

Vision of the Institute

"To become a leading institute of providing professionally competent and socially responsive technocrats with high moral values."

Mission of the Institute

- ⇒ To create an eco-system for the dissemination of technical knowledge, to achieve academic excellence.
- ⇒ To develop technocrats with creative skills and leadership qualities, to solve local and global challenges.
- ⇒ To impart human values and ethics in students, to make them socially and Eco-friendly responsible.

LAB MANUAL OF Quantity Estimation and Management Lab [BCE 553]

B. TECH, 3rd Year, 5th Sem



**Dr. A.P.J. Abdul Kalam Tech. University
Uttar Pradesh**

2025-26

Department of Civil Engineering

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Assistant Professor**

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Head of Department**

BABU BANARASI DAS EDUCATIONAL SOCIETY

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Institute Address: Sector I, Dr. Akhilesh Das Nagar, Faizabad Road, Lucknow (U.P.) - 226028, India

<p>Vision of the Institute</p> <p>"To become a leading institute of providing professionally competent and socially responsive technocrats with high moral values."</p>	<p>Mission of the Institute</p> <ul style="list-style-type: none"> ⇒ To create an eco-system for the dissemination of technical knowledge, to achieve academic excellence. ⇒ To develop technocrats with creative skills and leadership qualities, to solve local and global challenges. ⇒ To impart human values and ethics in students, to make them socially and Eco-friendly responsible.
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MANUAL CONTENTS

This manual is intended for the 3rd year students of Civil Engineering in the subject of Quantity Estimation and Management. This manual typically contains practical/lab sessions related covering various aspects related to the subject of enhanced understanding.

Students are advised to thoroughly go through this manual rather than only topics mentioned in the syllabus as practical aspects are the key to understanding and conceptual visualization of theoretical aspects covered in the books.

Good Luck for your Enjoyable Laboratory Sessions.

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PREFACE

This practical manual will be helpful for students of Civil Engineering for understanding the course from the point of view of applied aspects. Though all the efforts have been made to make this manual error free, yet some errors might have crept in inadvertently. Suggestions from the readers for the improvement of the manual are most welcomed.

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VISION OF THE DEPARTMENT

To impart academic excellence in Civil Engineering field with emphasis on holistic development of the professional, while inculcating ethics, socially and professionally responsive technocrats.

MISSION OF THE DEPARTMENT

Mission-1. To provide a comprehensive platform for the academic expertise and proficiency.

Mission-2. To develop Civil Engineering professionals with creative skills and leadership qualities in order to face regional and global challenges.

Mission-3. To develop ethics in students in order to promote socially responsible environmental awareness with innovative thinking.

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Program Educational Objectives (PEOs) of Department

The following are PEOs of the department:

PEO 1: To enhance skill and expertise in field of Civil Engineering with aim of boosting employability and entrepreneurship.

PEO 2: To develop multidisciplinary approach of Civil Engineering system with lifelong learning solutions.

PEO 3: To develop the potential to pursue higher education and research in field of Civil Engineering.

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Program Outcomes:(PO)

Graduates will be able to achieve

PO 1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering Fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO 2. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO 3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO 4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO 5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO 6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO 7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO 8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO 9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

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PO 10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear

PO 11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO 12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change

Program Specific Outcomes (PSOs) of the Department

PSO 1: Graduates shall be able to apply critical thinking in research, design, analysis and implementation of Civil Engineering problems.

PSO 2: Graduates shall be able to inculcate the idea of sustainability in engineering solution to meet real world challenges.

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Course Evaluation Scheme

Sr No	Subject Code	Subject Name	Periods			Evaluation Scheme				Total	Credit
			L	T	P	Sessional Assessment			PE		
						CT	TA	PS			
1.	BCE553	Quantity Estimation and Management	0	0	2	-	-	50	50	100	1

Course Objectives:

The main objectives of this lab course are:

- Familiarize students with **DSR, CPWD specifications, and NBC provisions** used in construction works.
- Develop the ability to perform **quantity estimation and costing** for civil engineering projects such as buildings, septic tanks, water supply pipelines, roads, and bridges.
- Train students in the preparation of **Bill of Quantities (BOQ)** and related contract documents.
- Provide practical exposure to **project planning and scheduling software** such as MS Project, Primavera, or open-source project management tools.
- Enable students to understand the structure and contents of **tender documents** used in real construction projects.

Pre- requisite:

Before studying QEM (Quantity Estimation & Management) Lab, students should have basic knowledge of:

1. **Building Construction and Civil Engineering Materials**
2. **Engineering Drawing and Building Planning**
3. **Surveying and Levelling**
4. **Basic Quantity Estimation and Costing Concepts**

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5. Construction Practices and Specifications

6. Fundamentals of Project Management and Scheduling

7. Basic computer skills for using software like Microsoft Project or Oracle Primavera P6.

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Course Outcomes (COs)

Course Outcomes: The students should be able to:		Bloom's Level
CO1	Interpret and analyze DSR (Delhi Schedule of Rates), CPWD (Central Public Works Department) specifications.	L4
CO2	Estimate and analyze quantities of various items of work of a building.	L4
CO3	Develop and prepare a Bill of Quantities (BOQ) for a project.	L5
CO4	Utilize and apply MS Project to manage a project	L5
CO5	Evaluate a complete set of tender documents of a building.	L4

CO-PO-PSO Mapping

The extent of mapping is as follows: 1 for low, 2 for moderate, 3 for high for No correlation between CO & PO.

CO-PO MAPPING

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	-	-	-	-	1	2	2	2	-	1	1	2
CO2	3	2	2	1	2	1	-	2	1	3	2	2	1
CO3	3	2	2	1	2	1	-	2	1	3	2	2	1
CO4	3	2	2	1	3	1	-	2	1	3	2	2	1
CO5	1	-	-	-	-	2	1	2	2	3	1	1	2
AVERAGE	2.4	2	2	1	2.33333	1.2	1.5	2	1.4	3	1.6	1.6	1.4

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List of Experiments

S. No.	Experiment
1	Study of DSR, CPWD specifications and NBC.
2	Estimation of quantities for any one of the following: Building/ Septic tank/Water supply pipe line/road/bridge.
3	Preparation of Bill of Quantities (BOQ) for above project.
4	Practice on open source project management software / MS Project/Primavera software for same problem.
5	Study of any full set of tender documents (Institute shall provide the set from ongoing/ completed tenders).

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S.No.	Name of the Experiment	CO	BTL	Lab Conduction Date	Remark/ Grade/ Marks	Faculty Signature with Date
1						
2						
3						
4						
5						
6						
7						
8						

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Do's (What You Should Do)

1. Read the experiment/problem statement carefully before starting the work.
2. Bring calculator, drawing sheets, DSR book, and lab record regularly.
3. Follow CPWD specifications and NBC guidelines while preparing estimates.
4. Use proper units, symbols, and standard formats in calculations and BOQ preparation.
5. Verify all quantity calculations before final submission.
6. Maintain neat and systematic records of observations and estimates.
7. Practice project scheduling using software such as Microsoft Project or Oracle Primavera P6 carefully.
8. Submit assignments, reports, and tender analysis work on time.
9. Handle laboratory computers, files, and documents responsibly.
10. Follow instructions given by the lab instructor during practical sessions.

Dont's (What You Should Avoid)

1. Do not use incorrect units or non-standard formats in estimation work.
2. Do not copy calculations, BOQ, or reports from others.
3. Do not ignore CPWD specifications, DSR rates, or NBC provisions.
4. Do not overwrite or submit untidy lab records.
5. Do not leave calculations unchecked before submission.
6. Do not operate computers or project management software without proper instructions.
7. Do not damage laboratory equipment, files, or tender documents.
8. Do not use unauthorized software or external storage devices in lab systems.
9. Do not create noise or disturb others during practical sessions.
10. Do not submit incomplete estimation, scheduling, or tender documentation work.

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**Experiment No 1
Study of DSR, CPWD Specifications and NBC**

Aim

To study and understand the use of DSR, CPWD specifications, and NBC in estimation, costing, and construction practices.

Objectives

1. To understand the structure and purpose of DSR.
2. To study CPWD specifications for various construction works.
3. To learn the provisions and guidelines of NBC related to building construction and safety.
4. To apply standard specifications and rates in quantity estimation and BOQ preparation.

Components Studied

1. DSR (Delhi Schedule of Rates)

- Standard schedule of item rates used for estimation and costing.
- Includes rates for materials, labor, and construction activities.
- Used for preparing estimates and tender documents.

2. CPWD Specifications

- Standard guidelines issued by Central Public Works Department for execution of civil works.
- Covers materials, workmanship, testing, and quality control.
- Ensures uniformity and standardization in construction.

3. NBC (National Building Code)

- Published by Bureau of Indian Standards.
- Provides rules related to planning, design, fire safety, structural safety, ventilation, and building services.
- Ensures safety, sustainability, and proper building practices.

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Applications

- Preparation of estimates and BOQ.
- Tender documentation.
- Quality assurance in construction projects.
- Compliance with national standards and safety regulations.

Result

The study helps students understand standard construction specifications, rate analysis, and building regulations used in practical civil engineering projects.

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EXPERIMENT NO.: 2

Objective - Estimation of quantities for Residential building.

