression shall be thoroughly compacted acceptance. Any materials that is lost by rains, weathering or other causes shall be replaced.

4.15 SETTLEMENT ALLOWANCE:

In the earthfill embankment, settlement allowance of 2% will be provided. Accordingly extra height shall be provided but payment for only designed will be mace. The base width of the embankment shall not be increased to maintain the designed slopes indicated in the drawing for the additional height as settlement allowance, but the following procedure will be adopted. Settlement allowance will be calculated at various levels where the slope to be changed and the elevation including settlement allowance will be derived. The embankment which at the designed levels remaining same. The edges of embankment at the increased elevations (including settlement.) when joined with the point where the slope has change earlier below shall give and slop to be adopted for contraction.

If the embankment is raised is more than one season provision for settlement shall be made in the last season’s constructions by light steepening of slopes over the top.

4.16 MODE OF MEASUREMENT AND PAYMENT FOR EARTHFILL IN DAM/CANAL EMBANKMENT:

The mode of measurement and payment will be the same as described in clause-3.8 of this chapter (mode of measurement and payment and payment for earth work by excavation) The earthfill will involve earth work by head load up to 160m. from the outer toe of embankment as well as transportation by truck or tipper for load up to 160 m. from the outer toe of embankment as well as rate for earthfill shall include all lifts for work done manually or by machine. The designed particulars such as hed width top width. hed level bank formation level etc. and the existing around level have been indicated in the drawing attached with tender Document. The Contractors are required to quote the rate after complete analysis of the lead and inspecting side condition the contractor shall be required to use the quantity of earthfill available within manual lead and only after utilizing all such quantity earthfill should be transported by truck or tipper first the quantity available up to ½ Km. lead will be utillised. If the quality within ½ km. lead is exhausted than only earthfill shall be throught from lead exceeding ½ Km. & upto 1 Km only on written order of the Engineer-in-charge

4.17 INSPECTION FAND TESTS:

It is necessary to maintain a through check on the quantity of fill materials delivered to the embankment and that the data and in situ properties of the materials after compaction be obtained for compairs on with design assumptions. To achieve these objective programme of fill testing and inspection shall be planned to effect quality control.

4.17.1 SCOPE OF TESTING AND INSPECTION REQUIRED:

Field control of fill materials will require visual and laboratory checks. The check on the effectiveness of placement and compaction procedures will require to be made by field density tests at prescribed intervals. The control shall be both of the method type and or / on end result basis.

4.17.2 EMBANKMENT TEST SECTION:

Placement of compaction methods specified will have to be verified by test of an embankment section for different zones to be built prior to start in fill operation or at an early stage of construction. Either the initial stage of embankment construction itself could be mode to serve the purpose of test embankment or test embankment or test embankments section could be established in borrow areas. The test sections referred herein shall be used to materials.

a) Layer thickness of fill materials.
b) Optimum practicable moisture content.
c) Number of passes of sheep-foot roller, or weight of vibratory rollers Vis-a Vis number of passes for effective compaction.
d) For pneumatic type compaction equipment, the test required will be such as to determine. The most suitable ballast loding, tyre pressures, moisture contents and number of coverages for compacting the materials in the zone.

When as appreciable change in materials occurs, additional rest sections should be made during construction. He procedure for construction of test embankment section is as follows :

i) Select a location the embankment where additional test are being performed. The area 15 M x 30 M (about 50’ x 100’) should be carefully marked and referenced so that its limits will be easily recognized. In order to expedite the determination of moisture content to be used. More than one set section may be established on the embankment at the same time.

ii) During construction of the test section which will most probably continue for several shifts, a complete record of the procedure should be kept. This record should include the number of layer placed and the spread thickness of each layer the moisture content at which the materials were rolled, the designation (No 1, No 2 etc.) of the rollers used, the conditions of the rolers (clean or dirty) condition of the materials being rolled such as under the rollers, amount of penetration of the materials being same.

iii) Check the rollers to make certain that they meet all the requirements of the specifications.

iv) Determine the required spread layer that will compact to the specified thickness after rolling specified number of ties and maintain this thickness as long as number of rollers passes is kept the same.

v) Using the available data from borrow pit investigation of the materials to be used in the test section, the optimum moisture content as determined by laboratory test will be known and 3 percent less than this moisture content should be used in the 3 or 4 layers rolled.

vi) After 3 or 4 layers have been placed at 3% less than the laboratory optimum moisture content, filed density test should be made throught the section. These test should be made for at least each 93 sq. metres (1000 sq. ft.) of test section area and should be so distributed over the area that they will detect the effects of different compaction conditions encountered during construction for example of the section is located near abutment certain parts of the area will receive more compaction form travel than others, hence some tests should be made in the portion compacted only by the roller and as reported.

vii) The next step is to compact another 3 to 4 layers at the moisture content slightly higher (1% or 2%) than the moisture content previously used, maintaining the same rolled thickness of layer density tests are again made over the test section

viii) If the resulting field dry densities (or material passing no 4 seive) from (vii) above show an increase with increase of moisture than increases the moisture again by another 1% or 2% and repeat the test. If an increase in moisture results in a decrease in field density than place to next layers slightly dry of the original moisture content used and repeat the test. This procedure is nothing more than developing on the embankment a moisture density

ix) relation or compaction curve for a certain roller, thickness of layers and a given umber of roller, passes it special studies during investigation have indicated that the materials being tested should placed within certain moisture limits to be used have been specified. The producers outlined above should include tests at these

x) moisture contents or a moisture contents both greater and smaller than the specified limits

xi) The roller compaction corve is now compared with the standard laboratory compaction curve. If the field density of materials passing the no. 4 sieve (from the roller curve) is greater than the standard compaction density at the specified moisture content the test section should be continued decreasing the number of roller trips while maintaining the specified desirable moisture content until the most economical compactive effect is determined when the roller strips are decreased, the required spread thickness of layer than will compact to the specified thickness of compacted material should be rekoned.

4.17.3 BEFORE COMPACTION :

Materials delivered to the fill shall be visually examined and their properties estimated by way of inspection. These checks shall include.

4.17.4 BORROW AREA:

i) The maximum depth of excavation from the borrow area will be 1 meter subject to provision that soil cover of latest 0.5 metre above the rocky strata is available for cultivation after excavation.
ii) Estimation of mojsture content of materials by visual examination and feel.
iii) Samples shall be taken for laboratory analysis in case the soil is of different characteristics.

These inspection checks shall be supplemented by sampling the materials at prescribed minimum intervals and by the resting samples in the laboratory for gradation and moisture content.

4.18.5 EMBANKMENT:

i) Water content tests shall be carried out in the laboratory while placing the fill materials.
ii) Moisture content shall be controlled by adding water or aerating the soil according in laboratory tests.
iii) It shall be ensured that the methods of dumping, spreading and moisture conditions are such that which results in reducing segregation and or variation moisture content to a minimum.

4.18.6 DRUING COMPACTION:

It is intended that the checks in operation during compactions shall verify:

i) That the layer thickness of the materials is as specified.

ii) That the fill is compacted by the specified number of passes of the specific machinery

iii) That no excessive cutting weaving and scaling of the fill occure during compaction.

4.18.7 AFTER COMPACTION:

The condition of the fill after compaction shall be observed and recorded particularly in respect of cutting of weaving, however, the properties of materials after compaction shall be determined primarily by fill density, routing tests on samples taken from constructed embankments shall be included besides density tests drain size distribution atterberg limit, permeability shear and consolidation characteristics.

4.18.8 FREQUENCY OF TESTING:

It will be necessary to carry out sampling and resting of materials before and after compaction at sufficient frequencies so that the effective checks on the fill operation all maintained. The testing frequencies proposed should correspond to the frequencies shown in table-1. however, the actual frequencies should be adjusted to suit the nature materials placed and the rate of fill placement.

Testing shall be performed at higher rates than those given in table-I during initial stages of placing each zone in order to establish control and testing techniques. Also testing should be conducted at higher rates in case at special problem of control caused by such factors as materials variation, equipment performance and of weather.

In addition, these tests shall be made:

i) In areas where the degree of compaction is doubtful.

ii) Areas where embankment in operation is concentrated.

iii) For “record” tests at the location of all embedded instruments.

Area of doubtful density may be detected by observation by the inspector. Possible locations of in-sufficient compaction include.

The junction between areas of mechanical tamping and filled embankment along abutments or cut of walls.

Areas where rollers turn during rolling operations.

Areas where too thick a layer is being compacted.

Areas where less than specified number of roller passes were made.

Areas where less than specified number of roller passes were made.

Areas where dirt-clogged rollers are being use to compact the materials.

Areas where oversized rock which has been overlooked is contained in the fill.

Areas where materials have been placed when they contained minor amount of frost or at nearly freezing temperature.

Areas that were compacted by rollers that have possible lost part of their ballast.

Areas containing materials differing substantially from the average.

4.18.9 RECORDS AND REPORTS:

Record to borrow area materials and embankment placing operations be maintained in order to have continuous check on the suitability and availability of fill materials and quality of the fill. Thus it will be possible to have a complete description of materials in any portion of the embankment.

5.0 TURFING:

The outer slope of the embankment shall have to be turfed with humous-sods of 6” thick dub or Jamarah grass. Light tamping with proper watering shall have to be done true to the profile and slope. Suitable precautions will be necessary for giving watering facilities to ensure quick growth of turfs at least for a fortnight. Final payment for turfing will be made after the sods catch root.

The humous-sods used shall be in rectangular shape 6” thick and laid so that their edges are in close contact, they shall be gently rammed till they from a level and compact mat. The item rate includes the cost of turf. Homous-sods, their transportation and placing with all leads & lifts.

6.0 ROCK TOE :

The materials for rock toe shall consist of the most durable rock fragments of approved quality selected for the purpose. The quality of rock fragments shall be dense sound resistant to abrasion and shall be free from crack seems shale parting conglomerate bands and other weathering action. The shape of the individual rock fragments shall be angular, Stones of size less than 0.019 cm. shall not be used in the rock toe, if necessary. The rock fill materials shall consist of rock fragments reasonable well graded as determined by Engineer-in-charge upto the maximum size of available stones.

Successive loads of materials shall be dumped so as to ensure the best practicable distribution to the materials as determined by the Engineer-in-charge to the extent practicable the large rock fragments shall be placed on the outer slopes and the smaller rock fragment approximately horizontal layers not exceeding 90 cm. in thickness. The rock fragments need not be hand placed but shall be dumped and roughly leveled in manner to maintain a reasonably spaces with the fill. The voids between the bigger stones after rough leveling shall be filled up. The exposed surface of the rock toe shall be neatly finished as to conform to the designed lines and grades as shown in the drawings.

7.0 DRAINS:

Longitudinal drains as per plan and detailed drawings shall be necessary for leading the rain water away from the canal to the natural valleys. The drains shall be constructed in the prescribed slope and grade. The longitudinal and the side drain leading transversely will be pitched with stone boulders hand packed and flush pointed with cement mortar (1:4). Necessary provision will be made at the toe to transverse drains to dissipate the energy of the falling water wherever leading channels are necessary the same shall have to be constructed. The measurement of earth in drain will be volumetric.

8.0 RIP-RAP/BOULDER PITCHING:

Wherever indicated in the drawing or decided at the letter stage the Contractor shall have to do pitching with good stone boulders of approved quality not less than 9” thick with tight joints. The boulder used for pitching shall be clean, hard, dense and durable. The requirement of pitching to be done just at the edge of concrete, concrete is to be save from getting damaged by the placing of boulders.

The pitching stone shall have the average volume of not less than 3.4. cubic feet the boulder shall be roughly squared and single hammered chisel hand placed, with close joints to the line and grade established by the Engineer in Charge and spaces between stones shall be filled with required size of metal.

9.0 METHOD OF MEASUREMENT:

The method of measurement shall not be in accordance with is : 1200 latest revision, and described in the clause 17.8 and 18.17 of this chapter.
Not with standing any thing contained to the contrary in IS : 1200 1958 the classification of different items of work shall be as per classification adopted in the schedule of item. Further the following works shall not be measured in addition to those which are measured in accordance with IS: 1300-1958 and the quoted item rates shall cover the cost thereo:

i. Setting out the works including surveying and making of level and co-ordinate with help of reference pillars.
ii. Providing, fencing, light post, sign board, notice board watchmen, guards barricades ragmen, signals etc. for guarding against accident.
iii. Proving necessary scaffolding for excavation of work upto completion
iv. Site clearance including cleaning of fence, logs stumps vegetation rubbish, slush etc. including stacking of serviceable materials as directed by the Engineer-in-charge

v. Filling of unauthorized excavation hed with concrete pf approved mix as direction by the engineer-in-charge.
vi. Removal of earth slips
vii. Removal of slush and dewatering during and after earth work or at any stage of construction till the construction is completed.
viii. Provision of divertion or surface drains, surface roads and fencing.
ix. Stripping in the borrow areas.
x. Extra earth bed for the settlement allowance @ 290 of the height.
xi. Dewatering and drainage works.
xii. Curing works:

CLASSIFICATION OF SOIL

All Materials involved in excavation shall be classified by the Engineer Incharge in the following groups:-

(A) Ordinary soil.

This shall comprises of vegetables or organic soil, turf sand silt loam, clay, mud, peat, back, cotton soil, soft shale or loose moorum mixture of these and similar materials which yield to the ordinary application of pick and shovel rake or other ordinary digging implement. Removal of Gravel or any other nodular materials having diameter in any one direction not exceeding 75mm occurring such strata shall be deemed to be covered under this category.

(B) Hard soil

This shall include:-

(i) stiff heavy clay hard shale or compact moorum requiring, grafting tool or pick or both and shovel closely applied.

(ii) Gravel and cobble stone having maximum diameter in any one direction in any one direction between 75mm and 300,,:

(iii) macadam surface such as water bound and bitumen/tar bounds.

(iv) Soling of roads, path etc. and hard core.

(v) Lime concrete, stone masonry in lime mortar and brick work in lime/ Cement mortar, below ground level.

(vi) Soft conglomerate where the stone may be detached from the matrix with picks.

(vii) Generally any material which requires the close application of picks of scarifies to loosen & not affording resistance of digging greater than the hardest of any soil mentioned in (i) to (vi) above;

(C) Ordinary of Soft rock (Not requiring blasting)

This shall include:-

(i) Lime stone, sand-stone, laterite, hard conglomerate or other soft or disintegrated rock which may be quarried or split with crowbars.

(ii) Unreinforced cement concrete which may be broken up with crowbars of pick & stone masonry in cement mortar below ground level.

(iii) Boulders which do not require blasting having maximum diameter in any direction of more than 300mm, found lying loose on the surface of embedded in river bed, soil, talus, slope, wash & terrace material of dissimilar origin.

(iv) Any rock which in dry state may be hard requiring blasting but which when wet becomes soft and manageable by means other than blasting.
(v)

(D) Hard Rock:) (Requiring Blasting

This shall comprise of :-
(i) Any rock of cement concrete for the excavation of which the use of mechanical plant of blasting is required.
(ii) Reinforced cement concrete (Reinforcement out through but not separated from concrete) below ground level.
(iii) Bouders requiring blasting.
(iv)

(E) Hard Rock (Blasting prohibited)

Hard Rock requiring blasting as described under (D), but where blasting is prohibited for any reason and excavation has to be carried out by chiseling, wedging or any other agreed method.

(F) Marshy Soil:

This shall include soils excavated below the original ground level of marshes and swaps and soils excavated from other requiring pumping or bailing out of water.

MODE OF MEASUREMENT

(A) Earth Work (As per T.E.C.Letter No. 147 dt. 08.04.1976):

(i) Pit measurement shall apply to routine maintenance and repair works as well as to widening and strengthening work.

(ii) Sectional measurement shall apply to the construction of new embankments and other works which shall be applicable to compacted section.

(B) Boulders, stone metal and stone chips etc.

As per decision taken in the meeting of central schedule rate committee held on 15/16.03.1985):
(i) Stacks of boulder of specified size and weight shall be 300mm. for 375 mm. height (25% deduction for voids shall be made)

(ii) Stacks of graded stone metal as per design (size 50 mm, and above) shall be 300mm, for 350mm. height (14% deduction for voids shall be made).

(iii) Stacks of stone chips (Size 50mm, and down) and stone metal of grade III shall be 300mm. for 325mm, height (8% deduction for voids shall be made.

(C) Deduction for voids in boulder pitching work

(As per decision taken in the meeting of central schedule rate committee held on 15/16.03.1985):

(i) 10% deduction shall be made for voids in pitching works on slope & apron under water.

(ii) 5% deduction shall be made for voids in pitching works o slope & apron above water.

(D) Procedure for the measurement of blasted hard rock/soft rock.

Excavation in hard rock is supposed to be carried out by use of mechanical means in some and by blasting in general case. The mode of measurement of excavated hard rock shall be as under:

(i) if the area to be excavated comprises of visible hard rock, this shall be marked out in specified way in block level plan and the excavated hard rock as calculated by block level and as calculated by stack measurement (deducting voids) shall be correlated and variation worked out. This stack measurement of hard rock, shall not ordinarily be less than 90%. The maximum ten percent (10%) difference may be leftout for wastages in blasting and carriage which shall be as ascertained by the engineer-in-charge and a certificate there from shall be recorded in measurement book. If a higher variation is found, after being got verified by the Executive Engineer, report shall be forwarded to the Superintending Engineer for approval.

(ii) For mixed zone where ordinary (soft rock, moorum, etc. and hard rock are so mixed that separate measurement of hard rock by block level is not possible, excavation shall be carried out in usual way by ordinary tools and by blasting. The excavated rock shall be made and accounted or which shall form the part of void as discounted and no payment shall be allowed for it. Soft rock and moorum etc. shall however, be disposed off in suitable way as instructed by Engineer-in-charge.

The total excavation shall be measured by block level and quantity worked out for the composite excavation. Quantity of hard rock shall be permissible only to the extent of stack measurement after deducting voids.

(iii) In case of stack measurement of hard rock as mentioned in para (i) and (ii) the volume shall be computed after making 25% deduction for voids therefrom. No extra payment for stacking shall be made. Hard rock so obtained will be the property of the department and that shall be used in the work as required and the cost of hard rock will be recovered from the contractors bill at prevalent departmental rates. The department has the right to use the hard rock so obtained for any other construction work or in the work if required.

CONTRACTOR

Executive Engineer
Irrigation Division, Deoghar

SPECIAL CONDITION

1.0 INDENT OF PLANS AND SPECIFICATION

1.1 The work to be carried out under the contract shall except as otherwise provided in these special conditions will be governed by terms and conditions of this agreement and shall include all labour, materials, tools, plant, equipment and transport which may be required in preparations and in the full and satisfactory execution and completion of the work. The descriptions given in the bill of quantities shall unless otherwise stated, be held to include waste materials carriage and cartage, carrying in and return of empties, hoisting, setting, fitting and fixing in position and all other labour necessary in and for the full and entire execution and completion of the works as aforesaid in accordance with the practice and recognised principles and any urgent and temporary works contingent upon the work.

2.0 DRAWING AND SPECIFICATIONS :

The drawings and specifications are to be considered as explanatory and correlated to each other and if any omission appears in the one and not described in the other, no advantage shall be taken of such omission, should any discrepancy. However, appear or should any mis-understanding arise as to the meaning and import of the said specifications or drawings, or as to the dimensions, or the quality of the materials or for due and proper execution of the work or as to the measurement, quality or valuation of the works executed under this contract as extra thereupon the same shall be clarified by the Engineer-in-Charge or his authorised representative and his explanation shall be binding upon the Contractor and the contractor shall execute the works according to such clarification and without extra charge and shall also do all such works and things as may be directed by the Engineer-in-charge of his authorised representative being considered necessary for the proper complete of the work as implied by the drawings and specification, even though such works and things are not specially shown and described in the said drawings and specifications supplementary dimension of drawing may be given by the Engineer-in-charge in addition to those already given and changes may also be Engineer-in-charge in addition to those already given and changes may also be affected in them and the Contractor will have to execute the works on the basis of the supplementary drawings or changed specifications without any additional claim whatsoever. The drawings furnished with this tender are tentative and only indicative of the general nature of the work involved any may require modification from time to time during execution of work. The details will be furnished as the works progress. Any change in the drawing shall not entitle the Contractor to any claims so long it does not affect the schedule of item specified and the decision of the Engineer-in-Charge in this respect shall be treated as final.

3.0 CONSTRUCTION PROGRAMME :

3.1 Time is the essence of the contract and shall be clearly understood that the tenderer should have a definite programme to carry out the work within the time limit given in N.I.T/IFB. from the day of commencement of the work.

3.2 Immediately after acceptence of the tender and before the work is begun, the Contractor will have to submit a detailed programme for all major items of the work (preferably a detailed net work) for approval of the Engineer-in-Charge. The department shall make every effort to secure the delivery of such of the construction materials that are controlled commodities and generally help whenever the Contractor needs the assistance of the Department to avoid delays in the performance of the works, should the department, however, for any reason, fail to secure delivery of such materials or consider it not useful to offer assistance in any matter the Contractor shall not be entitled to any damage or compensation on this account. but he proposal for suitable completion may be considered on individual merits.

3.3 The agreement on/or approval of the programming by the Engineer-in-Charge shall not relieve the contractor of any of his responsibility to complete the whole of the work by the prescribed time or extended time if any.

4.0 COMMENCEMENT OF WORK :

4.1 The contractor shall commence the work on site immediately on receipt of an order in writing to this effect from the Engineer-in-Charge and shall proceed with the same with due expedition without delay as may be expressly ordered by the Engineer-in-Charge.

4.2 SETTING OUT WORK :

The contractor shall be responsible for all setting out works according to the approved drawings and shall provide equipments and men for the same. Before the actual work is taken up the layout will be approved by the Engineer-in-charge for which the contractor shall have to provide for equipment and men without any charge.

4.3 INFORMATION TO BE FURNISHED BY THE CONTRACTOR

The Contractor shall furnish the following information to Engineer-in-charge within the period specified in each case.

Statement on specified forms to be approved by the Engineer-in-Charge of the number of persons on his pay roll, rate of wages paid to them, or any other information that may be within five days after close of each month.

5.0 LIMITATION OF OPERATIONS:

5.1 CONTRACTOR'S EMPLOYEES:

The Contractor shall employ for the execution of works only such persons as are skilled and experienced in their respective trades. in their first instance such personnel shall be recruited through local employment exchanges and only in case of non availability, from other source so that the local people are employed to the maximum extent possible.

5.2 The Engineer-in-Charge or any other officer authoriese by the Department is to have at all times access to the work and the works shall be entirely under his control. He may require the Contractor to dismiss any person employed by the Contractor on the works, who may be incompetent or who may misconduct himself and the Contractor shall forthwith comply with such instruction.

Should the Contractor not comply within one week with the requisition of removal, the Engineer-in-Charge will have the power of suspending or closing gown the works as circumstances justify.

Provided that if the employees concerned is the Chief agent of the Contractor, an appeal may be made by the Contractor to the Superintending Engineer against the order of dismissal passed by the Engineer-in-Charge within seven days of the order and the decision of the Superintending Engineer on this point shall be final and conclusive.

If the Superintending Engineer upholds the order of dismissal passed by the Engineer-in-Charge and the Contractor does not comply within three days from the date of communication of the Superintending Engineer order with requisition for dismissal, the works as the circumstances justify.

When any work is closed down under the above provision the Contractor shall have no claim to any compensation from the department either for loss of time, damage to materials, loss of time damage to materials, loss of money , wages, hire, interest, etc. or for any cause whatsoever.

6.0. INSTRUCTION AND NOTICES:

6.1. All complaints, notices, communications and reference shall be deemed to have been duly given or sent to the Contractor or his authorised agent, it left at of posted to be address given by the contractor or his authorised agent any they shall be deemed to have been given or sent (in the case of services by post) on the date

on which the same should have reached such address in the ordinary course of transmission by post and in either case on the day on which the same where so delivered or left.

6.2. The Contractor shall when he is not personally present on the site of the work invariable place and keep at such site a properly qualified agent duly authorised and to act on his behalf and to receive on his behalf all orders and instruction from the Engineer, Executive Engineer, or any other authorised officer in writing to supervise the work. All such order and instructions given to and all acts done by such agent shall be binding on the Contractors as if such orders and instruction was given to him or such acts had been done by him.

6.3. Site order book with machine numbered pages bearing the certificates of the Engineer-in-Charge for containing so any pages shall be maintained by the Contractor at the work site and it will have to be produced to the Engineer-in-Charge or inspecting office, if they so desire, for noting down anything's concerning the work.

This shall be property of the Department and the Contractor shall deposit the same with Engineer-in-Charge, after completion of the work.

6.4 The Engineer-in-Charge or the representative authorised by him shall communicate of confirm his instruction to the Contractor in respect of the execution of the work in the site order Book' and the Contractor or his authorised representative shall confirm receipt of such instruction by the relevant entries in the book. If required, the Contractor shall be furnished certified true copy of such instructions.

7. 0. FACILITIES TO OTHER CONTRACTOR:

The Contractor shall in accordance with the requirement of the Engineer-in-Charges afford all reasonable facilities to other contractors engaged contemporaneously on separate contracts in connection with the work and the departmental labour and labours of any other properly authrised authority or statutory body which may be employed at the site on execution of any work not included in the contract or of any contract which the department may enter into in connection with or ancillary to the work.

8.0. INSPECTION OF WORKS:

8.1. CONTRACTORS SUPERVISION:

The Contractor may either supervise the execution of the works himself, if he is a qualified Engineer or shall appoint a qualified and experienced Engineer to be approved by the Engineer-in-Charge, to act as his agent. If the Contractor failed to appoint a suitable agent director by the Engineer-Charge, the latter shall have full powers to suspend the execution of the works until and unless a suitable agent is is appointed and the contractor shall be held responsible for the delay so caused to the work.

8.2 In addition, the contractor shall employ suitable number or Engineers who have graduated from engineering College and subordinate Engineer holding diploma from Government recognized institute for management and supervision of work.

9.0 SUPERVISION AND APPROVAL BY ENGINEER-IN-CHARGE

9.1. All works embracing more than one stage or process shall be subject to examination and approval at each stage thereof and Contractor shall give due notice to the Engineer-in-Charge or his authorised representative when each stage is ready. In default of such notice, the Engineer-in-Charge shall be entitle to appraise the quantity and extent thereof even at a later stage at the risk and cost of the Contractor.

9.2. No work shall be covered up or put out view without the approval of the Engineer-in-Charge or his authorised representative and the contractor shall afford full opportunity for examination and measurement of any work which is about to be covered up or put out of view and for examination of foundation before permanent work is placed there on. The Contractor shall give due notice to the Engineer-in-Charge or his representative whenever any such work or foundation it ready for
examination and E/I or his authorised representative shall without unreasonable delay, unless considers it unnecessary, advise the Contractor accordingly, to attend for the purpose of examining and measuring such work or foundation. In the event of the failure of the Contractor to give such notice, he shall, if required by the Engineer-in-Charge , uncover such work at the Contractor's expenses.

9.3 Department officers concerned with the contract shall have powers at any time to inspect and examine and part of the work and the contractor shall give such facilities as may be required for such inspection and examination.

9.4. The Contractor shall uncover and part of the works and or make openings in or through the same as the Engineer-in-charge may from time to time direct for his verification and shall reinstate and make good such part to the satisfaction of the Engineer-in-Charge.

10.0 MATERIAL AND WORKMANSHIP:

10.1 The Contractor shall carry out the entire work in most workmen like manner by skilled careful and efficient personnel and with the specified materials best of their respective kinds.

10.2 REMOVAL OF DEFECTIVE WORKS:
If in the opinion of the Engineer-in-Charge any of the work had been executed with improper materials or defective workmanship, the Contractor, is when required by the Engineer-in-Charge forthwith to re-execute same and substitute proper materials and workmanship and in case of default of the Contractor in so doing within week the Engineer-in-Charge shall have full power to re-execute the work and /or remove the reject materials at the cost of the Contractor. In case of any difference between the Contractor and Engineer-in-Charge the decision of the Superintending Engineer will be final and binding.

10.3. Test and samples:
All material and workshop shall be subject form time to time such tests as the Engineer-in-Charge may direct at the place of manufacture of fabrication or on the site or in any laboratory or institute. The Contractor shall provide such assistance instruments, machines, labour and materials, as are usually required for examining, measuring, and testing any work and/or material and shall supply samples of materials before incorporation in the work for testing as may be selected and required by the Engineer-in-Charge. The Cost of making any such test cubes, moulds etc. including cost of all materials required for the tests shall be borne by the Contractor. In case of failure to do so by the Contractor, the same may be arranged by the Engineer-in-Charge or his subordiantes at the expense of the Contractor under the contract or from his security deposit or the proceeds of sale thereof, or a sufficient portion thereof.