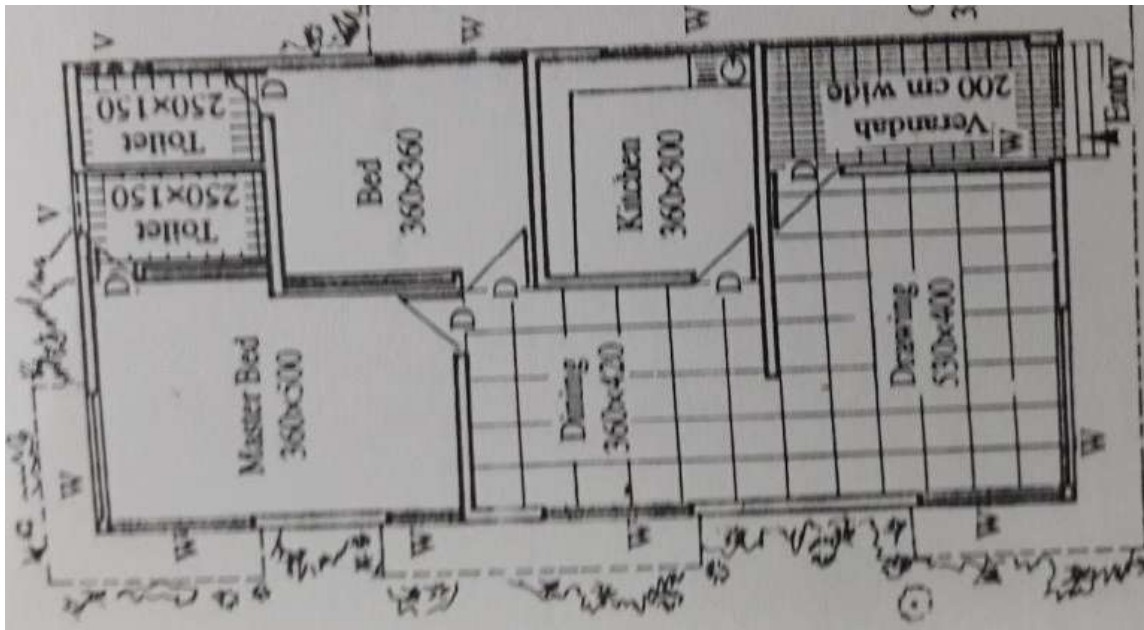
Document –Drawings,U.P P.W.D schedule of rates

Principle-

Calculation of quantities of residential building by Individual wall method.

Method-

Individual wall method.(Long wall &Short wall method)



Procedures -

SL. NO	Particulars of items	No.	Dimensions			Quantities	Units	Explanatory Notes
			L	B	H			
1	Earthwork in Excavation in							

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	foundation- Long wall Short wall							
2	Lime Concrete in Foundation- Long wall Short wall							
3	First class brick work in lime mortar in Foundation and Plinth- Long wall Short wall							
4	2.5cm thick Damp Proof Course Long wall Short wall							
5	Ist.class Brick work in Lime mortar in Superstruct. Long wall Short wall							
6	12 mm plaster of cement sand 1:6 both side Long wall Short wall							

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7	White washing 3 coats both sides Long wall Short wall							
8	Colour Washing 2 coats Long wall Short wall							
9	2.5 cm C.C. Flooring 1:2:4 Long wall Short Wall							
10	Wood work- Sal wood in frame fixed in Windows Doors							
11	Mild Steel bars in R.C.C. @ 1%							
12	Iron holdfast- In Doors In windows							
13	Painting 2 Course over a coat of priming- Window & Doors							

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14	Painting 2 course over a priming steel gate							
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Signature

Date:

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EXPERIMENT NO.: 3

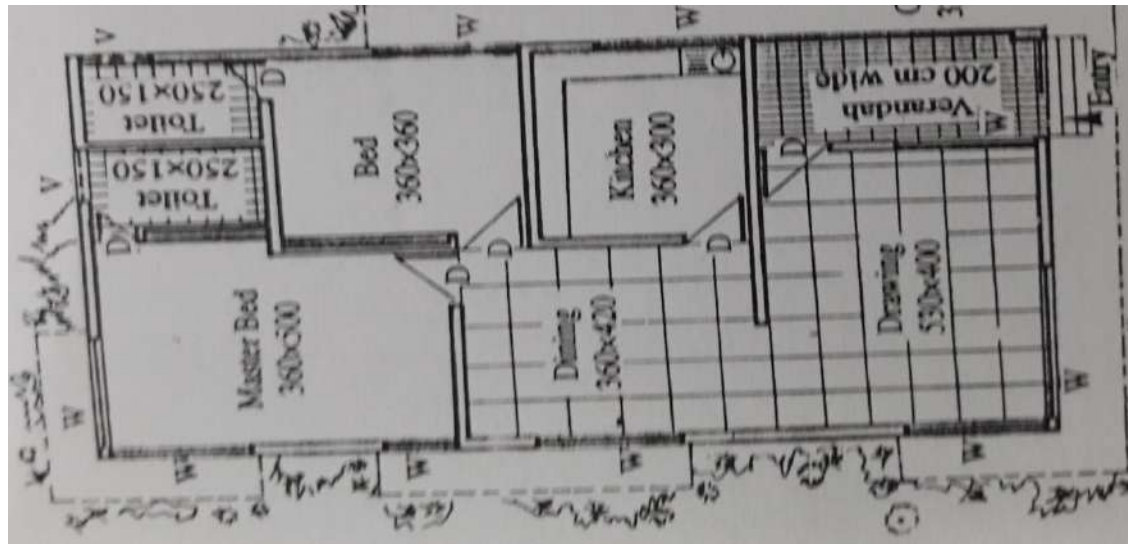
Objective To prepare the bill of quantity of residential building.

Documents-

- a- Calculated quantities of materials
- b- Pwd schedule of rates

Methods-

- a- Quanties of materials calculation as per unit.
- b- Quantities multiplying by schedule of rates per unit.



Procedures -

Item no.	Particulars of item	Quantity	Rate		Unit Per	Amount	
			Rs.	P		Rs.	P
1	Earth work in						

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	Excavation				
2	Earth work in filling				
3	Lime concrete in foundation				
4	First class brick work in foundation & plinth				
5	Damp proof course 2.5cm thick cc 1:1.5:3				
6	First class brick work in 1:6 cement mortar in super structure				
7	Plaster work on walls in 1:6 mortar				
8	White washing 3 coats both sides of walls.				
9	2.5 cm cement concrete Flooring 1:2:4				
10	Wood work- Sal wood in frame fixed in doors& windows				
11	Mild Steel bars in R.C.C. @ 1%				
12	Iron holdfast- In Doors & windows				

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13	Painting 2 Course over a coat of priming- Window & gate				

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EXPERIMENT NO.: 4

Practice on Open Source Project Management Software / MS Project / Primavera

Aim

To study and practice project planning, scheduling, and monitoring using project management software for a civil engineering project.

Objectives

1. To understand the basics of project management software.
2. To prepare project schedules and activity sequencing.
3. To allocate resources and estimate project duration.
4. To monitor project progress using Gantt charts and network diagrams.

Software Used

- Open-source project management software
- Microsoft Project
- Oracle Primavera P6

Procedure

1. Create a new project in the software.
2. Enter project details and working calendar.
3. List all construction activities for the selected project.
4. Define activity sequence and dependencies.
5. Assign duration and resources to each activity.
6. Generate Gantt chart and network diagram.
7. Analyze critical path and total project duration.
8. Save and print project reports.

Applications

- Construction planning and scheduling
- Resource allocation and management
- Time and cost control

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- Progress tracking of construction projects

Result

The project schedule was successfully prepared using project management software, and the critical activities, project duration, and resource planning were analyzed effectively.

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EXPERIMENT NO.: 5

Study of any full set of tender documents (Institute shall provide the set from ongoing/ completed tenders).

Objective

To invite tender.

Notice Inviting Tenders

No.....

Dated:

1 The S.E. U.P. P.W.D. on behalf of Governor of Uttar Pradesh invites the percentage rate bids from the eligible and approved Contractors registered with UP PWD, class A and B as the case may be. **The Bidder may submit bids for any or all of the works. Bidders are advised to note the minimum qualification criteria specified in Clause 4 of the Instructions to Bidders to qualify for the award of the contract.**

2.

SL. No.	District	Name of Work	Estimated cost (Rs.)	Bid Security (Rs.)	Executive Engineer Executing the work	Address of Superintending Engineer	Address of D.M.	Address of Chief Engineer
1	2	3	4	5	6	7	8	9

-
- **Time allowed for completion of each work is months, including rainy season.**

1. The bids shall remain valid for acceptance for a period of 90 (nintey) days from the last date of submission of bids. Bids once submitted cannot be withdrawn.

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2. A set of Bidding documents may be purchased from the office of concerned Executive Engineers, Superintending Engineer, D.M., Chief Engineer addresses mentioned in columns 6, 7, 8 and 9 respectively of the table corresponding to the respective work, between the hours of 11:00 am and 04:00 pm on any working day from To..... for a non-refundable fee of Rs. 2300.00 (Rupees two thousand three hundred only) Rs. 2000 for stationary charges and Rs. 300 for tender cost per set per work as indicated, in the form of cash or Demand Draft drawn on any Scheduled bank in favour of "Superintending Engineer, U.P. P.W.D....." payable at Interested bidders may obtain further information at the same office from where the documents are purchased. Bidding documents requested by mail will be dispatched by registered/ speed post on payment of an extra amount of Rs 200.00 (Rupees two hundred only). Applications for issue of Bidding documents by post shall be entertained only upto 4.00 PM on The authority inviting tender will not be held responsible for the postal delay, if any, in the delivery of documents or non-receipt of the same. Bidding document can also be downloaded from the website..... But its cost, i.e., Rs 2000/- in the form of DD drawn on any Scheduled bank in favour of "Superintending Engineer, U.P. P.W.D" payable at will necessarily be attached with the bid. However for bid document downloaded from the website, the drawings will be available in the office of concerned Executive Engineer or Superintending Engineer at the address indicated in columns 6 & 7 respectively of the above table against the concerned package.
3. In case of any discrepancy between the downloaded bid document and that available with the concerned Executive Engineer/Superintending Engineer, the bid document available in the office would be considered authentic
4. Bids must be delivered to the office of the Executive Engineer executing the work, Superintending Engineer or D.M. or Chief Engineer mentioned in columns 6 , 7, 8 & 9 of the table corresponding to the respective work on or before 12.00 Noon on and the technical bids will be opened on the next working day , that is, on

At 12.30 pm, in the office of the Superintending Engineer mentioned in columns 7, in the presence of the bidders who wish to attend. If the office happens to be closed on the date of receipt or opening of the bids as specified, the bids will be received and opened on the next working day, respectively, at the same time and venue, and validity of bid will be considered from the original date. The date and time of opening of the Financial bid shall be notified by a notice displayed in the office of the Superintending Engineer mentioned in columns 7 and by individual notice to the eligible and qualified bidders. The Financial bids shall be opened in the office of the Superintending Engineer mentioned in columns 7, in the presence of the bidders who wish to attend.