11.0 ACCIDENT PRECAUTIONS :

The Contractor shall provide, erect and maintain all necessary barricades, notice boards, watchman, guards, suitable sufficient red lights, danger signals and signs and exercise reasonable and proper precaution for the safety of the work, people on works and the public, and shall comply with the provisions of safety laws and building and construction codes of the State Govt. and Government of India and ISI as may be applicable. All machinery and equipments and other sources of physical hazards shall be guarded in accordance with the regulations or laws of the State Govt. and Government of India. The Contractors shall be responsible for all risk to the lives and property of people from whatsoever clause arising out of

or in connection with the execution of works during their progress. although all reasonable and proper precaution may have been taken by the Contractor.

12.0 CONTRACTOR'S LIABILITY AND INSURANCE :

12.1 From Commencement to completion of the work, the Contractor shall take full responsibility for the care thereof and for taking precautions to prevent loss or damage to minimise loss or damage to the greatest extent possible and shall be liable for any damage or loss that may happen to the works or any part thereof and all departmental tools and plant issued to him from any cause whatsoever and shall at his own cost repair and make good the same so that at completion of the works all departmental tools and plant shall be in good order and condition and in conformity in every respect with the requirements of the contract & instructions of the Engineer-in-Charge.

12.2 The Contractor shall at all times indemnify department against all claims, damage or compensation under the provisions of payment of wages Act, 1936, the minimum Wages Act, 1948 the Maternity benefit Act, 1961 or any amendment thereof any other Law relating thereto and rules made there under from time to time or as a consequence of any accident or injury to any workmen or other persons in or about the work, whether in the employment of the Contractor or not, save and except where such accident or injury has resulted from any act of department, their agents or servants and also against all cost, charges, expense of any suit action or proceeding arising out of such accident or injury and against all sum or sums which may with the consent of the Contractor be paid to compromise or compound any such claim. Without limiting his obligations and liabilities as above provided, the Contractor shall ensure all claims, damages or compensation payable under workman's compensation Act, 1923 or any amendments thereof and any other law relating thereto.

12.3 The Contractor shall during the progress of the work properly cover up and protect the plant and work from injury by exposure to weather and shall take every reasonable, proper, timely and useful precautions against accident or injury to the same from any cause and shall remain answerable and liable for accidents, injuries thereto, which untill the same be or deemed to be taken over may aries or be occasioned by the acts or omissions of the Contractor or his worker or sub-contract and all losses and damages to the plant and work arising from such accidents on injuries as aforesaid shall be made good in the most complete and all substantial manner all the sole cost of the Contractor and to the reasonable satisfaction of the Engineer-in-Charge.

12.4 Until the work shall be deemed to be taken over as aforesaid, the Contractor shall also, be liable for and shall be deemed to have agreed to indemnify the department in respect of all damaged to any property of department either occasioned by the negligence or fault of the Contractor or his workmen, or representative or by defective design work or materials or otherwise.

The Contractor shall during the progress of work be entirely responsible for the custody of the stores and he shall make timely and appropriate precautions against accident or injury or loss to the machinery and works from any cause whatsoever and shall remain answerable and liable for all accidents or injuries as aforesaid shall be made good by the Contractor. The Contractor shall arrange appropriate insurance for the above and also for the security of the works completed but not taken over and/or works completed and under the custody of the Contractor at his own cost.

12.5 In addition to requirement for handling and storing explosives and as provided for in paragraphs on accident prevention the Contractor shall maintain an inventory for storage and withdrawl of power, stocks and detonators and Engineer-in-charge shall be notified immediately of any loss of theft of explosive. The Contractor shall provide such reasonable and adequate protective facilities as may be necessary to prevent theft of explosive and to minimise hazards, subversive, action, sabotage to properties etc. only reliable and experienced personnel shall be permitted to store and handly explosive.

12.6 Blasting will be permitted only when the proper precautions are taken for protection of persons, the work and public or private properties, and any damage caused to the work or public or private properly by blasting shall be replaced or compensated for by the Contractor at the Contractor's expense.

12.7 No payment shall be made to Contractor for his performance of safety of life and properly as described. The Contractor shall comply with above clauses for safety of life and property at his own cost.

13.0 CONSTRUCTION MATERIALS :

13.1 PORTLAND CEMENT :

a) Cement shall be supplied by the Contractor according to I.S.I for use in concrete and masonary work in standard cement bags from the authorised stockist. The Contractor shall be responsible to assess timely requirement of cement & make necessary arrangements.

b) No claim for loss in weight etc. in the contents of the bags would be entertained.

13.2 IRON AND STEEL :

The mild steel rounds bars and structural steel shall be supplied by the contractor as per I.S.I. & as per approved by E/I.

13.3 COARSE AGGREGATE :

(a) The unsizeable hard rock as certified by the Engineer-in-Charge, excavated from the foundation of the structure may be used by the Contractor for manufacture of coarse aggregate which will be supplied to the Contractor at issue rate from the excavated dump.

13.4 ISSUE OF MATERIALS :

a. All materials viz. cement, steel, sand, bricks, explosive etc. satisfying the specification given with this document except those listed in the table above shall have to be arranged by the Contractor themselves and the department does not bind themselves into any obligation to supply them.

b. If for some reasons, the department is unable at any time to issue the materials as shown under para 13.4 and the work has to be stopped for want to materials, the Contractor shall not be entitled to any claim and/or be granted extension of time to the extent of such period as work remains suspended for want of materials to be supplied by the department. The Contractor shall bring such circumstances to the notice, to the Engineer-in-Charge within 24 hours of such a situation.

13.5 MATERIALS GENERAL :

(a) All other construction Materials shall have to be arranged by the Contractor himself and all charges on account of octroi, terminal, sales tax, royalties, or other duties including those of loading, unloading, lead and lift, rehandling at site etc. shall be borne by the Contractor.

(b) All materials arranged by the Contractor shall confirm to I.S.I. or other standard specification and subject to approval by the Engineer-in-Charge.

(c) The Contractor shall indemnify the department and its employees against any action, claim or proceedings relating to the infringement or use of any patent or design or nay alleged patent or design rights and shall pay royalty as or

other charges which may be payable in respect of any articles or materials or part thereof included in the contract.

(d) All materials brought to site shall not be removed from the site without the written permission of the Engineer-in-Charge.

(e) It shall be clearly understood that the rates quoted by the tenderer shall include all wastage and wash away either due to rains or storm or flood or in the normal course of works or other causes whatsoever.

(f) The department on request from the Contractor will if in his opinion the request is reasonable in interest of the work and progress, assist the Contractor in the procurement of indigenous materials in securing priorities for deliveries, transport and in allotment Railway wagon where such are needed. The department will not be however, responsible for the non availability of such facilities or delay in this behalf and no claims either in cost or for extension of time on account of such failure or delays shall be entertained by the Department.

(g) For timely supply of materials where required the Contractor may have to carry materials even by road or other route but no claims whatsoever shall be entertained on this account.

(h) If the materials supplied by the Department are not carefully handled resulting in wastage or pilferage during transport, storage or use at site, the cost of such material shall be recovered and panel rates which will be double the issue rates.

(i) The materials issued by the Department shall be normally the estimated quantity required for the work plus some percentage (upto 5%) for normal wastage during the various operations. Quantities consumed in excess of such requirement may be recovered at panel rates, i.e. twice the issue unless justified by the exigencies of the work.

14.0 STORAGE AND INSPECTION :

14.1 The Contractor shall provide suitable storage arrangements for cement, mild steel and all structural steel etc. to the satisfaction of the Engineer-in-Charge and the Engineer-in-Charge or his representative shall have the authority at all time to inspect the storage arrangements and the Contractor shall provide all facilities for inspection and check of all the materials. The Contractor shall at all time maintain proper record showing the basis of the indent the receipts

and utilisation of materials and these shall at all times to be open for inspection by the Engineer-in-Charge or his representative.

14.2 The storage of cement shall be for not less than 30 days requirement of cement for the week on hand and anticipated at the time and at the rate then in progress. The arrangements for storage shall be such as to ensure that the utilisation of cement is in order of its arrival at the stores.

14.3 These and other materials shall be stored by the Contractor only at places approved by the Engineer-in-Charge. The storage and safe custody of the materials shall be responsibility of the Contractor.

14.4 EXPLOSIVE AND INFLAMMABLE MATERIALS :

(j) If explosive or inflammable materials are to be used for the execution of the works, the Contractor shall have to make all arrangements to procure these materials at his own cost & he shall have to construct and maintain magazines if necessary at his expense as are required for storage in accordance with the requirement of the appropriate Governement rules in force. Such areas should be displayed clearly as dangerous areas both in English, Deonagri and local scripts. The Department will however, extend assistance to the Contractor to obtain such licenses as may be required for storing and using explosives and or inflamable materials.

(k) The Contractor shall exercise proper care while using explosives, so as not to endanger life and property and shall be solely responsible for any damage resulting from their storage, transport and use and shall indemnify absolutely the Department and its officers and employees against any claim or liability arising out of any accident or violation of any laws, rules and orders.

(l) The Contractors shall employ on this job only such person who are skilled and experienced in such jobs and have requisite license for the same.

14.5 GEOLOGICAL AND ARCHAEOLOGICAL ITEMS :

All fossils, coins, articles, of value of antiquity and structures and other remains of things of geological and archaeological interest discovered on the site during excavation or otherwise shall be made over to the Department and the Contractor shall take reasonable precautions to prevent his workmen or any other persons from removing or damaging any such articles or things and shall immediately upon discovery thereof and before removal aquaint the engineer-in-Charge of such discovery and carry out his orders as to the disposal of the same.

15.0 SAMPLING AND TESTING OF MATERIALS :

15.1 All materials to be used on work, such as cement, sand, coarse and fine aggregates, re-inforcement sheet, piles etc. shall comply and shall pass the test and analysis required by his or as specified by the code of I.S.I. specification or such recognised specification acceptable to the Engineer-in-Charge as equivalent thereto or in the absence of such authorised specifications such requirements, tests and analysis as may be specified by the Engineer-in-Charge.

15.2 The Contractor shall at his risk and cost, make all arrangement and provide for all such facilities for collecting, preparing and forwarding required number of samples for test for analysis at such times and place or places as may be directed by the Engineer-in-Charge.

15.3 The Contractor shall if and when required submit samples of materials to be tested or analysed and if so directed shall not make use of or incorporate in the works and materials to the represented by the sample until the required test or analysis have been made and the materials accepted by the Engineer-in-Charge.

16.0 SAMPLING AND TESTING OF MATERIALS :

17.0 PLANT AND MACHINERY :

No secured advance shall be given on any materials in any case.

17.1 GENERAL : The Contractor shall have to bring their own tools, plant and machineries required for the execution of the work within the stipulated time as per tems of contract, if the Department is able spare machines and in case the Contractor desired to use them, the hire charge shall payable at the rate to be fixed by the Superintending Engineer.

17.2 CONDITION OF HIRE :

a) For the purpose of hire charges the working hours will be the actual hours the machine might be working. The period spent in travel of the machine from the workshop/machine yard to the site and back will be counted towards working hours, the records of all working hours will be maintained in the machinery log book by authorised representative of the Engineer-in-Charge and the Contractor or his authorised agent shall daily records in taken of acceptance.

b) During the process of work the Engineer-in-Charge shall have access and powers to examine the machines with a view to ascertain if they are properly used and maintained. The Engineer-in-Charge shall have the right to withdraw machines which are not properly used and maintained and the

decision of the Engineer-in-Charge in this respect shall be final and binding. The Contractor shall not have any claim for compensation on this score.

c) The machine shall be handed back to the Engineer-in-Charge after the work is completed in a fair and working condition, Should the Engineer-in-Charge find that the machines are not in a fair and working condition the repairs necessary as details by the Engineer-in-Charge shall be carried out by the contractor before they are finally handed over. In case the Contractor fails to repair the machines to the satisfaction of the Engineer-in-Charge same shall be done by the Engineer-in-Charge at Contractor's cost decision of Engineer-in-Charge in this respect shall be final and be upon the Contractor.

17.3 HIRE CHARGES :

The hire charges of the various machines shall be based on the following assumption :

i. The hire charge is excluding the cost of POL which will have to be supplied by the Contractor at their own cost.
ii. The Departmental supervision charge is included in the hire of machines.
iii. Operation staff will be provided by the Department and this is included the hire charge of the machines.
iv. Major overhauls and repairs of the machines found necessary due normal wear and tear will be done by the Contractor.
v. Preventive maintenance specified by manufactures as also all m--- repairs if found necessary shall also be done be the contractor.
vi. Any major break down due to fault in operation or due to lack or proper as timely maintenance will be made good by the Contractor on his own account.
vii. In case of any difference in the classification of major vis-a-vis minor repairs, the decision of the Superintending Engineer shall be final as binding.

18.0 SUPPLY OF ELECTRIC POWERS :

18.1 GENERAL: The contractor shall make his own arrangements for his electric power requirements. The department will assist in getting electric connection from B.S.E.B. it is required.

19.0 CONTRACTOR'S CAMP :

19.1 CAMP SITE: The Contractor shall provide, maintain and operate under competent direction, such camps and facilities convenient to the work as necessary for accommodation fooding, medical facilities transportation of his employees, worker, etc. The location of construction, operation and maintenance of such camps shall be subject to approval by the Engineer-in-Charge at the cost of Contractor.

19.2 BUILDINGS : The type of construction and the plans shall specifications for the buildings to be erected in the Contractor's camps shall be subject to the approval of the engineer-in-Charge proper and adequate sanitation and water supply arrangement shall have to be provided by the Contractor.

19.3 WATER SUPPLY AND DRAINAGE :

a. Arrangements for water supply for drinking and domestic purpose in the Contractor's camps shall be made by the contractor himself at the own cost and with the help of this equipment.
b. It will be the responsibility of the Contractor to maintain proper drainage and sewerage disposal in his camps and work site in order to prevent unhealthy conditions.

19.4 ELECTRIC SUPPLY :

Electric power for Contractor's camps will be arranged by the Contractors, himself.

19.5 USE OF LAND FOR CONSTRUCTION PURPOSE :

The land for construction of camps to accommodate the construction staff and workmen employed by the Contractor will be made available free of cost to the extent available.

19.6 CAMP REGULATION :

The Contractor shall be responsible for maintaining good order in his camps and on the works and to that end shall employ such officer, watchmen or other persons as may be required. All regulations shall be subject to the approval of the Engineer-in-Charge.

20.0 CLAIMS :

20.1 Payments for any additional items or work shall be made at the rates mutually agreed as per clause 33 of G.C.

20.2 No claim for idle labour, idle machinery etc. on any account will be entertained.

20.3 No Claim for increased in cost of labour and materials shall be entertained.

20.4 No claim shall be entertained for business loss or any such loss.

20.5 No claim shall be entertained for delays in communicating decision, drawings or specification by the department. The Department may, however, consider the grant of extension of time in completion of work, if there is any such reason for it.

20.6 In case it is possible for the Department to make the entire site available on the award of the work the Contractor will have to arrange his working programme acccordingly. No claim whatsoever for not giving the site on award of work and for giving the site gradually will be entertained. However, suitable extension of time may be given at the discretion of the Engineer-in-Charge considering the merits of the case.

21.0 **CLEARANCE OF SITE :**

The work shall not be deemed to be completed unless the Contractor has removed from the site of work and the premises of his work yard and the Government land allotted to the Contractors for accommodation of his staff and employee all the scaffolding, shed, surplus materials, toods & plant rubbish, working foams, soakpits, and other structures which may have been erected by him in connection with work dine, levelling and dressing of area so as to give a neat & clean look to the satisfaction of the Engineer-in-Charge. If the contractors fails to comply with any of the requirements of this clause Engineer-in-Charge shall, at the expenses of the Contract or take action to fulfil such requirement and may dispose off the scaffoldings, the surplus materials, the tools and plant left over by the Contractor as he thinks fit and the Contractor shall have no claim in respect of any such materials except for any sum actually reaslised by the sale thereof less the cost of fulfilling the requirement and an other amount that may be due from the Contractor. If the expense of fulfilling such requirements is more than the amount realised on such disposals as aforesaid, the excess amount shall be recoverable from the security deposit for other sums payable to the Contractor.

22.0 **FINAL CERTIFICATE AND TERMINATION OF RESPONSIBILITIES :**

The final certificate regarding the termination of the responsibility of the Contractor shall be given only after the defect liability period, as outlined in para 2 below.

23.0 **FINAL CERTIFICATE :**

Date of completion of work: As soon as the work is complete, the Contractor shall notify the Engineer-in-Charge or his authorized agent or other departmental officers within 30 days of the receipt of such notice by the Engineer-in-Charge. If there are defects and omission in the work the same shall be pointed out to the

contractor in writing and the contractor shall at once attend to these instructions and comply with these instruction and make good all defects and omissions within the period specified by the Engineer-in-Charge on making good these defects the contractor shall again notify the E/I to inspect the works and the Engineer-in-Charge or his authorised representative shall again make detailed inspections within 30 days to see that the work is complete in all defects and omissions pointed out earlier have been rectified.

The defect liability period shall extend to a period of …….(period) from the date of completion of work. The Contractor shall be responsible for the maintenance of works during the period of construction as well as during the aforesaid defect liability period. In case defects viz. cracks, settlement deformations or damages within a certain specified period and the Contractor shall promptly action to make good the defects and damages pointed out to him at his own cost and to the entire satisfaction of the Engineer-in-Charge shall have the power to get the works done through any agency at the expense of the contractor and the Contractor shall have no claim whatsoever. Such expenses for which the certificate of the Engineer-in-Charge shall be final and binding on the Contractor, may be recovered from the Security deposits of the Contractor or any sum payable to the contractor.

The refund of security deposits can be made only after the defect liability period is over and the liabilities notice, during the period satisfactorily complied with and after fully assessing that all dues recoverable from the Contractor supply of department materials, hire charges of machines lent to the Contractor and other obligations of the Contractor under various clauses of the agreement have been recovered in full and nothing is due with the contractor.

24.0 **IMPORTANT NOTICE :**

If there be any contradiction between the conditions and F-2(modified) agreement clause, the F-2 (modified) agreement clauses will prevail.

25.0 **CONTRACTOR'S RATE :**

The rate quoted by contractor below as per NIT.

26.0 Venue and Quantum of carriage of materials may vary subject to the availability of the materials.

Executive Engineer,
Irrigation Division, Deoghar

Instructions to Bidders
(FOR F_2 CONTRACT)

Detailed instructions & documents to be furnished for online bidding

1. Guidelines for online submission of bids can be downloaded from the website http://jharkhandtenders.gov.in
2. Interested bidders can download the bid from the website http://jharkhandtenders.gov.in
3. Bidders in order to participate in the bidding process have to get 'Digital Signature Certificate (DSC)' as per Information Technology Act-2000 to participate in online bidding. This certificate will be required for digitally signing the bid. Bidders can get the above mentioned digital signature certificate from any approved vendors (CCA). Bidders, who already possess valid Digital Certificates, need not procure new Digital Certificate.
4. Bidders have to submit their bids online in electronic format with digital Signature. Bids without digital signature will not be accepted. No proposal will be accepted in physical form.
5. Bids will be opened online as per time schedule mentioned in the NIT.
6. Bidders should be ready with the scanned copies of cost of documents & EMD as specified in the tender document. Before submission of online bids, bidders must ensure that scanned copies of all necessary documents have been attached with bid.
7. **Bidders have to produce the original Demand Draft towards tender fee & EMD as mentioned in N.I.T to the Executive Engineer/Procurement Officer during the period & time as mentioned in the NIT failing which bid will not be accepted.** The details of cost of documents, EMD specified in the tender documents should be the same as submitted online (scanned copies) otherwise tender will summarily be rejected.
8. Uploaded documents of the successful bidder will be verified with the original before signing the agreement. The successful bidder has to provide the originals to the concerned authority.
9. The department will not be responsible for any delay in online submission due to any reason what so ever.
10. All required information for bid must be filled and submitted online.
11. Other details can be seen in the bidding documents.

B. Details of documents to be furnished for online bidding

1. **Scanned copies of the following documents to be up-loaded in.pdf format on the website** http://jharkhandtenders.gov.in
   i. D.D. towards Tender fee.
   ii. Duly pledged EMD
   iii. GST Registration
   iv. Up-to-date GST Return
   v. PAN Card
   vi. Letter of Registration
   vii. Income Tax clearance certificate/up-to-date ITR
   viii. Labour license
   ix. UCAN
2. Scanned Copies of the Certificates showing details of machineries owned or possessed on hire should be uploaded after converting the same to.pdf format
3. Affidavit stating bidder's agreement with the general rules, conditions of contract, special conditions of contract must be submitted with bid in pdf format. The bidder who disagrees on the conditions will not be eligible to participate in the tender.
4. Affidavit regarding arranging other required equipment and personnel. in the format appended with the bid document should be submitted in the pdf format.
5. Duly filled in & Digitally signed BOQ.
6. Uploaded documents of successful bidder will be verified with the original before signing the agreement. The successful bidder has to provide the originals to the concerned authority on receipt of such letter, which will be sent though registered post or delivered by hand.
7. Each uploading shall be digitally signed by the bidders.

Executive Engineer,
Irrigation Division, Deoghar

Schedule XLV – Form No. – 61

JHARKHAND PUBLIC WORKS DEPARTMENT

[Form No. F – 2]

ITEM RATE TENDER AND CONTRACT FOR WORKS

General Rule and Direction for the guidance of Contractors.

1. All Works proposed for execution by contract will be notified in a form of invitation to tender passed on a board hung up in the office of and signed by the Sub-divisional Office/Executive Engineer.

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, 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 specifications, designs and any other documents required in connection with this submission of tender signed for the purpose of identification by the Sub-divisional Officer/Executive Engineer shall also be open for inspection by the contractor at the office of the Sub-divisional Officer/Executive Engineer during office hours.

2. In the event of the tender being submitted by a firm, it must be signed separately by each member there of or in the event of the absence of any partner, it must be signed on his behalf by a person holding a power-authorising him to do so.

3. Receipt 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 receipt for the firm.

4. The memorandum of work tendered or 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 Office/Executive Engineer before the tender form is issued. If a form is issued to a intending tender without having been so filled in and completed, he shall request the office to have this done before he completed and delivers his tender.

5. The amount of earnest money to be deposited will be :-

If the amount of the estimate does not exceed Rs. 2,000	50
If the amount of the estimate exceeds Rs. 2,000 but does not exceed Rs. 5,000	100
If the amount of the estimate exceeds Rs. 5,000 but does not exceed Rs. 10,000	200
For each additional Rs. 5,000 or portion of Rs. 5,000 additional earnest money	100

6. Any Person who submits a tender shall fill up the usual printed form stating there at what rate he is willing to undertake each item of the work incomplete tender and tenders which propose any alteration in the work specified in the said form of invitation tenders, or which contain any other conditions of any sort, or omit to note the time within which the work can be finished, or which are not accompanied by the treasury challan for the required earnest money will be liable to rejection. No single tender shall include more than one work, but contractors who will to tender for two or more works shall submit a separate tender for each Tender shall bear the name of the work to which they refer written outside the envelope. Cash deposits for earnest money here in before mentioned shall be made in Government Treasuries and the challan there of should be enclosed with the tender.

7. The Engineer or his duly authorised assistant will open the tender in the presence of any intending contractors who may be present at the time and will enter the amounts of the several tenders a comparative statements in a suitable form. In the event of a tender being rejected the challan for the earnest money forwarded therewith shall there upon returned to the tenderer with a pay order for the amount of the earnest money.

8. The Engineer 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 or the selected tender who shall thereupon sign copies of the specification & other documents mentioned in rules 1 and 4 for the purpose of identification and for his acceptance with the tender. The tender of the selected tender shall also deposit the required amount of the security money within the prescribed time. If the tenderer falls to deposit the required amount of the security money within the prescribed time, the Engineer may reject the tender.

If the Engineer is not competent to accept the tender himself, he will inform the tenderer of the tender which he decides to recommend for acceptance. Such tenderer shall thereupon sign forth-with 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 and the security money deposited shall be refundable to the tenderer.

10. When a tender is selected for acceptance the tender shall deposit the required amount of the security money in cash in treasury and shall forward the challan to the Executive Engineer, Government securities may be enclosed to the Executive Engineer lieu of a cash deposit of 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 10% to the estimated value of the work & towards this amount the earnest money already deposited by him shall be credited. At least half of this security inclusive of the earnest money shall be deposited by the tenderer within such time as may be notified to him in writing by the officer opening tender, failing which the 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% of the amount of each payment to be made to him under clause 7 of the conditions of contract for work done under the contract.

12. When a tender has been selected for acceptance & the required amount of the security money has been deposited the Engineer shall scrutinise all pages of the form of item, rate tender & contract for works to see that the form has been properly filled up and signed by the contractor & the signature witnessed. He shall then if he is competent, to accept the tender, sign the acceptance of the tender, of, if he is not so competent shall send the form for signature of the acceptance of the officer competent to accept it.

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 hereto so for as applicable or insure in office the sum of money mentioned in the said conditions.

Dated the day of 200

Witness :-

Address :-

Occupation

Signature of contractor before commission of tender

Signature of witness to contractor's signature

The above tender is hereby accepted by me on behalf of Governor of Jharkhand.

Schedule XLV – Form No. – 61

Dated the day of 200

Signature of the office.
accenting the tender.

Acceptance communicated on .....

Signature of the party
taking the tender

CONDITIONS OF CONTRACT

Compensation

Clause 1 :- All compensation or other sums of payable by the contractors to Government under the terms of his contract may be deducted from, paid by the state of a sufficient part of his security deposit or from the interest arising therefore 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 there after make good in cash of Government securities endorsed as aforesaid any sum or sums which may have been deducted from or arised by sale of his security deposit of any part thereof.

The work should not be considered until such date as the Executive Engineer shall certify as the date on which the work is finished after necessary rectification of defects as pointed by the Executive Engineer his authorised agents are fully contractor to the Engineer's satisfaction.

Clause 2 :- 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 the essence of the contract on the part of the contract or) and the contractor shall pay as compensation an amount equal to ½ percent on the amount of the estimated cost of the whole work as shown by the tender for every day that the work remains uncommenced or unfinished after the proper date. 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 elapsed and three-fourth of the work, before three fourths of such time has elapsed in the event of the contractor falling to employ with this condition. I shall be liable to pay as compensation an amount equal to ½ 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 provisions the clause shall not exceed 10 percent of the estimated cost of the work as shown in the tender.

Action when persnle security deposit foreited

Clause 3 :- In any case which under any clause or clauses of or this contract the contractor shall have rendered himself laible to pay compensation amounting to the whole of his security deposit in the hands of Government (where paid in one sum or deducted by installments) the Executive Engineer on behalf on the Bihar Government shall have been powered to adopt any of the following courses, as he may deem best suited to the interest of Government.

(a) To rescind the contract (of which rescind notice in writing to the contractor under the hand of the Executive Engineer shall be conclusive evidence) and in which case the security deposit of the contractor shall start forfeited, and be absolutely at the disposal of Government.

Item No.	Item of work	RATE TENDERED		Per
		In figures	In words	

(b) 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 construction with the cost of the labour and the price of the materials (of the amount of which cost and price certificate of the Engineer-in-charge shall be final and conclusive against the contractor), and crediting him with the value of the work done, in all respects in the same manner and at the same rates as if it had been carried out by the contractor under the terms of his contract, the certificate of the Executive Engineer as to the value of the work done shall be final and conclusive against the contractor.

(c) To measure up the work of the contractor and to take such part of the work of the contractor as shall be unexecuted out of his hands, and to give it another contractor to complete in which case any expenses which may be incurred in excess of the sum which would have been paid to the original contractor if the whole work had been executed by him (of the amount of which excess the certificate in writing of the Executive Engineer shall be final and conclusive) shall be born and paid by the original contractor and made 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 there of, or a sufficient part thereof.

In the event of any of the above courses being adopted by the Executive 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 engagement, or made advances on account of or with a view to execution of the work or the performance of the contract. And in case the contract shall be rescinded under the provision aforesaid, contractor shall not be entitled to recover or be paid any sum for any work there-to-fore actually performed under this contract unless and until the Executive 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.

Contractor remains liable to pay compensation if action not take under clause 2.