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5. A pre-bid meeting will be held for each work on at 12.00 Noon at the office of Superintending Engineer mentioned in column 7 of the table corresponding to the respective package to clarify the issues and to answer questions on any matter that may be raised at that stage as stated in Clause 9.2 of 'Instructions to Bidders' of the bidding document.

6. Bids must be accompanied with security of the amount specified for the work in the table. Bid security will have to be in any one of the forms as specified in the bidding document and shall be valid for 45 days beyond the validity of the bid.

7. A bidder shall not be permitted to bid for works in the Circle responsible for award and execution of contracts in which his or his spouse's near relatives (defined as first blood relations, and their spouses) is posted as Divisional Accountant or as an officer in any capacity between the grades of Superintending Engineer and Junior Engineer (both inclusive)

8. No Engineer of gazetted rank or other Gazetted officer employed in Engineering or Administrative duties in an Engineering Department of the State / Central Government is allowed to work as a Contractor for a period of two years after his retirement from Government service, without Government permission. This contract is liable to be cancelled if either the Contractor or any of his employees is found any time to be such a person who had not obtained the permission of the Government as aforesaid before submission of the tender or engagement in the Contractor's service.

9. Bid documents and other details consisting of qualification information and eligibility criterion of bidders, plans, specifications, drawings, the schedule of quantities of the various classes of work to be done and the set of terms & conditions of contract to be complied with by the Contractor can be seen in the office of the Executive Engineer mentioned in column 7 of the table corresponding to the respective package between hours of 11.00 am and 04.00 pm on any working day between and

10. Any bidder who is having criminal record is not allowed to participate in the bidding process.

11. Any bidder who is registered with the state Bar Council is not allowed to participate in the bidding process.

12. Each bidder is required to furnish an affidavit on a non-judicial stamp paper of Rs. 100/- giving all informations on prescribed proforma required for evaluation of the bidding capacity of the bidder.

Superintending Engineer,

U.P. P.W.D

For and on behalf of Governor of UP

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This is Certify that I have checked the Bid Document and it is correct in all respect.

Executive Engineer

.....
.....

Date:

Bidding Documents

Content of Bidding Documents

- The set of bidding documents comprises the documents listed below and addenda issued in accordance with Clause 10 of ITB.
 1. Notice Inviting Tender
 2. Instructions to Bidders
 3. Qualification Information
 4. Conditions of Contract(Part I General Conditions of Contract, and Contract Data; Part II Special Conditions of Contract)
 5. Specifications
 6. Drawings
 7. Bill of Quantities
 8. Form of Bid
 9. Form of Acceptance, Form of Agreement, Issue of Notice to Proceed with the Work, form of Unconditional Bank Guarantee.
- One set of the bidding documents will be issued to the bidder against the payment.
- The bidder is expected to examine carefully all instructions, conditions of contract, contract data, forms, terms and specifications, bill of quantities, forms and drawings in the Bid Document. Failure to comply with the requirements of Bid Documents shall be at the bidder's own risk. Pursuant to clause 25 hereof, bids, which are not substantially responsive to the requirements of the Bid Documents, shall be rejected.

Clarification of Bidding Documents and Pre-bid Meeting

1. A prospective bidder requiring any clarification of the bidding document may notify the employer in writing or by cable ("cable" includes Telex and facsimile) at the employer address indicated in the Notice inviting tenders. The Employer will respond to any request for clarification received earlier than 10 Days prior to the dead line for submission of bid. Copies of the employer's response will be

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forwarded to all purchasers of the bidding documents, including a description of the enquiry, but without identifying its source

2. If a pre-bid meeting is to be held, the bidder or his authorised representative is invited to attend it. Its date, time and address are given in the Appendix to ITB.
 - The purpose of the meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage.
 - The bidder is requested to submit any questions in writing or by cable so as to reach the Employer not later than one week before the meeting.
 - Minutes of the meeting, including the text of the questions raised (without identifying the source of the enquiry) and the responses given will be transmitted without delay to all purchasers of the bidding documents. Any modifications of the bidding documents listed in Clause 8.1 of ITB, which may become necessary as a result of the pre -bid meeting shall be made by the Employer exclusively through the issue of an Addendum pursuant to Clause 10 of ITB and not through the minutes of the pre-bid meeting.
 - Non-attendance at the pre-bid meeting will not be a cause for disqualification of a bidder.

Amendment of Bidding Documents Before the deadline for submission of bids, the Employer may modify the bidding documents by issuing addenda.

1. Any addendum thus issued shall be part of the bidding documents and shall be communicated in writing by registered post or by cable to all purchasers of the bidding documents. Prospective bidders shall acknowledge receipt of each addendum by cable to the Employer.
2. To give prospective bidders reasonable time in which to take an addendum into account in preparing their bids, the Employer shall extend, as necessary, the deadline for submission of bids, in accordance with Clause 20.2 of IT

Preparation of Bid

Language of Bid

1. All documents relating to the Bid shall be in the language specified in the Appendix to ITB.
2. Documents Comprising the Bid
3. The Bid submitted by the Bidder shall be in two separate parts:

Part I This shall be named Technical Bid and shall comprise of:

1. For bidding documents downloaded from the website, the demand draft for the cost of the bidding documents placed in a separate cover, marked “cost of bidding document downloaded from the internet”;
2. Earnest Money in a separate cover marked ‘Earnest Money’;

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3. Authorized Address and contact details of the bidder having the following information : Address of communication:

Telephone No.(s): Office:

Mobile No.:

Facsimile (Fax) No. :

Electronic Mail Identification (E-mail ID):

4. Qualification information, supporting documents, affidavit and undertaking as specified in Clause 4 of ITB.
5. Undertaking that the bid shall remain valid for the period specified in clause 15.1 OF ITB.
6. Any other information/documents required to be completed and submitted by bidders, as specified in the Appendix to ITB, and
7. An affidavit affirming that information he has furnished in the bidding document is correct to the best of his knowledge and belief.

Part II. It shall be named Financial Bid and shall comprise of:

1. Form of Bid as specified in Section 6;
2. Priced bill of quantities for items specified in Section 7;
3. Each part shall be separately sealed and marked in accordance with Sealing and Marking instructions in clause 19 of ITB.

- The following documents, which are not submitted with the bid, will be deemed to be part of the bid.

SectionParticulars

- 1 Notice inviting Tender
- 2 Instruction to the bidders
3. Conditions of Contract
4. Contract Data
5. Specifications
6. Drawings

7. Bid Prices

1. The Contract shall be for the whole Works, as described in Clause 1. 1 of ITB, based on the priced Bill of Quantities submitted by the Bidder.
2. The Bidder shall adopt the Percentage Rate Method as specified in the Appendix to ITB; only the same option is allowed to all the Bidders.
Percentage Rate Method requires the bidder to quote a percentage above / below/ at par of the schedule of rates specified in the Appendix to IT.

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3. All duties, taxes, royalties and other levies payable by the Contractor under the Contract, or for any other cause, shall be included in the rates, prices, and total Bid price submitted by the Bidder.
4. The rates and prices quoted by the Bidder shall be fixed for the duration of the Contract and shall not be subject to adjustment.

• **Currencies of Bid**

The unit rates and the prices shall be quoted by the bidder entirely in Indian Rupees.

• **Bid Validity**

1. Bids shall remain valid for a period of ninety days after the deadline date for bid submission specified in Clause 20 of ITB. A bid valid for a shorter period shall be rejected by the Employer as non-responsive.
2. In exceptional circumstances, prior to expiry of the original time limit, the Employer may request that the bidders may extend the period of validity for a specified additional period. The request and the bidders' responses shall be made in writing or by cable. A bidder may refuse the request without forfeiting his Earnest Money. A bidder agreeing to the request will not be required or permitted to modify his bid, but will be required to extend the validity of his earnest money for a period of the extension, and in compliance with Clause 16 of ITB in all respects.

• **Earnest Money**

1. The Bidder shall furnish, as part of the Bid, Earnest Money, in the amount specified in the Appendix to ITB.
2. The Earnest Money shall, at the Bidder's option, be in the form of Fixed Deposit Receipt of a scheduled commercial bank, NSC, Post office saving Bank issued in favour of the name given in the Appendix to ITB. The Fixed Deposit Receipt shall be valid for six months or more after the last date of receipt of bids. Other forms of Earnest Money acceptable to the Employer are stated in the Appendix to ITB.
3. Any bid not accompanied by an acceptable Earnest Money, unless exempted in terms given in the Appendix to ITB, shall be rejected by the Employer as non-responsive.
4. The Earnest Money of unsuccessful bidders will be returned within 28 days of the end of the Bid validity period specified in Clause 15.1 of ITB.
5. The Earnest Money of the successful Bidder will be discharged when the Bidder has signed the Agreement and furnished the required Performance Security.