Clause 4 :- In any case in which any of the powers, conferred upon the Executive Engineer by clause 3 thereof shall have become exercisable and the same shall not be exercised the non-exercise there of shall not contitury walver of the conditions here and such power shall not with standing be exercisable in the event of any future case of default by the contractor for which by any clause 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 Executive Engineer putting in force the powers vested in him under the preceding clause he may, if so desires, take possession of all or any tools, plants, materials and store, in or upon the works of the site thereof or belonging to the contractor or procured by him and intended to be for the execution of the work or any part there of paying or allowing for the same in the contract at the account rates, or in case of these not being applicable at current market rates to be certified by the Executive Engineer whose certificate thereof shall be final, otherwise the Executive Engineer may notice in writing to the contractor or his clerk of the work, foreman or other authorised agent require him to remove such tools, plants, materials or stores from the premises (within a time to be specified in such notice) and in the event to the contractor falling to comply with any such requisition the Executive Engineer may remove them at the contractor expense or sell them by auction or private sale on account of the contractor and at his risk in all respect, and the certificate of the Executive Engineer as to the expense of any such removal and the amount of the proceeds and expense of any such sale be final and conclusive against the contractor.

Extension of time

Clause 5 :- If the contractor shall desire any extension of the time for completion of the work, on the ground of his having been unavoidably hindered in its execution or on any other ground other than those mentioned in clause 12(a) he shall apply in writing to Executive Engineer within 40 days from the date of starting of the hindrance on account of which be desires such extension as aforesaid and the Executive Engineer shall, if in his opinion (which shall be final) reasonable grounds be shown there of authorised such extension of time, if any, as may in his opinion be necessary or proper. The Executive Engineer shall at the same time inform the contractor whether he claims compensation for the delay.

Final certificate

Clause 6 :- On completion of the work, the contractor shall be furnished with a certificate by the Executive Engineer (hearing after called the Engineer-in-charge) of such completion, but no such certificate be given, nor shall the work be considered to be complete under the contractor no such certificate be given, nor shall the work be considered to be complete until the contractor shall have removed from the area of the premises (to be distinctly marked by the Executive Engineer in the site plan) on which the work shall be executed all scaffolding surplus materials and rubbish, and cleaned of 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, not until the work shall have been measured by the officer of the Public Work Department in accordance with rules of Department whose measurements shall be binding and conclusive against the contractor. If the contractor shall fall to comply with the requirements of this clause as to removal of scaffolding, a surplus materials and rubbish and cleaning off dirt on or before the date fixed for completion the work, the Engineer-in-charge may at the expense of the contractor remove such scaffolding, surplus materials and rubbish and dispose of the same as the thinks fit and clean of such dirt as aforesaid and the contractor shall forth with pay amount of all expense so incurred, and shall have no claim in respect of any such scaffolding or surplus materials as aforesaid, expect for any sum actually realised by the sale there of.

Payment of in terms date certificate of to be regarded as advance and Bill to be submitted monthly.

Clause 7 :- A bill shall be submitted by the contractor each month or before the date fixed by the Engineer-in-charge for all work executed in the previous months and the Engineer-in-charge or his subordinate shall take the requisite measurement for the purpose of having the same verified and the claim, as for as admissible, adjusted, if possible, before the expiry of the 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 whose counter signature on the measurement list will be sufficient warrant, and the Engineer-in-charge or his subordinate shall prepare at bill from such list which shall be binding to the contractor in all respects.

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

Clause 8 :- The final bell shall be prepared by the officer of the Public Work Department in accordance with the rules of the department in the presence of the contractor with in the month of the date fixed for completion of the work.

Stores supplied government

Clause 9 :- If the specification or estimate of the work provides for the use of any special description of material to be supplied from the Engineer-in-charge's stores or if it is required that the contractor shall use certain stores to be provided be the Engineer-in-charge under the conditions of this contract or (such materials and stores, and the prices to be charged therefore as herein after 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 are specified or memorandum here to annexed) the contractor shall be supplied with such materials and stores noted in the annexed such schedule require form 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 there after to become due to the contractor under the contract or otherwise, or against or from the security deposit, or the proceed of sale there of, if the same is held in Government security the same or sufficient portion thereof 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 accounts he 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 correctly in 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 to or any such materials.

Clause 10 :- The contractor shall executive the whole and every part of the work in the most Work to be

executed accordance with specification drawing other etc.

substantial and workman like 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 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 entitle to access at such office, for the purpose of inspection during office hours, and the contractors shall, if he so require 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.

Alteration in specifications and designation.

Clause 11 :- Engineer-in-charge shall have power to make any alteration in additions to the original specifications, drawings and instructions that may appear to him to be necessary or advisable during the progress of the work. 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 for completion of the work shall be extended in the proportion that the additional work. The time for completion of the work shall be extended in the proportion that the additional work bears to the original contract work and the certificate of the Engineer-in-charge shall be conclusive as to such proportion and to the additional work includes any class of work, for which no rates is specified in this contractor then such class of work shall be carried out at the rates entered in the sanctioned scheduled or 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 in 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 does the rates which in his intention to charge for such class of work and if the Engineer-in-charge does not agree to this rate he shall be noticed 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 provided always that if the contract shall commence work or in our expenditure in regard thereof before the rate shall have been determine as lastly herein before mentioned then and 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 rate or rates as shall be fixed by the Engineer-in-charge in the event of a dispute the decision of the Superintending Engineer of the circle will be final.

Do not in validate contract

Time in consequence of alteration

Provided always that the contractor shall not be entitled to any payment for any additional work done unless he has received an order in writing from the Engineer-in-charge for the additional work the contractor shall be bound to submit his claim for any additional work done during any month on or before the 15th days other following month accompanied by a copy of the order in writing of the Engineer-in-charge for the additional work and the contractor or shall not be entitled to any payment in respect of such additional work if be other submit his claim within date aforesaid period.

Rate of work no in estimate or schedule of rates of the district.

Compensation for alteration in or restriction of work to be carried out.

Clause 12 :- If at any time after the commencement of the work the Government of Bihar shall for any reason whatsoever not require 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 of compensation whatsoever on account of any profit or advantage, which he might have derived from execution to the work in full, but which he did not derive in consequence of the full amount of the work not having been carried out neither shall he have any claim for compensation by reason of any alternation having been made in the original specification, drawing, designs and instruction which shall involve any installment of the works as originally contemplated clause 12 (a). As enclosed in G. O. 1929 dated 11.9.56.

Clause 12 :- (a) The contractor shall not be entitled to claim any compensation for loss suffered by him on account of delay by or on behalf of Government in the supply of materials as stores which the Government may have undertaking to supply where such failure is due to :-

(i) natural calamities, (ii) act of enemies, (iii) transport and procurement difficulties or (iv) circumstances beyond the control of the State Government.

In case of such failure in delay in the supply of materials or stores on an application by the

contractor within 30 days from the date of such failure or delay such extension of time shall be granted to the contractor for completion of the work as shall appears to the Engineer to be reasonable in accordance with the circumstances of the case. The decision of the Executive Engineer as to the extension of time shall be accepted as finally by the contractor.

Action and compensation payable in case of work

Clause 13 :- If it shall appear to the Engineer-in-charge or his subordinate in-charge of the work that any work has been executed with unsound, imperfect or skillful workmanship or with materials of any inferior description, or by any materials or articles provided by him for the execution of the work are unsound or of a quality inferior to that contracted for at otherwise not in accordance with the contract, the contractor shall on demand in writing form the Engineer-in-charge specifying the inadverntaly passed certified and paid for, forthwith rectify or remove and re-contract the work so specified in whole or in part as the case may remove the materials or articles so specified and provided other proper and suitable materials or articles at his own proper charge and cost, and in the event of failing to do son within period to be specified by the Engineer-in-charge in his demand aforesaid the contractor shall be laible 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 certify 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 taken to inspection

Clause 14 :- All work under in course of execution or executed in presence of the contractor shall at the times to open 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 time at which reasonable notice of the intimation of the Engineer-in-charge or his subordinate to visit the works shall have been given to the contractor, either himself to be present to receive orders and instruction, or have a responsible agent duly credited in writing present for that purpose orders given to the contractors agent all shall be considered to have the same force as if they had been given to the contract himself.

Contractor or responsible Agents to be present

Clause 15 :- The contractor shall give not less than five days notice in writing to the Engineer-in-charge or his subordinate-in-charge of the work before covering up or otherwise placing beyond the reach of measurement of any work in order that the same may be measured and correct dimensions there of the 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 of any work without the consent in writing of the Engineer-in-charge or his subordinate-in-charge of the 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 contractors expenses or in default there on payment or allowance shall made for such work on material with which the same was effected.

Notice to be taken before work covered up.

Clause 16 :- If the contractor or his work-people, or servants shall break, deface injury or destroy any part of a building in which they may be working or any building, road, road curves, fence enclosure water pipes, cables, drains, electric or telephone posts or wires, trees, grass or grassland or cultivated ground contiguous on which the work or any part of it is being executed or if any damage shall happen to the work, while in progress from any cause whatsoever or any imperfection become apparent in if within three months (six months in the case of a road-work) after a certificate final or other of its completion shall have been given by the Engineer-in-charge.

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

as a fore seal, the contractor shall make the same good at his own expense, or in default, the Engineer-in-charge may cause the same to be made be good by other worksmen and deduct the expense of which time thereafter may become due to the contractor, or from his security deposit, or the proceed of sale there of, or of a sufficient portion there of the security deposit at the contractor shall not be refunded before the expiry of three months (six months in the case of a road work) after the issue of the certificate final or otherwise of completion of work provided that in the case of a road work if in the opinion of the Engineer-in-charge behalf of the security deposit will be refundable after three months of the issue of the said certificate of completion.

Contractor to supply to plantiadder scaffolding

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 by supplied from the Engineer-in-charge's stores). Plants, tools, application, implements, ladders, cordage jackal scaffolding and temporary works requisites or proper for the proper execution of the work whether original, altered or substituted and whether include in the specification or other documents forming part of the contract or referred to in these conditions or not or which may be necessary for purpose of satisfying or complying with the requirement of the Engineer-in-charge as to any matter as to which under these conditions he is entitled to be satisfied which he is entitled to require together with carriage therefore to and form 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 or examination at any time and form time to time of the work or materials failing his so doing the same may be provided by the Engineer-in-charge at the expense of the contractor and the expenses may be deducted from any money due to the contractor under the contract 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 to expenses of defence of every suit action or other proceeding at law that may be brought by any person for injury sustained owing to neglect of the above precautions and to any such person or which may with the consent of the contractor be paid to compromise any claim by any such person.

And is liable for damage arising for non-provision of light fencing etc.

Clause 18 :- No female labour shall be employed within the limits of cantonment. The contractor shall not employ for the purpose of his contract any person who is below the age of twelve years and shall pay to each labour for the work done by such labourer wages not less than the wages paid by similar work in the neighborhood.

Work not to be subject

The Executive Engineer shall have the right to enquire into the case and decide any complaint alleging that the wages paid by the contractor to any labouer 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 contractor is below the age of twelve years and to refuse to allow any labourer whom he decided to be below the age of twelve years to be employed by the contractor.

Contract may be rescinded and security deposit forfeited for subletting bribes or if contractor become insolvent

Clause 19 :- The contractor shall not be assigned or subject without the written approval of the Executive Engineer. And if the contractor shall assign or subject his contract, or attempt so to do, or become insolvent proceedings to make any composition with his creditors or attempt so to do, or if any bride, gratuity, gift loan, requisite, reward or advantage pecunairy of otherwise, shall either directly or indirectly be given promised, or offered by the contractor, or any of his servant or agents to any public officer, or person in the employ of Government in any way relating to his officer or employment or if any such officer or person shall become in any way directly or indirectly interested in the contract the Executive Engineer may there upon by notice in writing rescind the contract. The security deposit of the contractor shall there upon stand forfeited and be absolutely at the disposal of Government and the same consequence shall ensure as if the contract had been rescinded under clause 3 here of, in addition the contractor shall not entitled to recover or be paid to any work therefore actually performed the under the contract.

Such payable by way of compensation to be considered 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 the Government without reference to the actual loss or damages sustained and there of not any damage shall have been sustained.

Charges in constitution of firm

Clause 21 :- In the case of a sender by partners, any change in the constitution of the firm shall be forthwith notified by the contractor to the Engineer-in-charge of this information.

In case of failure to notify the change in the constitution within fifteen days the Engineer-in-charge may be notice in writing rescind the contract 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 has been rescinded under clause 3 hereof, and in addition the contractor shall not be entitled to recover or be paid for any work therefore actually performed under the contractor.

Works to be under direction of Superintending Engineer

Clause 22 :- All work to be executed under the contract shall be executed under the direction and subject to the approval in all respect of Superintending Engineer of the circle 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 sum in estimate

(a) Clause 24 :- When the estimate on which a tender is made includes lump sum in respect of the contract shall be entitled to payment in respect of the items or work involved of the work in question the same rates as are payable under this contract such terms, for 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 at his direction 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 pay able to him under the provision of this clause.

Action where no specification.

Clause 25 :- In the case of any class of work for which there is no such specification as is mentioned in rule 1, such work shall be carried out in accordance with the circle specification and in the event of there being no circle specification, then in such case the work shall be carried out in all respects in accordance with the instructions and requirements of the Engineer-in-charge.

Definition of works

Clause 26 :- The expression “work” or “works” where used in these conditions shall unless there be something either in the subject or context repugnant to such construction be constructed and taken to mean the work by or virtue of the contract contracted to be executed whether temporary or permanent, and whether original, altered, substituted or additional.

Clause 27 :- The terms and conditions of the agreement have been read/explained to me and ..... certify ..... clearly understand them.

Witness

Contractor

Annexure-I

EARNEST MONEY (BANK GUARANTEE)

WHEREAS, ... [name of Bidder] (hereinafter called "the Bidder") has submitted his Bid dated..... [date] for the construction of .....[name of Contract hereinafter called "the Bid"].

KNOW ALL PEOPLE by these presents that We .....
[name of Bank] having our registered office at ..... (hereinafter called "the Bank") are bound into E.E., Irrigation Division, Deoghar..... in the sum of Rs. (amount of earnest money in words) for which payment well and truly to be made to the E.E., Irrigation Division, Deoghar..... the Bank itself, his successors and assigns by these presents.
SEALED with the Common Seal of the said Bank this ..... day of .....,20.....

THE CONDITIONS of this obligation are :

(1) If after Bid opening the Bidder withdraws his bid during the period of Bid validity specified;

OR

(2) If the Bidder having been notified of the acceptance of his bid by the E.E., Irrigation Division, Deoghar ..... during the period of Bid Validity:

We undertake to pay to the E.E., Irrigation Division, Deoghar..... up to the above amount upon receipt of his first written demand, without the E.E., Irrigation Division, Deoghar..... having to substantiate his demand, provided that in his demand the E.E., Irrigation Division, Deoghar..... will note that the amount claimed by him is due to him owing to the occurrence of one or any of the above mentioned two conditions and specify the occurred condition or conditions.

This Guarantee will remain in force up to and including the date .....** days after the deadline for submission of Bids as is stated in the instructions to Bidders or as it may be extended by the E.E., Irrigation Division, Deoghar..... notice of which extension(s) to the Bank is hereby waived and notice to the bidder would constitute sufficient notice to the Bank. Any demand in respect of this guarantee should reach the Bank not later than the above date.

DATE

SIGNATURE .....
(of Issuing Banker)

(Signature of Witness) ..... SEAL .....

.....

[Name and Address]

*The Bidder should insert the amount of the guarantee in words and figures denominated in Indian Rupees. This figure should be the same as shown in the bid document.

** 45 days after the end of the validity period of the Bid.

Executive Engineer,
Irrigation Division, Deoghar

TECHNICAL SPECIFICATION
(STRUCTURE)

1.0 PREPARATION OF WORK AREAS:

All rubbish ,jungles ,bushes ,bush wood and trees etc. shall be cleared and disposed of as per disposal plan approved by the E/I.All roots of trees ,stumps shall be grubbed out to a minium depth of 600mm ,belfow ground level or foundation level and wholes so form to be filled with earth and well rimmed.The clearerd and grubbed areas shall be maintained free of vegetables growth during the progress of work.

No separate payment be made for this item

2.0. LAY-OUT :

For lay-out pags ,strings ,flags pillers and labour required for setting out work ,in lines and levels as per approved drawing or construction of bench marks may be required shall be provide by the contractor at his own cost,no separate payment will be made to the contractor on this account and the charge or lay out as above will be taken to be included in the tendered rates for the item or works specified in the bill of quantity .

3.0 EXCAVATION OF FOUNDATION:

Trenches for foundation shall be taken out to full width of lowest course of footing in exat length and depth as shown in the drawings or as directed by the E/I.A working space if at all needed will be permitted up to 0,.50M at the foundation level whereevewr necessary.The side shall be plumb where nature of the soil permit it , but they must be steeped back or shored up carefully where they show a tendency to fall in. The excavated materials shall be disposed of only in the manner and at the place approved by the E/I. otherwise it will entitle the department not only to reject the quantity for the purpose of payment but also to recover from the contractor the cost involved in removal of the same .In case excavation is done deeper or wider than shown in the drawing the contractor shall have to fill up the extra depth or width so cut at his own expense with concrete or sand ,watered and rammed to the satisfaction and direction of E/I.Bottom of foundation trenches shall be dressed and beveled both longitudinally and transversally and shall be watered and well rammed .Where stepping is indicated in drawing or order by E/I.,it must be squarely benched out .If any soft place comes to light on inspection of exposed foundation they shall be dug out or dealt with as order by the E/I.All superfluous water in trenches or water coming from ground water table etc. shall be removed before

putting concrete .The foundation trenches shall be inspected ,checked and approved in writing by the E/I.before starting concrete or masonary work .No separate payment will be made to contractor on account of removal of water of for dewatering .The contractor supposed to include the charges on this account in the tender rates for the items of work specified in the bill of quantity.

3.1 EXCAVATION OF SOIL:

(a)**ORDINARY SOIL**: This shall include vegetable or organic soil ,turf ,san,silt ,loam ,clay,mud ,peat,blackcotton soil,soft shale or loose moorum ,a mixture of these and similar materials which yields to ordinary application of pick –axe and shovel,rake or any other ordinary digging tools or equipments ,removal of gravel or any other

bquildery materials having diameter in anyh one direction not more than 300mm shall be deemed to be covered under this category.

(T.S.-2)

b) **HARD SOIL**: this shall include :

i) stiff heavy clay,hard shale or compact moorum,requiring tools orpicks or both and closely applied shovel .

ii) gravel and cobble stone having 300mm maximum diameter in anyone direction .

iii)Soling or roads,path,etc.and hardf core .

iv)Macadam surface such as water –bond and bitumen /tar bond.

v)Lime concrete ,stone masonry in lime mortar and brick work in lime cement mortar or mud mortar below ground level.

vi)Soft conglometer ,where the stone may be detached from the matrix with picks.

vii)Generally any materials which require close application of picks scarifies to loosen and not offering resistance to digging greater than the hardness of any soil mentioned in (i) to (vi) above .

3.2**EXCAVATION OF ORDINARY ROCK** :

This type of excavation mayor may not need blasting .Soft rock excavation shall include only excavation in rock of hardness and texture as can be qurried or split with crowbars or with mild explosives .This shall inclue.

i)Lime stone ,sand stone,late rite hard conglomeht or other disint grated rock which may be quarried or split with crowbars or with mild explosives.

ii)Boulders which do not required blasting maximum diameter in any direction of not more than 300mm found laying as slope was and terrace materials of dissimilar organ.

Exavation is to be done in profiles and sections and grade .Any extra cut either in bed or slope below sub bead should be refilled with plain cement of(1:5:10) (with 25cm.stone chips) at the cost of the contractor.

3.3 **EXCAVATION OF HARD ROCK** :

This will include all solid rock in place which can not be rem untiloosend by blasting and wedding out all boulders or detached pieces of solid rocks of having a dimension of not less than 300mm .The rock should be of such hardness and texture that it can not be loosend or broken down by sabals.Blasting shall be resorted only after it has been certified by the E/I. that blasting in necessary.

THAT HARD ROCK SHALL COMPROMISE OF : i)Any rock or cement concrete for the excavation of which the use compressor,jack hammer and blasting is required.

ii)Reinforced cement concrete or (re-inforcement out through but not sepated from the concrete)below ground level .

iii)Boulders having minimum diameters of 300mm requiring blast .

Hard rock requiring blasting as described bove but where blasting is prohibited for any reason ,excavation has to be carried out by chiseling wedding or any other agreed method.Blasting will be permitted only when proper precautions are taken for the protection of the life and all other properties and damage done to the work or the property of life by blasting shall be made good by the contractor at his own expence,no extra payment shall be made for this

(T.S.-3)

Blasting shall have to be done in case where removal of hard rock is necessary in bulk.Blasting near the finished section shall be done with light charges so as not to disturb the sub grade and bed and slope finished .

The blasting so done ,shall not creat creacks or fissures lower down as this may result weakening the sub grade.The hard rock so obtained will be neatly stocked by the contractor with all lifts and leads up to 160M at place indicated by the E/I.in sizeable and level stacks .

THE MODE OF MEASUREMENT OF EXCAVATED HARD ROCK SHALL BE AS UNDER:

i)If the area to be excavated comprises of visible hard work,this shall be marked out to specified 'Nay inb block level plan an as calculated by stock measurement (deducting voids)shall be co-related and variation worked out.The stock measurement of hard rock shall not ordinarily be less than 90%.The maximum 10% difference may be left out for wastage in blasting and carriage which shall be ascertained by the E/I.and a certificate thereof shallbe recorded in measurement book.If a higher variation is found after being verified out by the Executive Engineer, a report shall be forwarded to Superinternding Engineer for approval. The Quantity excavated shall be also calculated on the basis of explosive quantity consumed and the minimum of the three will be payble .

ii)For mixed zone where ordinary(soft)rock,moorum etc.and hard rock are so mixed that separate measurement hard rock by block level is not possible ,excavation shall be carried out in usual way by ordinary tools and by blasting .The excavated rock shall be picked

upto 150mm size and properly stacked .For size 150mm and below separate stacked shall be made and accounted ,for which the part of voids shall be discounted and dndo payment shall be made for it. Soft rock and moorum etc.shall how ever ,be di sposed of in suitable way as instructed by E/I.

The total excavation shall be measured by block level and quantity work out for the composit excavation ,quantity of hard rock shall be permissible only to theextent of stock measurement after deducting voids .

iii)Incase of stock measurement of hard rock as mentioned in para(i)and(ii)the volume shall be computed after making 25%deduction for voids therefrom .No extra payment for stacking shall be made .Hard rock so obtained will be the property of Govt. which shall be used in the works as required and the cost of hard rock will be recovered from the contractor 's bill at Departmental rate. The department rerserve right to use the hard rock so obtdained for any other construction or in the work if required. The rock needed for work of pitching ,filter or stone etc.shall be uti lised out of the excavated hard rock if so required .

3.4 **PAYMENT**:

The contractors rate shall include cutting ,filling and removing excavated materials etc.as required during course of excavation.The quantity to be paid for excavation shall be as per actual section excavated subject to the maximum section as specified above.

4.0 **EARTHWORK IN FILLING**:

The earthwork in filling will be of two types (a)Backfill(b)Fill other than backfill.

4.1(A) **BACKFILL**

Backfill is defined as excavation refill which is required to be placed under these specification and which can not be deposited around the structures or adjacent embankment unit after the structures are completed .Such backfills may consist of either s.Previous o r impervious earth .However the thickness of previous matewrials adjacent to the structure in the backfill shall not be less than 600mm at any place.The thickness of backfill with previous earth greater than 600mm will be depend upon availability of previous materials at site and will be decided by the E/I.This will be laid in 9 inch layers and compacted so as to give maximum dry density of not less than95% at optimum moisture content .Payment for this type of work shall be made for cubical contents of finished work.

5(B) **FILLS OTHER THAN BACKFILLS**:

This shall consists of either previous or impervious materials.Such fills shall be done around the structures behind the back fill.The materials for the fill may be obtained from the excavation of foundation ,or excavation of borrow areas.Attemptrsll be made to use the materials obtained from founbdation directly ,in fills as far as practiciable. When ever the materials of the fill is received from the direct disposal of the foundation excavation as laid downin the clause 3.0,no extra payment will be made as the cost is included in item of excavation of foundation trenches but when the materials is borrowed from the outside and not received from the direct disposal of the foundation excavation , the cost will be paid as per rates accepted in the item of filling. The unit of measurement will be per cubic metre.

The fill lshall be paid in 9" layers and compacted so as to give maximum dry density of 85% at optimum moisture content,. The fill not conforming to above stipulation shall be rejected and Contractor will have to be re-done without any extra payment for this ltypwe of fill. Payment shall be made for cubical content of the finished work less the cubical content directly utilized from the ltime of excavation of foundation trenches .Contractor's rate for the item work shall include the cost of carriage,disposal ,sprading,watering,rolling,compaction,leveling and dressing the same in suitable profile llas per specification and direction of E/I,when soil shall be carried from the borrow area. When disposal of excavated soil will be utilized in filling work then payment for watering and rolling shall be made .The cost of other operation included in quoted rate will be deducted.

5.0 **DEWATERING**:

The Tenderer are supposed to be will acquainted with site conditions and quote their rate exclusive of cost of all arrangements and all operations of fdewatering.

Separate payment lwill be made for dewatering involved at any time during the execution of work.

6.0 **MATERIALS:**

All materials to be used in the work shall co0nfirm with the requirement laid down in the specificatgion or as per stipulation IS code for such type of materials. If any special materials not covererd here is required to be used ,it shall confirm to relevant Indian Standard if there are any,or to the lrequirement specified by the E/I.

6.1**FIRST CLASS BRICKS**:

First class bricks should be sound hard,well brunt,uniform deep,cherry red or copper colour ,free from cracks ,flaws,stones or lumps of any kind.Thgese should be of good shape. Sharp edged and capable of with standing of crushing stress 100kg /sq.cm.The absorption of well burnt brick after 6 hours immersion on water should not exceedd of 1/6 th of its weight when dry.They should omita metallic pitched ringing sound when struck.The size will be 24.5cmx12cmx7cm brick should be stdacked in such away that each brick is vi sible l;and can be inspected.

6.2 **CEMENT**:

Cement lshall conform to the relevant lclause lof the I.S.O.P.C 33 grade or as latest revision (Govt.Lt No.1135 dated 9.8.99)

Cement shall be used in approximately the same chrono-logical order in which it is received from the factory.

Cement delivered in bags shall be transported under complete damp proof covers and stored in damp proof structure with adequate provision for the provention of absorption of moisture and stacked in a manner permitting inspection and identification of each consignment .Stacking height of bagged cement shall not exceed 3 metres ,cement that has been in storage for more than 4months shall not be used without special inspection,testing and approval as per clause 3.6.1 of IS.457-1957

6.3 **COARSE AGGREGATE**:

Coarse aggregate shall consist of curshed stones of approved quality .Quarring and screening to obtain aggregate of required size and grading shall be the responsibility of the contractor.The

aggregate shall contain requisite fines to allow adequate finishing .Maximum size of aggregate shall not exceed 40mmas stipulated in bill of quantity concrete work.Grading of mix of for the concrete shall be approve by the E/I.Before the same is used by the contractor .The contractor shall have to make is own arrangement for quarrying ,crushing to size ,washing and transporting of aggregate of required sizes to work site at his own cost .Coarse aggregate shall confirm to 1.8.383-1970.The aggregate shall be properly graded so as to produce a compact concrete .Thge gradation shall be finally approved by the E/I.The fibre particles and deleterious materials passisng 4.75mm sieve shall not exceed 5 % in any case.The over size maximum size shall not exceed 3%. **QUALITY:**

The coarse aggregate shall consist of hard ,dense ,durable ,uncoated rock fragments and shall be free from injurious amount of soft ,friable ,thin and laminated pieces ,alkali,organic matter or other deleterious substance.Rounded peb Qles ,flaky laminated land decayed stone are not to be used .

6.4 **FINE AGGREGATE**:

i)**General** :Fine aggregate or sand is the materials most of which passes through 4.75mm sieve .Fine aggregate for concrete ,mortar shall be natural fine aggregate or coarse sand from river bed.Sand obtained from crushing of stone may also be used as fine aggregate provided if it satisfied the Indian Stdandard Specification.

ii) **Quality** : The fine aggregate shall consist of clean ,hard,strong,sharp, durable ,uncoated particles,free from injurious(dust,mica,shales,softflaky particles,alkalies,organic matters

,loam or other deleterious substances)the maximum percentage of deleterious substance in the fine aggregates as delivered for use of work shall not exceed the following values.