• **The Earnest Money may be forfeited:**

1. If the Bidder withdraws the Bid after bid opening (technical bid) during the period of Bid validity;
2. in the case of a successful Bidder, if the Bidder fails within the specified time limit to
 - I. Sign the Agreement; and/or
 - II. Furnish the required Performance Security.

• **Alternative Proposals by Bidders**

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Bidders shall submit offers that comply with the requirements of the bidding documents, including the Bill of Quantities and the basic technical design as indicated in the drawings and specifications. Alternative proposals will be rejected as non-responsive.

• **Format and Signing of Bid**

1. The Bidder shall submit one set of the bid comprising of the documents as described in Clause 12 of ITB.
2. The Bid shall be typed or written in indelible ink and shall be signed by a person or persons duly authorized to sign on behalf of the Bidder, pursuant to Clause 4.3(a) of ITB. All pages of the Bid shall be signed by the person or persons signing the Bid.
3. The Bid shall contain no overwriting, alterations or additions, except those to comply with instructions issued by the Employer, or as necessary to correct errors made by the Bidder, in which case such corrections shall be made by scoring out the cancelled portion, writing the correction and initialling and dating it by the person or persons signing the Bid.

• **Submission of Bids**

Sealing and Marking of Bids

1. The Bidder shall place the two separate envelopes (called inner envelopes) marked "Technical Bid" and "Financial Bid" in one outer envelope. The inner envelopes will have markings as follows:
 - i. Technical Bid: To be opened on 21-09-2005 at 12.30PM (date and time of Technical Bid opening as per clause 22.1 of ITB.)
 - ii. Financial Bid: Not to be opened except with the approval of the Employer.
 - iii. The contents of the Technical and Financial Bids shall be as specified in clause 12.1 of ITB.
2. The inner and outer envelopes containing the Technical and Financial Bids shall
 - i. be addressed to the Employer at the address provided in the Appendix to ITB;
 - ii. bear the name and identification number of the Contract as defined in clause 1.1 of ITB; and
 - iii. provide a warning not to open before the specified time and date for Bid opening as defined in clause 22.1 of ITB.
3. In addition to the identification required in Clause 19.2, each of the envelopes shall indicate the name and address of the Bidder to enable the Bid to be returned unopened in case it is declared late, pursuant to Clause 21 of ITB, or is declared non-responsive pursuant to Clause 22 of ITB.
4. Deadline for Submission of Bids
5. Complete Bids (including Technical and Financial) must be received by the Employer at the address specified in the Appendix to ITB not later than the date and time indicated in the Appendix to ITB. In the event of the specified date for the submission of bids being declared a holiday for the Employer, the Bids will be received up to the specified time on the next working day.
6. The Employer may extend the deadline for submission of bids by issuing an amendment in accordance with Clause 10.3 of ITB, in which case all rights and obligations of the Employer and the bidders previously subject to the original deadline will then be subject to the new deadline.

• **Late Bids**

Any Bid received by the Employer after the deadline prescribed in Clause 20 of ITB will be returned unopened to the Bidder.

• **Bid Opening and Evaluation**

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i. Bid Opening

1. The Employer will open the bids received (except those received late) in the presence of the bidders/bidders' representatives who choose to attend at the time, date and place specified in the Appendix to ITB. In the event of the specified date for the submission of bids being declared a holiday for the Employer, the Bids will be opened at the appointed time and location on the next working day.
2. The envelope containing the technical bid shall be opened. The inner envelope marked "cost of bidding document downloaded from the Internet" will be opened first and if the cost of the bidding documents is not there, or incomplete, the remaining bid documents will not be opened, and bid will be rejected.
3. In all other cases, the amount of Earnest Money, forms and validity shall be announced. Thereafter, the bidders' names and such other details as the Employer may consider appropriate, will be announced by the Employer at the opening.
4. The Employer will prepare minutes of the Bid opening, including the information disclosed to those present in accordance with Clause 22.3 of ITB.
5. Evaluation of the technical bids with respect to bid security, qualification information and other information furnished in Part I of the bid in pursuant to Clause 12.1 of ITB, shall be taken up and completed within Ten working days of the date of bid opening, and a list will be drawn up of the responsive bids whose financial bids are eligible for consideration.
6. The Employer shall inform, by telegram or facimal, the bidders, whose technical bids are found responsive, date, time and place of opening as stated in the Appendix ITB. In the event of the specified date being declared a holiday for the Employer, the bids will be opened at the appointed time and location on the next working day through they or their representative, may attend the meeting of opening of financial bids.
7. At the time of the opening of the 'Financial Bid', the names of the bidders whose bids were found responsive in accordance with clause 22.5 of ITB will be announced. The financial bids of only these bidders will be opened. The remaining bids will be returned unopened to the bidders. The responsive bidders' names, the Bid prices, the total amount of each bid, and such other details as the Employer may consider appropriate will be announced by the Employer at the time of bid opening. Any Bid price, which is not read out and recorded, will not be taken into account in Bid Evaluation-
8. The Employer shall prepare the minutes of the opening of the Financial Bids.

• **Process to be Confidential**

Information relating to the examination, clarification, evaluation, and comparison of bids and recommendations for the award of a contract shall not be disclosed to bidders or any other persons not officially concerned with such process until the award to the successful Bidder has been announced. Any attempt by a Bidder to influence the Employer's processing of bids or award decisions may result in the rejection of his Bid

• **Clarification of Bids and Contacting the Employer**

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1. No Bidder shall contact the Employer on any matter relating to its bid from the time of the bid opening to the time the contract is awarded.

2. Any attempt by the bidder to influence the Employer's bid evaluation, bid comparison or contract award decision may result in the rejection of his bid.

• **Examination of Bids and Determination of Responsiveness**

1. During the detailed evaluation of "Technical Bids", the Employer will determine whether each Bid (a) meets the eligibility criteria defined in Clauses 3 and 4; (b) has been properly signed; (c) is accompanied by the required securities; and (d) is substantially responsive to the requirements of the bidding documents. During the detailed evaluation of the "Financial Bids", the responsiveness of the bids will be further determined with respect to the remaining bid conditions, i.e., priced bill of quantities, technical specifications and drawings.
2. A substantially responsive "Financial Bid" is one that conforms to all the terms, conditions, and specifications of the bidding documents, without material deviation or reservation. A material deviation or reservation is one (a) which affects in any substantial way the scope, quality, or performance of the Works; (b) which limits in any substantial way, inconsistent with the bidding documents, the Employer's rights or the Bidder's obligations under the Contract; or (c) whose rectification would affect unfairly the competitive position of other bidders presenting substantially responsive bids.
3. If a "Financial Bid" is not substantially responsive, it will be rejected by the Employer, and may not subsequently be made responsive by correction or withdrawal of the nonconforming deviation or reservation.

• **Correction of Errors**

1. Bids determined to be substantially responsive will be checked by the Employer for any arithmetic errors. Errors will be corrected by the Employer as follows:
 - i. Where there is a discrepancy between the rates in figures and in words, the rate in words will govern; and
 - ii. Where there is a discrepancy between the unit rate and the line item total resulting from multiplying the unit rate by the quantity, the unit rate as quoted will govern.
2. The amount stated in the Bid will be adjusted by the Employer in accordance with the above procedure for the correction of errors and shall be considered as binding upon the Bidder. If the Bidder does not accept the corrected amount, the Bid will be rejected, and the Earnest money shall be forfeited in accordance with Clause 16.6(b) of ITB.

• **Evaluation and Comparison of Bids**

1. The Employer will evaluate and compare only the bids determined to be substantially responsive in accordance with Clause 25 of ITB.
2. In evaluating the bids, the Employer will determine for each Bid the evaluated Bid price by adjusting the Bid price by making correction, if any, for errors pursuant to Clause 26 of ITB.
3. If the Bid of the successful Bidder is seriously unbalanced in relation to the Engineer's estimate of the cost of work to be performed under the contract, the Employer may require the Bidder to produce detailed price analyses for any or all items of the Bill of Quantities, to demonstrate the internal

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consistency of those prices with the construction methods and schedule proposed. After evaluation of the price analyses, the Employer may require that the amount of the performance security set forth in Clause 32 of ITB be increased at the expense of the successful Bidder to a level sufficient to protect the Employer against financial loss in the event of default of the successful Bidder under the Contract. The amount of the increased performance security shall be decided at the sole discretion of the Employer, which shall be final, binding and conclusive on the bidder.

4. If the Bid of the successful Bidder is seriously unbalanced in relation to the Engineer's estimate of the cost of routine maintenance of works to be performed for five years under the contract, the Employer may require the Bidder to produce detailed price analyses for routine maintenance. After its evaluation, the Employer may require that the amount of the performance security set forth in Clause 32 be increased at the expense of the successful Bidder to a level sufficient to protect the Employer against financial loss in the event of default of the successful Bidder under the Contract. The amount of the increased performance security shall be decided at the sole discretion of the Employer, which shall be final, binding and conclusive on the bidder.

- **Price Preference**

There will be no price preference to any bidder.

- **Award of Contract**

Award Criteria

Subject to Clause 31 of ITB, the Employer will award the Contract to the Bidder whose Bid has been determined:

- i. to be substantially responsive to the bidding documents and who has offered the lowest evaluated Bid price, provided that such Bidder has been determined to be (a) eligible in accordance with the provisions of Clause 3 of ITB, and (b) qualified in accordance with the provisions of Clause 4 of ITB; and
- ii. to be within the available bid capacity adjusted to account for his bid price which is evaluated the lowest in any of the packages opened earlier than the one under consideration.

Employer's Right to Accept any Bid and to Reject any or all Bids

Notwithstanding Clause 29 above, the Employer reserves the right to accept or reject

- 30.1 any Bid, and to cancel the bidding process and reject all bids, at any time prior to the award of Contract, without thereby incurring any liability to the affected Bidder or bidders or any obligation to inform the affected Bidder or bidders of the grounds for the Employer's action.

31. Notification of Award and Signing of Agreement.

- 31.1. The bidder whose Bid has been accepted will be notified of the award by the Employer prior to expiration of the Bid validity period by cable, telex or facsimile confirmed by registered letter. This letter (hereinafter and in the Part I *General Conditions of Contract* called the "Letter of Acceptance") will state the sum that the Employer will pay to the

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Contractor in consideration of the execution, completion by the Contractor as prescribed by the Contract (hereinafter

and in the Contract called the "Contract Price").

31.2. The notification of award will constitute the formation of the Contract, subject only to the furnishing of a performance

security in accordance with the provisions of Clause 32.

The Agreement will incorporate all agreements between the Employer and the

31.3. successful Bidder. It will be signed by

the Employer and the successful Bidder after the performance security is furnished.

Upon the furnishing by the successful Bidder of the Performance Security, the

31.4 Employer will promptly notify the other

Bidders that their Bids have been unsuccessful.

32. Performance Security

32.1 Within 10 (ten) days after receipt of the Letter of Acceptance, the successful Bidder shall deliver to the Employer a Performance Security of five percent of the Contract Price, for the period of one years and the time for completion of works plus additional security for unbalanced Bids in accordance with Clauses 27.3 and 27.4 of ITB and Clause 46 Part I General Conditions of Contract and sign the contract.

32.2 The performance security shall be either in the form of a Bank Guarantee or fixed deposit Receipts, in favour of **Superintending Engineer** ,**Circle, P.W.D.** payable at U.P.,

from a Scheduled Commercial Bank.

32.3 Failure of the successful Bidder to comply with the requirements of Clause 32.1.shall constitutes sufficient grounds for cancellation of the award and forfeiture of the Earnest Money. He will also be debarred from participating future bids under U.P. P.W.D. for one year.

33. Advances:

33.1 The employer will provide mobilization advances and advance against security of equipment as provided in Part I General Condition Of Contract.

34. Corrupt or Fraudulent Practices

The Employer requires the bidders/Contractors to strictly observe the laws against fraud and corruption in force in India, namely, Prevention of Corruption Act, 1988.

Section 3 Qualification Information

(Following informations shall be furnished by the contractor on a non-judicial stamp paper of Rs. 100/- only.)

Notes on Form of Qualification Information

The information to be filled in by bidders in the following pages will be used for purposes of post-qualification as provided for in Clause 4 of the Instructions to Bidders. This information will not be incorporated in the Contract. Attach additional pages as necessary.

1. Individual Bidders

1.1	Constitution or legal status of	<i>[attach copy]</i>
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	Bidder Place of registration: Principal place of business: Power of attorney of signatory of Bid	_____ _____ _____
		[Attach]
1.2	Total annual volume of civil construction work executed and payments received in the last five years preceding the year in which bids are invited. (Attach certificate from Chartered Accountant)	(Rs. In lakhs)

1.3 1	Work performed as prime Contractor (in the same name and style) on construction works of a similar nature and volume over the last five years. Attach certificate from the Engineer-in-charge
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Project Name	Name of Employer	Description of work	Value of contract	Contract No.	Date of Issue of Work Order	Stipulated Date of Completion	Actual Date of Completion	Remarks explaining reasons for Delay,
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								if any

1.3.2 Information on Bid Capacity (works for which bids have been submitted and works which are yet to be completed) as on the date of this bid.

(A) Existing commitments and on-going construction works:

Description of Work	Place & State	Contract No & Date	Name & Address of Employer	Value of Contract (Rs. In lakhs)	Stipulated period of completion	Value of works remaining to be completed (Rs. Lakhs) *	Anticipated Date of completion
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

*Enclose certificate(s) from Engineer(s)-in-charge for value of work remaining to be completed.

(B) Works for which bids already submitted:

Description of Work	Place & State	Name & Address of Employer	Estimated Value of Works (Rs. Lakhs)	Stipulated period of completion	Date when decision is expected	Remarks, if any
(1)	(2)	(3)	(4)	(5)	(6)	(7)

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1.4 Availability of Major items of Contractor's Equipment proposed for carrying out the Works. List all information requested below. Refer also to Clause 4.2(d) and Clause 4.4 b (b) of the Instructions to Bidders.

Item of Equipment	Description, make, and age (Years), and capacity	Condition (new, good, poor) and number	Owned, leased (from whom?), or to be purchased
		available	

1.5 Qualifications of technical personnel proposed for the Contract. Refer also to Clause 4.2(e) of the Instructions to Bidders and Clause 9.1 of Part-1 General Conditions of Contract.

Position	Name	Qualification	Years of experience		
			Road Works	Building Works	Other

1.6 Proposed sub-contractors and firms involved for construction. Refer to Clause 7 of Part I General Conditions of Contract.

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Sections of the Works	Value of subcontract	Sub-contractor (name and address)	Experience in similar work

Note: The capability of the sub-Contractor will also be assessed (on the same lines as for the main Contractor) before according approval to him.

1.7 Financial reports for the last five years: balance sheets, profit and loss statements, auditors' reports, etc. List below and attach copies.

1.8 Evidence of access to financial resources to meet the qualification requirements: cash in hand, lines of credit, etc. List below and attach copies of support documents. (Sample format attached).

1.9 Name, address, and telephone, telex, and facsimile numbers of banks that may provide references if contacted by the Employer.

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Information on current litigation in which the
a. Bidder is involved.

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and Numbering**

Name of Other party(s)	Cause of dispute	Litigation where (Court/arbitration)	Amount involved

1.11 Proposed Programme (work method and schedule). Descriptions, drawings, and charts as necessary, to comply with the requirements of the bidding documents.

Section 4

Part I General Conditions of Contract

A. General

1. Definitions

1.1 Terms, which are defined in the Contract Data, are not also defined in the Conditions of Contract but keep their defined meanings. Capital initials are used to identify defined terms.

Bill of Quantities means the priced and completed Bill of Quantities forming part of the Bid.
Compensation Events are those defined in Clause 40 hereunder.

The Completion Date is the date of completion of the Works as certified by the Engineer, in accordance with Clause 48.1.

The Contract is the Contract between the Employer and the Contractor to execute, complete, and maintain the Works. It consists of the documents listed in Clause 2.3.

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The Contract Data defines the documents and other information, which comprise the Contract.

The Contractor is a person or corporate body whose Bid to carry out the Works, including routine maintenance, has been accepted by the Employer.

The Contractor's Bid is the completed bidding document submitted by the Contractor to the Employer.

The Contract Price is the price stated in the Letter of Acceptance and thereafter as adjusted in accordance with the provisions of the Contract.

Days are calendar days; months are calendar months.

A Defect is any part of the Works not completed in accordance with the Contract.

The Defects Liability Certificate is the certificate issued by Engineer, after the Defect Liability Period has ended and upon correction of Defects by the Contractor.

The Defects Liability Period is one years calculated from the Completion Date.

Drawings include calculations and other information provided or approved by the Engineer for the execution of the Contract.

The Employer is the party as defined in the Contract Data, who employs the Contractor to carry out the Works, including routine maintenance,. The Employer may delegate any or all functions to a person or body nominated by him for specified functions.

The Engineer is the person named in the Contract Data (or any other competent person appointed by the Employer and notified to the Contractor, to act in replacement of the Engineer) who is responsible for supervising the execution of the Works and administering the Contract.

Equipment is the Contractor's machinery and vehicles brought temporarily to the Site to construct the Works.

The Initial Contract Price is the Contract Price listed in the Employer's Letter of Acceptance.

The Intended Completion Date is the date on which it is intended that the Contractor shall complete the Works. The Intended Completion Date is specified in the Contract Data. The Intended Completion Date may be revised only by the engineer by issuing an extension of time.

Materials are all supplies, including consumables, used by the Contractor for incorporation in the Works.

Plant is any integral part of the Works that shall have a mechanical, electrical, electronic, chemical, or biological function.

The Site is the area defined as such in the Contract Data.

Site Investigation Reports are those that were included in the bidding documents and are

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reports about the surface and subsurface conditions at the Site.

Specification means the Specification of the Works included in the Contract and any modification or addition made or approved by the Engineer.

The Start Date is given in the Contract Data. It is the date when the Contractor shall commence execution of the Works. It does not necessarily coincide with any of the Site Possession Dates.

A Sub-Contractor is a person or corporate body who has a Contract with the Contractor to carry out a part of the construction work in the Contract, which includes work on the Site.

Temporary Works are works designed, constructed, installed, and removed by the Contractor that are needed for construction or installation of the Works.

A Variation is an instruction given by the Engineer, which varies the Works.

The Works, as defined in the Contract Data, are what the Contract requires the Contractor to construct, install, maintain, and turn over to the Employer. Routine maintenance is defined separately.

2. Interpretation

2.1 In interpreting these Conditions of Contract, singular also means plural, male also means female or neuter, and the other way around. Headings have no significance. Words have their normal meaning under the language of the Contract unless specifically defined. The Engineer will provide instructions clarifying queries about these Conditions of Contract.

2.2 If sectional completion is specified in the Contract Data, references in the Conditions of Contract to the Works, the Completion Date, and the Intended Completion Date apply to any Section of the Works (other than references to the Completion Date and Intended Completion Date for the whole of the Works).