(T.S.-6)

Materials passing No. 200 sieve	
Shale	1 %
Coal	1%
Claylumps	1%

Total of other deleterious substance (such as alkali ,mica coated grains ,soft ,flaky particles and loam) shall not be more than 2%.Theum of percentage of all deleterious substance shall not exceed 5% by weight.All sand to be used in the construction of the structure shall confirm to specification and limit of grading by I.S.I.in R.C.C. work and other of F.M.not less than 2.00 in r.C.C. work .Sand of F.M. 1.6 to 1.8 to 2.00 will be used in masonry ,pointing and plastering work.the sand shall be screened and washed to remove all foreign and deleterious materials before use in work.The fineness modueles shall be computed by adding commulating percentage of fine aggregate retained on the Indian Standard sieves and deviding the same by 100.the grading of the fine aggregates shall be controlled in such a manner that the fineness modulus atleast nine out of ten test samles will not very than 0.20 from the average fineness modulus of ten samples.

6. 5 **RE-INFORCEMENT** :

The re-inforcement bars,if provided will be on the departmental issue rate .The contractors will have to submit the phasewise requirements of re-inforcement atleast a 15days before use.The contractor will submit the reinforcement bnding schedule as per approved drawings and after approval by E/I.,the cutting and bending of rods will be done .the re-inforcement must be clean and free from scales of rust and dirt.If rusts are found they shall be removed by rubbing with dry sand for which no extra payment will be made .All re-inforcement must be bent cold as per details given in the drawings or as directed by the E/I

6.6 **WATER** :

The water to be used in concrete and mortar shall be reasonably clear and free from objectionable uatities of slits,organic metter,alkalies,salts and other impurities and has to be arranged by the contractor at his own cost.

6.7 **NP-2 HUME PIPE** :

The pipe confirming to 1.8.1.158-1971 will be used and it will be laid as per design,drawings or as direction on E/I.

6.8 **BOULDERS :**

The boulder shall be supplied by the departmental stack yard if available .However ,carriage as per requirement shall have to be done by contractor.

The stone boulder shall consists of varieties like granite ,basalt,sand,stone etc.conforming to I.S.I.specification.

All stone shall be strong ,hard and durable as per I.S.I. specification.The stone shall be free from defects like caijtious cracks,flaws,stone holes,viens patches of soft or loose materials etc.The percentage of absorption shall not exceed 5%.Generally the stone should not contain crystaaline silica or chartmica impurities etc.The minum crushing

Strength of boulde shall not be less than the values given hereunder .

Sl. No.	Type of stone	Minimum crushing strength in kg./oper sq.cm.
1	2	3
1	Granite	1000
2	Rasalt	400
3	Sand stone	300

Sand stone normally be of size 9'0 to 12'0 and the length of the stone shall not exceed three times height .The specific gravity of stone shall be not less than 2.50.The minum weight of such stone boulder shall be less than 40kg..The stone shall also conform to I.S. 1123-1957 and I.S. 1127-1957 for payment purpose 16'0 height of stack shall be measurement at 12".The stone boulder shall be properly stacked in rows in stack yard or at site as per direction of E/I. or his representatives.The stack height should not exceed 1200mm in anycase and sufficient space shall be left all round the stacks to facilitate inspection and measurmnent.

6.9 **FILTER MATERIALS** :

The filter materials shall be clean,sound well graded sand ,gravel or screened rock fragment .No practicals of the decomposed rock,debris and vegetable materials or other deleterious materials shall be permitted.

Specification in regard to gradation of the filter as mentioned in drawing or as per direction of the E/I should be followed strictly .

6.10 **FILTER MATERIALS AT EXPANSION JOINTS :**

The materials used for filling expansion joint shall be bitumen impregnated felt or any other similar material specificified on the drawing .Impregnated felt shal confirm to the requirements of I.S.I.1988 and shall be approved by the E/I.

6.11 **Copper SEAL/RUBBER SEAL** :

For the constriction of expansion joints,the cooper seal/rubber seal shall confirm to the latest I.S.I. specification and shall be got approved from the E/I.

7.0 **BRICK WORK** :

Brick,sand and ceent should be as per specification given in the specification of materials.Unless otherwise specified brick work shall be first class laid in cement mortar.Work shall be strickly as per drawing .Bricks shall be soaked in water for atleast 6 hours before use in masonry work.For this purpose the the contractor must construct at his own cost brick lined tanks of approved size which shall be dismantled or filled by after completion of work by the contractor at his own cost.

Cement and sand shall be measured and mixed dry.Minimum quantity of water tom ensure workability is to be added ,the mortar turned over backwards and forwards as approved by the E/I.All cement mortar shall be used within 30minutes of mixing.

The brick work is to be of English bond.No where half bricks shall be used than these necessary to complete the bond.Great care shall be taken in the selection of the bricks face which will be felt exposed .These brick shallbe uniform in size and appearance and no mortar shall be smeared over the brick face exposed to view .

In laying each coarse must be truly levelled and in perfect bond ,all bricks being thoroughly bedded and flushed with mortar .No mortar joint is to exceed 10mm.thickness .The wall must be carried up roughly and no portion of work should be left more than 900mm lower than the other .Temporary stops left during construction must be racked accoding to bond,so that when work is contained the new brick will be laid over these previously laid.The contaractor shall provide lank on which the wetted brick shall be stacked before they are laid on wall.

All brick work shall be kept wet for atleast a fortnight after it is laid .All brick work shall be left floo ,deand the end of each days of work by making through with mortar fillets.

All the fixtre shall be built into walls in there correct position as work proceeded joints of the brick work shall be racked while the mortar is still green,to a depth of 1/2"(12mm) to ensure at good key to plaster .All scaffolding must be provided by the contractor.Double scaffolding (post) should always be provided in important structures where exposed face are reuired to be poited.The log holes must however,invariably be closed with bricks and mortar after the scaffolding is removed and before plastering is done.The contractor shall be responsible for any damage or injurios to labours resulting from improperly erected scaffolding or by the other cases.The contractr 's rate for brick work shall include cost of all scaffolding,curing,providing necessary set backs,splaye,projection,citting,string coarse chiseling and making holes to various services as shown in drawing or as directed by the E/I.

7.1 **MODE OF PAYMENT** :

Payment for brick work bill be made per meter cube .

7.2 **RANDOM RUBBLE MASONRY WORK** :

The boulders shall be hammer –dressed on the face ,sides and beds to such an extent that the same will come into close proximity.No stones shall tail to a point and shall not be of greater height than breath of face or length .The random rubble masonry shall be laid uncoarsed in cement mortar 1:4 .The beds and joints shall not exceed 25mm thicknes.The hearting stones shall not be less than 15cm in any direction ,carefully laid,hammered down with wooden mallets into place and solidly bedded with mortar ,chips and spauls being wedged in to avoid thick beds of joints and mortar .Each stone is to be punched into the number of sides to which it can be most convieniently dressed ,and will then be so fitted into wall that joints shall never exceed 25mm throughout random rubble masonry stone should be supplied with equal quoins and should be coarse every 50mm of wall in height.One fifth of the face should be through heared.

Every stone is to be well flushed in mortar as described for other forms of masonry .All stones,which are not headers,should half bond or overlap one another at least one third the wideth of the wall .All stones shall be thoroughly wetted before laying .The masonry of the part is to be deleyed ,the work must be raked back at an angle not exceeding 40degree .One non working days the top of all finished masonry is to be kept flooded .The vertical face of walls should be carried truey to plumb and the inclined face should be in one plane.The stone shall be fairy equal in size ,every stone shall be fitted to adjacent stones.

Masonry dyring construction shall be protected from the effects of sun,frost and rain by suitable covering and masonry shall be kept moist for a period of atleast 10 days .Unit for measurement of stone masonry

work shall be for per cubic meter of finished work.The rate will include cost for carriage of stones from stacks to the place of work and their place of work and their placing in position.

(T.S.-9)

8.0 **CEMENT CONCRETE WORK** :

COMPOSITIONS :

Cement concrete shall composed of cement sand .Sand aggregate and water in prescribed proportion by volume.The specifivcation for these materials have been given under this chapter previously .

8.1**BATCHING** :

The concrete ingredient shall be provided in specified quanties by volumetric measurements.When moist sand is used due allowance shall be made for bulking as directed by the E/I .Appropriate means of correct measurmnet of the concrete ingredients shall be provided means of correct measurement of the concrete ingredients shall be provided to the satisfaction of the E/I .The proportions of mixes have indicated in the item of work.

8.2 **MIXING** :

The more thoroughly a concrete is mixed ,the greater is its strength.The mixing shall therefore be done in mixer only. Wherever the quantity involved shall and other conditions do not permit the mix by mixer,hand mixing may be done with the specific approval of the E/I or his authorised representatives,it will be necessary for the contractor to arrange sufficient mixers for the desered concrete mix at the end mixing period .correct proportion of materials shall be loaded in the mixing machines in accordance with water cement ratio desired.It should thenbe kept rotating for 1.5 to 2 minutes till all materials are mixed thoroughly and then concrete should be disposed in one operation over a level platform and turned over one before being conveyed.Each time the work is stopped for the day ,the mixer should be cleared out and when next mixing is commenced the first batch should have10% additional cement to allow for stacking losses.

Whenever the quantity of mix is so small and hand mixing has been permitted by the E/I the mixing shall be done on awter tight brick platform of edequate size approved by the E/Iwith strip fastened along there side to prevent materials being washed or shoveled off during mixing where hand mixing is allowed cement and sand shall first be mixed dry thoroughly by turning over backword and forward several times.This day mortar shall thenbe spread over the top of premeasured stack of dry aggregate .The whole batchshall then be thoroughly mixed by turning over and ovewrbackword and forward atleast 5 times to ensure through mixing.To this water shall then be added from fitted with ratehole/gradually and the whole mass turned over and again till every stone materials is sufficiently coated with mortar.No excess water should be used .The bulking shall be made .The concrete prepared after mixing must posses a good consistency and workability in case this is found deficient the ingredients will be adjusted to improve the same with approval of the E/I or his authorised representative,slump test will be carried out regulary to check consistency and workblity.Theslump should be specified by the E/I .

(T.S.-10)

8.3 **SURFACE PREPERATION** :

When concrete has to be laid in consecutive layer and sufficient time has lapsed between first ccarse and successive one the lower course should be well racke,brushed with wire to the satisfaction of E/I .All loose aggregates and lactances should be removed .To ensure bond and water tightness between the old concrete surface and the concrete to be placed the surface should od of initial green cut and sand blasting.The the green cut method consists of rubbing the concrete surface with a high velocity air water jet accompanied by wire brushing and jobbing,chipping,surface layer to expose clean surface of sound concrete usually about 8to 12hours after placing.

If the initial clean up can not be performed at the proper stage in the hardening process .All defective and desirable concrete will be removed by either chipping and picking by hammer if so required or by sand blasting .Thereafter the entire surface shall be thoroughly washed and should be dry to permit smooth cleaning .Ordinary sand may not be used even for smaller work but sand of size 1.7mm to 4.75will be have to be 5.63kg./sq.cm.After sand blasting and washing is over ,the surface shall have to be got approved by the E/I.and therefore covered with a 10mm to 20mm layer of mortar but care shall be taken that mortar does dry up excessively thus loosing its consistency .

8.4 **PLACING :**

Concrete shall be placed in aplanned manner along the span so as to avoid cold joint.For this process the contractor shall arrange sufficient labour ,materials ,tools and appliances to complete the work in suitable blocks as programmed .

NO CONCERETE SHALL BE PLACED WITHOUT FORM WORK :

Before depositing the concrete debris of all the kinds shall be removed from the site of concreting .The surface shall be well cleaned and brought to lines and levels as per drawing and specification .No concrete shall be placed up till form work and placing of reinforcement have been completed where required andchecked by the E/I according to drawing and specification .There after mixed concrete shall be laid (not thrown) in suitable layers and compacted with vibrator,suitable for the purpose and approved by the E/I.

8.5 **PLACING CONCRETE UNDER WATER** :

Concrete is being placed under water ,unless placement .The dewatering operation should be stopped at the time for placing of concrete ,extra cement up to 20% shal be added in the concrete under water.The admixture shall be added in the concrete under water ,the mix shall be suitable incrossed on the specific written approval of the E/I.The total quantity of such concreting will have to be got recorded by the E/I or his authorised agent so that a check may be kept on extra cement consumed .

8.6 **COMPACTION**:

As concrete is being placed it should be compacted thoroughly and uniformaaly .Compacting includes rodding ,spading,vibrating and such other operation as are necessary to compact the concrete properly ,concrete bshall be worked well around ther in for cement enclosed fixture and corners of forms.

Sufficient equprnet together with necessary operation should be provided atsite for compaction .As concrete starts setting immediately

after it is placed ,consolidation should be done when placing is going on.Exessivevibration cauaing segregation and formation of laitances shall be avoided .

HAND TAMPING :

16mm M.S. rods should be used for tamping. The tools should penetrate the full depth of layer being placed and should used at or near virticalform faces.For dry hand tamped concrete the surface should be rammed with heavy flats face trowel till a thin film of mortar appears at the surface showing that air pockets have been filled.

VIBRATION:

Mass concrete should be thoroughly compacted with the aid of vibrators .Immediately after placing concrete the vibrators should be started and operated for a few second .Then moved to the other without any hole or impression of the vibrator ,vibration should be continued till the entire batch gives uniform appearance and surface just start to glist,vibrator should beinserted and drawn slowly and operated continuously while being withdrawn ,it should be in such a manner that no voids are lift in plastic concrete .

Sufficient number of vibrators should be used to compact each batch properly before placing the next one .A sufficient number of reserve vibrators in good conditions,concreting shall not be allowed to proceed without proper compaction with the vibrator,suitable for the perpose.Under no circumstances the vibrator should stick the face of forms not shall reinforcement steel or embaded metal be jerked with sufficient force to empire the bond between concete and metals .

7. **STOPPING WORK** :

If for any reason it is necessary to stop conreting in the middle of ajob,it should be stopped as under:

FOR SLAB :

In a vertical plane at right angles to the span either middle span over the centre of the supporting beam or girder .

FOR COLUMN :In horizontal at right angles to the length of the column.

FOR BEAM AND GIRDER :In vertical plane at right angle to the length of the beam or girder either the mid span or over the centre of the support of the beam .In no case shall the work be stopped in beams of slab where futureshearing action will be great as for example near the end or direct under concentrated load.At place other than specified above,should become necessary to stop cocreting for any unforeseen reasons,the same shall be done at the locations directed by the E/I.In all such xases the edges of the concrete shall be left and finished in a proper slope as per direction of the E/I.

Before commencing the work ,surface of the existing concrete must be carefully brushed with stiff brush to remove particules and dust thick grout of neat cement must be poured over it before new concrete is placed.