2.3 The documents forming the Contract shall be interpreted in the following order of priority:

- (1) Agreement,
- (2) Notice to Proceed with the Work,
- (3) Letter of Acceptance,
- (4) Contractor's Bid,
- (5) Contract Data,
- (6) Special Conditions of Contract Part II,
- (7) General Conditions of Contract Part I,
- (8) Specifications,
- (9) Drawings,
- (10) Bill of Quantities, and

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(11) Any other document listed in the Contract Data.

3. Language and Law

3.1 The language of the Contract and the law governing the Contract are stated in the Contract Data.

4. Engineer's Decisions

4.1 Except where otherwise specifically stated, the Engineer will decide contractual matters between the Employer and the Contractor in the role representing the Employer. However, if the Engineer is required under the rules and regulations and orders of the Employer to obtain approval of some other authorities for specific actions, he will so obtain the approval.

4.2 Except as expressly stated in the Contract, the Engineer shall not have any authority to relieve the Contractor of any of his obligations under the contract.

5. Delegation

5.1 The Engineer, with the approval of the Employer, may delegate any of his duties and responsibilities to other people, after notifying the Contractor, and may cancel any delegation after notifying the Contractor.

6. Communications 6.1 All Certificate, notices or instructions to be given to the contractor by Employer / Engineer shall be sent on the address or contact details given by the contractor in Section 6 - Form of Bid. The address and contact details for communication with the Employer/ Engineer shall be as per the details given Contract Data to GCC. Communications between parties that are referred to in the conditions shall be in writing. The Notice sent by Facsimile (fax) or other electronic means shall be effective on confirmation of the transmission. The Notice sent by Registered post or Speed post shall be effective on delivery or at the expiry of the normal delivery period as undertaken by the postal service.

7 Subcontracting

7.1 The contractor may subcontract part of the construction work with the approval of the Employer in writing, upto 25% of the contract price but will not assign the Contract. Subcontracting shall not alter the contractor's obligations.

7.2 Beyond what has been stated in clauses 7.1, if the contractor proposes sub contracting any part of the work during execution of the works, because of some unforeseen circumstances to enable him to complete the work as per terms of the contract, the Employer will consider the following before according approval:

- a. The Contractor shall not sub-contract the whole of the works.
- b. The Contractor shall not sub-contract any part of the work without prior consent of the Employer. Any such consent shall not relieve the contractor from any liability or obligation under the contract and he shall be responsible for the acts, defaults and neglects of any his sub-contractor, his agents or workmen as fully as if they were the acts, defaults or neglects of the Contractor, his agents and workmen.

7.3 The Engineer should satisfy himself before recommending to the Employer whether a. The circumstances warrant such sub-contracting: and

- b. The sub-contractor so proposed for the work possess the experience, qualification

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and equipment necessary for the job proposed to be entrusted to him in proportion of the Quantum of works to be sub-contracted.

7. Other Contractors

7.1 The contractor shall co-operate and share the site with other contractors. Public authorities utilities, and the employer between the dates given in the schedule of other contractors, as referred to in the contract data. The contractor shall also provide facilities and services for them as described in the schedule. The employer may modify the schedule of other contractor, and shall notify the contractor of any such modification.

7.2 The contractor should take up the work in convenient reaches as decided by the Engineer to ensure there is least hindrance to the smooth flow of traffic including movement of vehicles and equipment of other contractors till the completion of the works.

8. Personnel

9.1 The Contractor shall employ for the construction work and routine maintenance the technical personnel named in the Contract Data or other technical persons approved by the Engineer. The Engineer will approve any proposed replacement of technical personnel only if their relevant qualifications and abilities are substantially equal to or better than those of the personnel stated in the Contract Data.

9.2 If the Engineer asks the Contractor to remove a person who is a member of the Contractor's staff or work force, stating the reasons, the Contractor shall ensure that the person leaves the Site within seven days and has no further connection with the Works in the Contract.

9.2 The Contractor shall not employ any retired Gazetted officer who has worked in the Engineering Department of the State Government and has either not completed two years after the date of retirement or has not obtained State Government's permission to employment with the Contractor.

9. Employer's and Contractor's Risks

10.1 The Employer carries the risks which this Contract states are Employer's risks, and the Contractor carries the risks that this Contract states are Contractor's risks.

10. Employer's Risks

11.1 The Employer is responsible for the excepted risks which are (a) in so far as they directly affect the execution of the Works in the Employer's country, the risks of war, invasion, act of foreign enemies, rebellion, revolution, insurrection or military or usurped power, civil war, riot commotion or disorder (unless restricted to the Contractor's employees), natural calamities and contamination from any nuclear fuel or nuclear waste or radioactive toxic explosive, or (b) a cause due solely to the design of the Works, other than

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the Contractor's design.

12. Contractor's Risks 12.1 All risks of loss of or damage to physical property and of personal injury and death which arise during and in consequence of the performance of the Contract other than the excepted risks, referred to in clause 11.1, are the responsibility of the Contractor.

13. Insurance

13.1 The Contractor at his cost shall provide, in the joint names of the Employer and the Contractor, insurance cover from the Start Date to the date of completion, in the amounts and deductibles stated in the Contract Data for the following events which are due to the Contractor's risks:

- a) loss of or damage to the Works, Plant and Materials;
- b) loss of or damage to Equipment;
- c) loss of or damage to property (except the Works, Plant, Materials, and Equipment) in connection with the Contract; and
- d) Personal injury or death.

13. Insurance policies and certificates for insurance shall be delivered by the Contractor to the Engineer for the Engineer's approval before the completion date/ Start Date. All such insurance shall provide for compensation to be payable in Indian Rupees to rectify the loss or damage incurred.

13.3 (a) The Contractor at his cost shall also provide, in the joint names of the Employer and the Contractor, insurance cover from the date of completion to the end of defect liability period, in the amounts and deductibles stated in the Contract Data for the following events which are due to the Contractor's risks:

- (a) Personal injury or death.

13.4 (b) Insurance policies and certificates for insurance shall be delivered by the Contractor to the Engineer for the Engineer's approval before the completion date/ start date. All such insurance shall provide for compensation to be payable in Indian Rupees.

13.5 Alterations to the terms of insurance shall not be made without the approval of the Engineer.

13.6 Both parties shall comply with any conditions of the insurance policies.

14. Site Investigation Reports

14.1 The Contractor, in preparing the Bid, may rely on any Site Investigation Reports referred to in the Contract Data, supplemented by any other information available to him, before submitting the bid.

15. Queries about the Contract Data

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15.1 The Engineer will clarify queries on the Contract Data.

16. Contractor to Construct the Works

16.1 The Contractor shall construct, and install and maintain the Works in accordance with the Specifications and Drawings.

16.2 The contractor shall construct the works with intermediate technology, i.e., by manual means with medium input of machinery required to ensure the quality of works as per specifications. The contractor shall deploy the equipment and machinery as given in Contract Data.

17. The Works to Be Completed by the Intended Completion Date

17.1 The Contractor may commence execution of the Works on the Start Date and shall carry out the Works in accordance with the Programme submitted by the Contractor, as updated with the approval of the Engineer, and complete them by the Intended Completion Date.

18. Approval by the Engineer

18.1 The Contractor shall submit Specifications and Drawings showing the proposed Temporary Works to the Engineer, who is to approve them.

18.2 The Contractor shall be responsible for design of Temporary Works.

18.3 The Engineer's approval shall not alter the Contractor's responsibility for design of the Temporary Works.

18.4 The Contractor shall obtain approval of third parties to the design of the Temporary Works, where required.

18.5 All Drawings prepared by the Contractor for the execution of the temporary or permanent Works, are subject to prior approval by the Engineer before their use.

19. Safety

19.1 The Contractor shall be responsible for the safety of all activities on the Site.

20. Discoveries

20.1 Anything of historical or other interest or of significant value unexpectedly discovered on the Site shall be the property of the Employer. The Contractor shall notify the Engineer of such discoveries and carry out the Engineer's instructions for dealing with them.

21 Possession of the Site

21.1 The Employer shall handover complete or part possession of the site to the Contractor 7 days in advance of construction programme . At the start of the work, the employer shall handover the possession of at-least 75% of the site.

22. Access to the Site

22.1 The Contractor shall allow access to the Site and to any place where work in

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connection with the Contract is being carried out, or is intended to be carried out to the engineer and any person/persons/agency authorized by:

- a. The Engineer
- b. The Employer
- c. The Ministry of Rural Development, Government of India.
- d. National Rural Roads Development Agency, New Delhi

23. Instructions

23.1 The Contractor shall carry out all instructions of the Engineer, which comply with the applicable laws where the Site is located.

. TIME CONTROL

26. Programme

26.1 Within the time stated in the Contract Data, the Contractor shall submit to the Engineer for approval a Programme showing the general methods, arrangements, order, and timing for all the activities in the Works, along with monthly

cash flow forecasts for the construction of works.

26.2 The Contractor shall submit the list of equipment and machinery being brought to site, the list of key personnel being deployed, the list of machinery/ equipments being placed in field laboratory and the location of field laboratory along with the Programme. The Engineer shall cause these details to be verified at each appropriate stage of the programme.

26.3 An update of the Programme shall be a programme showing the actual progress achieved on each activity and the effect of the progress achieved on the timing of the remaining Works, including any changes to the sequence of the activities.

26.4 The Contractor shall submit to the Engineer for approval an updated Programme at intervals of *60 Days* no longer than the period stated in the Contract Data. If the Contractor does not submit an updated Programme within this period, the Engineer may withhold the amount stated in the Contract Data from the next payment certificate and continue to withhold this amount until the next payment after the date on which the overdue Programme has been submitted.