8.8 **CURING AND PROTECTION OF CONCRETE** :

The object of curing is to prevent or replenish the loss necessary of moisture during the early relatively rapid stage of hydration .Minimum curing period for the concrete shall be 21 days and is to commence as soon as the concrete has harened but not before that 24 hours the time of placement .The curing shall be accomplished by keeping the exposed surface continuously moist condition.

Where forms are used these shall be kept sprinkled with water until removal.Wooden forms may be loosened wetted thoughly at frequent intervals so that water floods the space between the forms and concrete .Merely having form in place will not keep the concrete sufficiently moist for proper curing .When spray pipe system is used for spraying,galvanized or alloy pipe shall be used .This will prevent rust stain that may be formed by use of iron pipe.Construction joint shall be continuously kept wet for atleast 72 hours prior to the placing of additiona concretes.All water used in curing sall be free from excessive amount of silt and other impurities.

8.9 **TESTING :**

The contractor shall provide all lanour required for making and cube test specimens without any separate payments. 8.10 **CLASSIFICATION :**

Except where required to meet special conditions ,all concrete shall confirm to the classification in the table given below defined according to maximum aggregate size arld other approximate details.The mix proporations may have to be modified after detailed laboratory test and field experiment.These mixes may fyrther be modified to suit the work or the nature of materials used further be modified to suit the work or the nature of materials used.The contractor's rates are to bebased on the concrete of mixes of required strength and quantity of cement specified in the table below. The vibrations in ingredients will not be considered for adjustment in rates .

NOMINAL MIXPROPORTION AND EMENT CONSUMPTION PER CUBIC METER OF FINISHED CEMENT

Nominal Mix	Maximum size of Aggregate	Cement consruction per cu.M.Finished Concrete
1	2	3
1:4:8	40 mm.	0.121cu.m.
1:3:6	40mm.	0.157cu.m.
1:2:4	20mm.	0.225 cu.m.
1:2:4	20mm.	0.225 cu.m.
1:1:5:4	20mm.	0.287 cu.m.
1:1:5:3	20mm.for 20mm aggregate size also to be maintained .	0.287 cu.m.

8.11 **PAYMENT FOR CONCRETE** :

Therate of concrete shall including cost of materials,mixing ,placing,curing cmpaction Finishing of concrete and also of providing and fixing supports ,contrivances and form work along with removal there of including the the surface preparation for the next lift and removal and making good the damage concrete as required .The unit of measurement will be per cubic meter .

8.**12 FORM WORK** :

a) The turm form work ,shall include all forms sheeting,planks,poles,shores,ties,upright and all other temprory supports to the concrete during the process of laying and setting.The form work shall be of such dimension ,strength and rigidity and so constructed as to hold the concrete and to with stand the necessary pressure and remain rigid during the laying ,vibration and setting of concrete without any

deflection from the prescribed lines.The joints must be water tight and smooth so as to prevent leakage cement slurry.All faces wich will come in corncrete with the concrete must be plain ,clean,rigid,tightand smooth,suitable devices shall be used to hold the corners djacent ends and edge ofpanels or other forms together in accurate alignment.The form shall be such as to produce finish of striking of at one.

b) Where wooden forms are the lapping shall be in the direction of the structures as shown in the drawing or as directed of E/I..Wood sheating or lining shall be of such a kind and quality or shall be so treated ,that there shall be not chemical deterioration or declaration of the formed concrete surface.

c) **FORM MATERIALS &CONCRETE SURFACE** : All timber used shal be of the best quality,sound straight,freee from sap,loose knots,warps holes and other defects seasoning is of great importance partiality seasoned

timber is tom be best for from work,since if it is to dry it will tend to small from absorption of moisture while green timber is to be best for form

work,since if it is to dry it will tend to small from absorption of moisture while green timber will try to dry out and shrink in hot weather causing elevation and depression in the concrete .All timber faces coming in contact with concrete should be made plans to give better finish of the concrete face.The form work should have sufficient strength and rigidity.

d) **METAL FORMS** : Metal forms shall b epermitted for permanently exposed surface .Curves and special forms shall be character that will result on smooth concrete surface .They shall be so designed and constructed that they will not warp or spring during eraction or placing concrete .Forms to be used more than one shall be maintained in scecable condition and will be the thoroughly cleaned and smoothened in the forms with the minim,um amount of bumps or other impe,factions.The use of sheet metal be correct

imperfections in the lining of lumper faced forms for surface that be permanently exposed to view will not be permitted.

TIMES : The use of metal rods and other similar divices in the concrete for holding forms will be permitted if the ends of rods are omitted or subsequently removed to a depth of not less than 50mm from the surface of the concrete without injury to the concrete provided that for walls to be subjected to water pressure on side and to be water tight ,the rods shall not be continuous through the wall.Removal of embedded rods shall not be permitted .Removal of embedded fastners on the ends of the rods shall be such as to leave of regular share for ramming .All hole left by the removal of fastners from the in of the rods shall beimmediately rammed with suitable to end remers ,so as to leave the surface of the hole clean and rough and completely filled with dry patch mortar and the surface finished to meet adjustment concrete .Wire ties shall be permitted only when specifically approved and shall be cut flusts with the surface of the concrete after the form are removed .Wire ties shall not be used where permanent exposed finish surface are required .

e) **OILING** : All forms coming in contact with concrete should be oiled with cured oil perferbly before being set in place .This oiling allows easy stripping of forms as the concrete does not stick to the oily form ,if the concrete is to be place ,however,oil should not be used as it prevents the adhesion of plaster ,wetting with water of soft soap and water will sufficient in such cases,In no case the reinforcement placed over the form work should be oiled.

f) **ERECTION OF FORMS** : Before placing of concrete ,is placed ,precaution shall be taken to see that all forms are in proper alignment and

that forms anchors and ties are thoroughly the form strips for narrow groove so as to prevent reeding of the forms subsequent damaged to concrete prior to the removal of forms where form for continuous surfdace are placed in successive units ,the forms shall fit roughly over the completed surface so as

to prevent leakage of mortar from the concrte and to maintain accurate alignment of the surface .

g) Removal of forms should never be started until the condrete is thoroughly set and has attained to give it sufficient strength to carry its own weight besides the live load.which is likely to come on the work during the coarse of construction .The length of time,the form should remain in place ,should be decided withn refence to weather condition,slopes and position of the structure of structural member and the nature and amount of dead and live loads,the decision given by the E/I.regarding the period for which the forms shall remain in place shall be final.

In no case forms be removed until there is assuarance that the removal can be accomplished without chiping,spalling of defacing the concrte surface further more heavy load should not be permitted until after the concrete has reached its design without jerking the structure of throwing heavily .Upon the concrete all forms shall be entirely removed to permit inspection before rest for the next lift.

8.13 **STAGING** :

The contractor shall provide efficient and rigid temporary staging required for constructing the structure .

The staging ,should be wide and strong enough to take two gang ways,one each side to used bottle by workmen as well as for inspection purposes. It should also be strong enough to permit working with vibrating and other machineries,as may be required for concreting etc.Due allowance for sagging of shuttering and support should be made in the design of the staging of the shuttering .On the completation of the work ,staging shall b removed to the entire satisfaction of the E/I.

8.14 **PLACING OF RE-INFORCEMENT** :

Re-inforcement bars shall be placed in the concrete wherever shown on the drawing .the bars shall be accurately outto length and could bend where required .the bends for strups shall be made around pin of diameter not less than eight times the diameter of the bars .The ends of the bars shall be hooked with internal radius of four times the diameter of the bars.

The surface of re-inforcement bar shall be cleaned of the rust scales,dirtsn ,grease and other objectionable substaces.the re-inforcement shall be accurately positioned and secured so that there is not movement when concrteete is placed .Bars crossing one another shall be tied at every intersection with 16SWG wire to make the skelton perfectly rigid.Metalsof concrete shares and spacers of approved type shall be provided suitably for proper support and spacing of re-inforcement .Slices in re-inforcementshall be avoided at points of maximum stress and such slices where provided shall be of sufficient length (s) (subject to minimum of40times the diameter)to transfer stress between bars,by bend lapped ends of bars shall be placed

so as to be supplied to the contractor,if available with I accordance with provision of bars available.All wastage shall be borne by the contractor and cut pieces shall not be taken back by the department .

8.15 **WASTAGE OF GOVERNMENT MATERIALS** :

In case of steel if supplied by the Department ,small pieces of steel rods is allowed to the maximum of 5% of quantity consumed in work executed .Out which 2.5% of steel rods should not be less than of the length of 3M wich will be returned to the department .But the small pieces less than length of 3M will not be taken back by department .Hence ,for wastage the

value of 2.5% of quantity consumed will be treated as wastage and the amount for this much quantity will be recovered on issue rate from the contractor's bill.The materials received by the contractor in excess of actual consumption as determined above and not returned to department will be charged at panel rates which will be double the issue rates of materialor the market rates plus 10% which ever is higher .

9.0 **CEMENT PLASTERING** :

9.01 **PLASTERING** :

Good sand shall be used in plaster.The plaster is to be 12mm thick as specified but contractor should make allowance in the rate for the extra cost involved owing to the surface of wall being not very regular or plain.The proportion of sand and cement mortar of the specified in the item of work.If the water proof plaster is indicated in drawing or if the E/I.so dirtects,such plaster shall be provided in cement mortar of the specified

proportion after adding the approved quality of water proofing compound .The quantity of water ptoofing compound to be used shall be as directed by the E/I.Thecontractor's rate shall include the cost of all the materials together with cost of water proofing compound and labour etc.

The materials should be thoroughly mixed and the mortar of plaster being used within half an hour of being mixed .Joints of brick work to be plastered should be raked out to 12mm deep before plastering .Plaster shall be kept wet for period of 14 days.

The rate of plaster shall include (a) plastering surface and corners and rounding at angles (b)preparing,cleaning and watering surface(c) watering and protecting plaster after completion(d)provisionof erection and removal of scaffolding.

FLUSH POINTING :

All joints in masonry shall be raked cut to a depth of atleast 12mm .these shall be brushed and well watered .Pointing materials shall be one

art of cement and three parts of sand by volume or as may be specified .Perticular attention must be given to complete filling of joints .

After filling the joints with the pointing mortar ,the flush pointing shall be done as per specification ad direction of E/I .The pointing shall be kept moistfor atleast 10 days .

(T.S.-16)

11.0 **PITCHING :**

The boulder pitching shall be of good stone and shall confirm to the specification given in the description of materials .The pitching shall be done as per drawing unless otherwise specified .

The surface where boulder pitching has to be done shall be levelled and dressed up before the boulders are laid.The boulder not be less than 40 kg.each or as directed by E/I.and shall be selected as to size and shape to secure fairlylarge flat surfaced stone which will lay up with even surface and minimum of voids .The top layer shall be levelled and hand packed so as to press at as even surface .Rock fragments and spawls shall be rightly driven in the intersticks to wedge the pitching in place and to as directed opening to the under laying layers .

11.1 **PAYMENT :**

The item of work will be paid for at unit rates quoted which shall include the cost of all materials and labour required for work as pointed in this specification.

12.1 **EXPANSION JOINTS** :

The expension joints shall be copper seal r rubber seal or any other type as per drawing of direction of E/I.

The expension joints shall be so constructed as to tender it absolutely water tight .

12.2 **CONSTRUCTION JOINTS** :

This will be done as specified in rawing or as peer direction of the E/I.

13.0 **WEEP HOLE** :

Adequate weep holes shall be provided in the drainage wing wall,abutments and thes will start about 450mm above drainage bed level.The weep holes shall be spqaced 1.2meter intervals in both directions.The size of weep holes shall be 50mmx75mm face &120mmx150mm with a slope of 1 in 8 from back to the face .at back of the weep holes an inverted filter in total thickness 600mmx600mmx300mm will be provided in order to chek the erosion of the back fill materials should be placed above suitably compacted earth to avoide displacement .

14.0 **CLEANING OF SITE** :

The contractor shall the site work clear of all shades,soakingvats,mortar platform debries ,surplus constraction materials etc.after construction work has been completed for which nothing extra will be paid.

15.0I **RON SAFETY LADDER** :

The Iron safety ladder shall be made with size 5/8" dia rod as per specification and direction of E/I.

16 If any discrepancy is found between technical specifications and I.S Code, the provisions of I.S Code will prevail

CONTRACTOR

Executive Engineer
Irrigation Division, Deoghar

GENERAL RULES

2.1 Bidders have to fill in all such information as required in the tender documents.

2.2 The rates quoted by the tenderer shall be inclusive of Income Tax, Gst Tax, Royalty or any other Provincial and Central Taxes applicable at that time. Provisional or conditional tender shall not be accepted.

2.3 The tenderer shall be presumed to have carefully examined the conditions of the contract and specifications of the work. The tenderer will also be deemed to have inspected the work site and to have satisfied himself/herself/themselves independently as to the nature, extent and practically of all works and required road approaches & other means of communication & access to the site, lands, building, available for accommodation that may be required for temporary purpose in connection with the contract of work, as also availability of construction materials, location of work site including its climate & other geological characteristics, availability of skilled, semi skilled& un-skilled labourers. The consequences of the lack of necessary knowledge will be borne entirely by tenderer.

2.4 Works of item of works, which are involved, shall be executed with Circle specification/Technical specifications of Water Resources Department.

2.5 The tenderer shall submit a program of the execution of the work along with the tender.

2.6 The tenderer will maintain watch guards for the safety of the materials, if any, supplied by the department at his own cost.

2.7 All labourers engaged in the work are to be paid wages as per Minimum Wages Act in force at the time of execution of this work.

2.8 The tenderer will provide to the labourers, huts for shelter, drinking water and medical facilities at site and keep the site clean at his own cost.

2.9 Extension of time may be granted on valid ground by the competent authorities as per Government rules and circulars in force and as received from time to time.

2.10 On receipt of the written order from the Executive Engineer, Irrigation Division, Deoghar, the successful tenderer will first deposit the balance amount of initial security deposit (ISD) within the specified period of ten days and then enter into an agreement with Executive Engineer on the basis of the stipulated in the approved tender documents before the issue of work order.

2.11 (a) If the rate quoted by the tenderer is above the BOQ rate and the competent officer has approved above the BOQ rate, then the enhancement over the BOQ rates shall not be applicable over the cost of bitumen.

(b) If the tenderer quotes the rate below the BOQ rate and the competent officer approves it, then the reduction over the BOQ rate shall be applicable on all items or work including the cost of bitumen.

Executive Engineer
Irrigation Division, Deoghar