26.5 The Engineer's approval of the Programme shall not alter the Contractor's obligations. The Contractor may revise the Programme and submit it to the Engineer again at any time. A revised Programme shall show the effect of Variations and Compensation Events.

27 Extension of the Intended Completion Date

27.1 The Engineer shall extend the Intended Completion Date if a Compensation Event

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occurs or a Variation is issued which makes it impossible for Completion to be achieved by the Intended Completion Date without the Contractor taking steps to accelerate the remaining Works, which would cause the Contractor to incur additional cost.

27.2 The Engineer shall decide whether and by how much time to extend the Intended Completion Date within 21 days of the Contractor asking the Engineer for a decision upon the effect of a Compensation Event or Variation and submitting full supporting information. If the Contractor has failed to cooperate in dealing with a delay, the delay by this failure shall not be considered in assessing the new Intended Completion Date.

28. Delays Ordered by the Engineer

28.1 The Superintending Engineer may instruct the Contractor to delay the start or progress of any activity within the Works. Delay/delays totalling more than 30 days will require prior written approval of the Employer.

29. Management Meetings

29.1 The Engineer may require the Contractor to attend a management meeting. The business of a management meeting shall be to review the plans for the Works.

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

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C. Quality Control

30. Identifying Defects

30.1 The Engineer shall check the Contractor's work and notify the Contractor of any Defects that are found. Such checking shall not affect the Contractor's responsibilities. The Engineer may instruct the Contractor to search for a Defect and to uncover and test any work that the Engineer considers may have a Defect.

31. Tests

31.1 For Carrying out mandatory tests as prescribed in the specification. The Contractor shall establish field laboratory at the location decided by Engineer. The field laboratory will have minimum equipments as specified in the Contract Data. The contractor shall be solely responsible for :

- a. Carrying out the mandatory tests prescribed in the Specifications, and
- b. For the correctness of the test results, whether performed in his laboratory or elsewhere.

31.2 If the Engineer instructs the Contractor to carry out a test not specified in the Specification/ Rural Roads Manual to check whether any work has a Defect and the test shows that it does, the Contractor shall pay for the test and any samples.

32. Correction of Defects noticed during the Defect Liability Period for one year.

32.11 The Engineer shall give notice to the Contractor of any Defects before the end of the Defects Liability Period, which begins at Completion of work. The Defects Liability Period shall be extended for as long as Defects remain to be corrected.

32.1.2 Every time notice of Defect/Defects is given, the Contractor shall correct the notified Defect/Defects within the duration of time specified by the Engineer's notice.

32.2. The RFI system will be followed for execution of work.

33. Uncorrected Defects

33.1 If the Contractor has not corrected a Defect pertaining to the Defect Liability Period under clause 32.1.1 and of these Conditions of Contract, to the satisfaction of the Engineer, within the time specified in the Engineer's notice, the Engineer will assess the cost of having the Defect corrected, and the Contractor will pay this amount, on correction of the Defect.

D. Cost Control

34. Bill of Quantities

34.1 The Bill of Quantities shall contain items for the construction, installation, testing, and commissioning, maintaining works, and lump sum figures for yearly routine maintenance for each of the five years separately, to be done by the Contractor.

34.2 The Bill of Quantities is used to calculate the Contract Price. The Contractor is paid for the quantity of the work done at the rate in the Bill of Quantities for each item for the construction of roads. The payment to the Contractor is performance based for routine maintenance of roads.

35. Variations

35.1 The Engineer shall, having regard to the scope of the Works and the sanctioned estimated cost, have power to order, in writing, Variations within the scope of the Works he considers necessary or advisable during the progress of the Works. Such Variations shall form part of the Contract and the Contractor shall

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carry them out and include them in updated Programmes produced by the Contractor. Oral orders of the Engineer for Variations, unless followed by written confirmation, shall not be taken into account.

36. Payments for Variations

36.1 If rates for variation items are specified in Bill of Quantity, the contractor shall carry out such work at the same rate. This shall apply for variation only up to the limit prescribed in the contract data. If the variation exceeds this limit, the rates shall be derived under the provision of clause 36.3 for quantities (higher or lower) exceeding the deviation limit.

36.2 If the rates for Variation are not specified in the Bill of Quantities, the Engineer shall derive the rate from similar items in the Bill of Quantities.

36.3 If the rate for Variation item cannot be determined in the manner specified in Clause 36.1 or 36.2, the Contractor shall, within 14 days of the issue of order of variation work, inform the Engineer the rate which he proposes to claim, supported by analysis of the rates. The Engineer shall assess the quotation and determine the rate based on prevailing market rates within one month of the submission of the claim by the Contractor. As far as possible, the rate analysis shall be based on the standard data book and the current schedule of rates of the district public works division. The decision of the Engineer on the rate so determined shall be final and binding on the Contractor.

37. Cash Flow Forecasts

37.1 When the Programme is updated, the Contractor shall provide the Engineer with an updated cash flow forecast.

38. Payment Certificates

38.1 The payment to the contractor will be as follows for construction work:

The Contractor shall submit to the Engineer fortnightly/ monthly statements of the value of the work executed less the cumulative amount certified previously supported with detailed measurement of the items of work executed in measurement books authorised by UP. P.W.D. .

(b) The Engineer shall check the Contractor's fortnightly/monthly statement within 14 days and certify the amount to be paid to the Contractor.

(c) The value of work executed shall be determined, based on measurements by the Engineer.

(d) The value of work executed shall comprise the value of the quantities of the items in the Bill of Quantities completed.

(e) The value of work executed shall also include the valuation of Variations and Compensation Events.

(f) The Engineer may exclude any item certified in a previous certificate or reduce the proportion of any item previously certified in any certificate in the light of later information.

(g) The Payment of final bill shall be governed by the provisions of clause 50 of GCC.

39. Payments

39.1 Payments shall be adjusted for deductions for advance payments security deposit, other recoveries in terms of the Contract and taxes at source, as applicable under the law. The Engineer shall pay the Contractor the amounts he had certified within 15 days of the date of each certificate.

39.2 The Employer may appoint another authority, as specified in the Contract Data (or any other competent person appointed by the Employer and notified to the contractor) to make payment certified by the Engineer.

39.3 Items of the Works for which no rate or price has been entered in the Bill of Quantities, will not be paid for by the Employer and shall be deemed covered by other rates and prices in the Contract.

40. Compensation Events

40.1 The following shall be Compensation Events unless they are caused by the Contractor:

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- a) The Engineer orders a delay or delays exceeding a total of 30 days.
- b) The effects on the Contractor of any of the Employer's Risks.

40.2 If a Compensation Event would prevent the Works being completed before the Intended Completion Date, the Intended Completion Date shall be extended. The Engineer shall decide whether and by how much the Intended Completion Date shall be extended.

41. Tax

41.1 The rates quoted by the Contractor shall be deemed to be inclusive of the sales and other levies, duties, royalties, cess, toll, taxes of Central and State Governments, local bodies and authorities that the Contractor will have to pay for the performance of this Contract. The Employer will perform such duties in regard to the deduction of such taxes at source as per applicable law.

42. Currencies

All payments will be made in Indian Rupees.

43. Security Deposit/ Retention and Release of Performance Security and Security Deposit/ Retention.

- 43.1 The Employer shall retain security deposit of 5% of the amount from each payment due to the Contractor until completion of the whole of the construction Work. No. security deposit/ retention shall be retained from the payments for Routine maintenance of Works.
- 43.2 On the completion of the whole of the construction Work half the total amount retained as Security Deposit is repaid to the contractor and half when the defect liability period has passed and the Engineer has certified that all defects notified by the Engineer to the contractor before the end of his period have been corrected.
- 43.3 The additional performance security for unbalanced bids as detailed in Clause 51 of Conditions of Contract is repaid to the contractor when the construction work is complete.
- 43.4 The performance security equal to the five percent of the contract price in Clause 51 of Conditions of contract is repaid to the contractor when the period of one years fixed or defect liability period is over and the Engineer has certified that the contractor has satisfactorily carried out the Works.
- 43.5 If the contractor so desires then the Security Deposit can be converted into any interest bearing security of schedule commercial bank in the name of the Employer or National Saving Certificates duly pledged in favour of the Employer for Defect Liability Period.

44. Liquidated Damages

- 44.1 The Contractor shall pay liquidated damages to the Employer at the rate per week or part thereof stated in the Contract Data for the period that the Completion Date is later than the Intended Completion Date. Liquidated damages at the same rate shall be withheld if the Contractor fails to achieve the milestones prescribed in the Contract Data. However, in case the Contractor achieves the next milestone the amount of the liquidated damages already withheld shall be restored to the Contractor by adjustment in the next payment certificate. The total amount of liquidated damages shall not exceed the amount defined in the Contract Data. The Employer may deduct liquidated damages from payments due to the Contractor. Payment of liquidated damages shall not affect the Contractor's other liabilities.
- 44.2 If the Intended Completion Date is extended after liquidated damages have been paid, the Engineer shall correct any overpayment of liquidated damages by the Contractor by adjusting the next payment certificate.

45. Advance Payment

- 45.1 The Employer will make the following advance payment to the contractor against provision by the

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Contractor of an Unconditional Bank Guarantee in a form and by a Commercial bank acceptable to the Employer in amounts equal to the advance payment:

- a. Mobilization advance up to 5 percent of the contract price.
- b. Equipment advance up to ninety percent of the cost of the new equipment brought to the site, subjects to a maximum of 10 percent of the contract price.

The guarantee shall remain effective until the advance payment has been repaid, but the amount of the guarantee shall be progressively reduced by the amounts repaid by the Contractor. Interest will not be charged on advance payment.

45.2 The Contractor is to use the advance payment only to pay for Equipment, plant and mobilisation expenses required specifically for execution of works. The Contractor shall demonstrate the advance payment as been used in this way by supplying copies of invoices or other documents to the Engineer.

45.3 The advance payment shall be repaid by deducting proportionate amounts from payments otherwise due to the Contractor for the construction work, following the schedule of completed percentage of the work on payment basis. No account shall be taken of the advance payment or the repayment in assessing valuation of work done. Variations, price adjustments, Compensation events or liquidated damages.

46. Securities

46.1 The Performance Security equal to five percent of the contract price and additional security for unbalanced bids shall be provided to the Employer no later than the date specified in the Letter of Acceptance and shall be issued in the form given in the Contract Data and by a scheduled commercial bank. The Performance Security shall be valid until a date 45 days from the date of expiry of Defect Liability Period and the additional security for unbalanced bids shall be valid until a date 45 days from the date of issue of the certificate of completion.

47. Cost of Repairs

47.1 Loss or damage to the Works or Materials to be incorporated in the Works between the Start Date and the end of the Defects Correction periods shall be remedied by the Contractor at his cost if the loss or damage arises from the Contractor's acts or omissions.

E. Finishing the Contract

48. Completion of Construction and Maintenance

48.1 The contractor shall request the Engineer to issue a certificate of completion of the construction of the works, and the Engineer will do so upon deciding that the works is completed.

49. Taking Over

49.1 The Employer shall take over the works within seven days of the Engineer issuing a certificate of completion of works.

50. Final Account

50.1 The contractor shall supply the Engineer with a detailed account of the total amount that the Contractor considers payable for works under the contract within 21 days of issue of certificate of completion of construction of works. The Engineer shall issue a defect liability certificate and certify any payment that is due to the correct and complete. If the account is not correct or complete, the engineer shall issue within 42 days a schedule that states the scope of the corrections or additions that are necessary. If the account is still unsatisfactory after it has been resubmitted, the Engineer shall decide on the amount payable to the contractor and issue a payment certificate with in 28 days of receiving the Contractor's revised account. The payment of final bill for construction of works will be made within 14 days thereafter.

50.2 In case the account is not received within 21 days of issue of Certificate of Completion as provided in clause 50. I above, the engineer shall proceed to finalise the account and issue a payment certificate within 28 days. The payment of final bill for construction of works will be made within 14 days thereafter.

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51. Operating and Maintenance Manuals

51.1 If "as built" Drawings and/or operating and maintenance manuals are required, the Contractor shall supply them by the dates stated in the Contract Data.

51.2 If the Contractor does not supply the Drawings and/or manuals by the dates stated in the Contract Data, or they do not receive the Engineer's approval, the Engineer shall withhold the amount stated in the Contract Data from payments due to the Contractor.

52. Termination

52.1 The Employer may terminate the Contract if the Contractor causes a fundamental breach of the Contract.

52.2 Fundamental breaches of Contract shall include, but shall not be limited to, the following:

- a) the Contractor stops work for 28 days when no stoppage of work is shown on the current Programme and the stoppage has not been authorized by the Engineer;
- b) the Contractor is declared as bankrupt or goes into liquidation other than for approved reconstruction or amalgamation;
- c) the Engineer gives Notice that failure to correct a particular Defect is a fundamental breach of Contract and the Contractor fails to correct it within a reasonable period of time determined by the Engineer;
- d) the Contractor does not maintain a Security, which is required;
- e) the Contractor has delayed the completion of the Works by the number of days for which the maximum amount of liquidated damages can be paid, as defined in clause 44.1;
- f) the Contractor fails to provide insurance cover as required under clause 13;
- g) if the Contractor, in the judgement of the Employer, has engaged in the corrupt or fraudulent practice in competing for or in executing the Contract. For the purpose of this clause, "corrupt practise" means the offering, giving, receiving, or soliciting of any thing of value to influence the action of a public official in the procurement process or in Contract execution. "Fraudulent Practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the Employer and includes collusive practice among Bidders (prior to or after bid submission) designed to establish bid process at artificial non-competitive levels and to deprive the Employer of the benefits of free and open competition.
- h) if the Contractor has not completed at least thirty percent of the value of construction Work required to be completed after half of the completion period has elapsed;
- i) if the Contractor fails to set-up a field laboratory with the prescribed equipment, within the period specified in the Contract Data; and
- j) any other fundamental breaches as specified in the Contract Data.
- k) if the Contractor fails to deploy machinery and equipment or personnel as specified in the contract Data at the appropriate time.

52.3 Notwithstanding the above, the Employer may terminate the Contract for convenience.

52.4 If the Contract is terminated, the Contractor shall stop work immediately, make the Site safe and secure, and leave the Site as soon as reasonably possible.

53. Payment upon Termination

53.1 If the Contract is terminated because of a fundamental breach of Contract by the Contractor, the

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Engineer shall issue a certificate for the value of the work done and Materials ordered less liquidated damages, if any less advance payments received up to the date of the issue of the certificate and less the percentage to apply to the value of the work not completed, as indicated in the Contract Data. If the total amount due to the Employer exceeds any payment due to the Contractor, the difference shall be recovered from the security deposit, and performance security. If any amount is still left unrecovered it will be a debt payable to the Employer.

53.2 If the Contract is terminated at the Employer's convenience, the Engineer shall issue a certificate for the value of the work done, the reasonable cost of removal of Equipment, repatriation of the Contractor's personnel employed solely on the Works, and the Contractor's costs of protecting and securing the Works and less advance payments received up to the date of the certificate, less other recoveries due in terms of the Contract, and less taxes due to be deducted at source as per applicable law.

54. Property

54.1 All Materials on the Site, Plant, Equipment, Temporary Works, and Works shall be deemed to be the property of the Employer for use for completing balance construction work if the Contract is terminated because of the Contractor's default, till the Works is completed after which it will be transferred to the Contractor and credit, if any, given for its use.

55. Releases from Performance

55.1 If the Contract is frustrated by the outbreak of war or by any other event entirely outside the control of the Employer or the Contractor, the Engineer shall certify that the Contract has been frustrated. The Contractor shall make the Site safe and stop work as quickly as possible after receiving this certificate and shall be paid for all work carried out before receiving it and for any work carried out afterwards to which a commitment was made.

F. Other Conditions of Contract

56. Labour

56.1 The Contractor shall, unless otherwise provided in the Contract, make his own arrangements for the engagement of all staff and labour, local or other, and for their payment, housing, feeding and transport.

56.2 The Contractor shall, if required by the Engineer, deliver to the Engineer a return in detail, in such form and at such intervals as the Engineer may prescribe, showing the staff and the numbers of the several classes of labour from time to time employed by the Contractor on the Site and such other information as the Engineer may require.

57. COMPLIANCE WITH LABOUR REGULATIONS

57.1 During continuance of the Contract, the Contractor and his sub Contractors shall abide at all times by all existing labour enactments and rules made there under, regulations, notifications and bye laws of the State or Central Government or local authority and any other labour law (including rules), regulations, bye laws that may be passed or notification that may be issued under any labour law in future either by the State or the Central Government or the local authority. Salient features of some of the major labour laws that are applicable to construction industry are given in Appendix to Part I General Condition of Contract. The Contractor shall keep the Employer indemnified in case any action is taken against the Employer by the competent authority on account of contravention of any of the provisions of any Act or rules made there under, regulations or notifications including amendments. If the Employer is caused to pay or reimburse, such amounts as may be necessary to cause or observe, or for non-observance of the provisions stipulated in the notifications/bye laws/Acts/Rules/regulations including amendments, if

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any, on the part of the Contractor, the Engineer/Employer shall have the right to deduct any money due to the Contractor including his amount of performance security. The Employer/Engineer shall also have right to recover from the Contractor any sum required or estimated to be required for making good the loss or damage suffered by the Employer.

The employees of the Contractor and the Sub-Contractor in no case shall be treated as the employees of the Employer at any point of time.

58. Drawings and Photographs of the Works

58.1 The contractor shall do photography/video photography of the site firstly before the start of the work, secondly mid-way in the execution of different stages of work and lastly after the completion of the work. No separate payment will be made to the contractor for this.

58.2 The Contractor shall not disclose details of Drawings furnished to him and works on which he is engaged without the prior approval of the Engineer in writing. No photograph of the works or any part thereof or plant employed thereon, except those permitted under clause 58.1, shall be taken or permitted by the Contractor to be taken by any of his employees or any employees of his sub-Contractors without the prior approval of the Engineer in writing. No photographs/ Video photography shall be published or otherwise circulated without the approval of the Engineer in writing.

59. The Apprentices Act 1961

59.1 The Contractor shall duly comply with the provisions of the Apprentices Act 1961 (III of 1961), the rules made there under and the orders that may be issued from time to time under the said Act and the said Rules and on his failure or neglect to do so he shall be subject to all liabilities and penalties provided by the said Act and said Rules.

60. Criminals are prohibited from bidding

60.1 Any bidders having **criminal record** is not allowed to participate in the bidding process. Any person who is having criminal cases against him or involved in the **organised crime or gangster activities or Mafia or Goonda or Anti social activity** are strictly prohibited to participate in the bidding process. If it is established that any bidder has **criminal record, his bid shall be automatically cancelled.**

60.2 The bidder has to produced character certificate, Solvency certificate, self decoration affidavit (on the prescribed proforma which is attached with the bid document) etc., issued by the competent authority in original with bid document.

61. Any bidder who is an Advocate and Registered with any State Bar Council Shall not be allowed to participate in the bidding. If it is established that the contractor is registered with the state bar council, **his bid shall be automatically cancelled.**

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