

WAMIS Ultimate Complete Bible - The Definitive Technical Guide

Comprehensive Works and Accounting Management Information System Knowledge

With Advanced Billing System Integration

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Complete System Overview

System Definition & Development

WAMIS (Works and Accounts Management Information System) is a comprehensive enterprise-level application developed by the **Centre for Development of Advanced Computing (C-DAC), Pune** for engineering departments across multiple states in India^[140]. The system serves as a complete digital transformation solution for public works management, covering:

- **Rural Development Departments**
- **Roads & Buildings Departments**
- **Water Resource Departments**
- **Housing & Urban Development Departments**

Core System Objectives

The system facilitates **complete lifecycle management** from project inception to completion, addressing all activities carried out by technical sections at divisional offices^[140]. Key objectives include:

1. **Computerization:** Complete digitization of manual processes
2. **Integration:** Seamless connection with accounting and budget systems
3. **Transparency:** Enhanced visibility into project status and finances
4. **Compliance:** Adherence to government codes and procedures
5. **Efficiency:** Streamlined workflows and automated processes

System Coverage & Scope

WAMIS covers the **complete project lifecycle**:

- Project proposal and approval workflows
- Tendering and contractor selection processes
- Work execution and progress monitoring
- Billing and payment processing
- Quality control and issue management
- Financial integration and compliance reporting

System Architecture & Integration

Main System Modules

1. Works Module

Complete project lifecycle management from proposal to completion^[140]:

- Work proposal creation and management
- Administrative and technical approvals
- Tendering and contractor selection
- Execution monitoring and control
- Progress tracking and reporting

2. Billing Module

Comprehensive billing and payment processing^[^140]:

- RA (Running Account) bill creation and processing
- Measurement book management
- Deviation approvals and extra items
- Recovery calculations and tax management
- Multi-tier approval workflows

3. Accounts Module

Financial management and voucher processing:

- Automatic accounting voucher generation
- Integration with treasury systems
- Compliance with CPWA codes
- Monthly account preparation
- Audit trail maintenance

4. Budget Module

Budget preparation and allocation tracking:

- Budget estimation and allocation
- Real-time expenditure tracking
- Fund utilization monitoring
- Budget vs actual analysis

Critical Integration Points

iFMS Integration

Integrated Financial Management System connectivity^[^140]:

- Real-time budget and expenditure synchronization
- Automatic voucher generation for payments
- Direct treasury interface for disbursements
- Comprehensive financial reporting

AG Systems Integration

Accountant General systems for compliance^[140]:

- Audit compliance reporting
- Monthly account submissions
- Trial balance automation
- CAG reporting requirements

e-Procurement Integration

Government e-procurement platform connectivity^[140]:

- GEPNIC portal integration for tendering
- Automatic BOQ and tender document generation
- Contractor qualification verification
- Bid evaluation and award processing

Master Data Management

Authority Master Management

Comprehensive approving authority database^[140]:

- Authority names and designations
- Financial delegation powers
- Approval limits by project value
- Hierarchical reporting structures

Example Implementation:

```
Authority: Executive Engineer
Financial Power: Up to ₹50 Lakhs
Approval Types: Technical Sanction, Work Orders
Reporting To: Superintending Engineer
```

Work Classification System

Work Types^[140]

- **Roads:** State highways, district roads, village connectivity
- **Buildings:** Government offices, schools, hospitals, residential
- **Bridges:** Major bridges, minor bridges, culverts

- **Irrigation:** Canals, drainage, flood control structures
- **Water Supply:** Pipe networks, treatment plants, storage

Work Sub-Types[^140]

- **Roads:** NH (National Highway), SH (State Highway), MDR (Major District Road)
- **Buildings:** Administrative, Educational, Medical, Residential
- **Irrigation:** Major irrigation, Minor irrigation, Drainage

Contractor Classification[^140]

Standardized contractor categorization:

- **A Class:** Projects above ₹10 Crores
- **B Class:** Projects ₹2-10 Crores
- **C Class:** Projects ₹50 Lakhs - ₹2 Crores
- **D Class:** Projects up to ₹50 Lakhs
- **Special/Super:** Specialized high-value projects

Asset Master System[^140]

Infrastructure asset management with geo-location:

- Asset coding system (e.g., RDD1901VR05B01)
- Geographic coordinates and mapping
- Asset condition and maintenance history
- Integration with work proposals

Complete Works Lifecycle

Phase 1: Proposal Creation & Management

Work Information Entry[^140]

Comprehensive project detail capture:

- **Work Number:** Auto-generated unique identifier (e.g., 215/54)
- **Work Description:** Detailed project description
- **Location Details:** District, Tehsil, Village, Habitation
- **Budget Classification:** Demand number, heads of account
- **Estimated Cost:** Project financial estimation

Technical Example:

Work Number: 555/24

Description: Construction of 5 Nos. bridges at 40/650 km, 42/330 km, 43/750 km, 45/150 km

Location: Balasore District, Odisha

Budget Head: 28-5054-80-789-1230-37158-000

Estimated Cost: ₹50,00,000

Work Splitting Functionality[^140]

Large project division for manageable execution:

- Parent work identification
- Split work creation with unique IDs
- Resource allocation across splits
- Progress tracking by individual splits
- Consolidated reporting capabilities

Phase 2: Approval Workflows

Administrative Approval (AA)[^140]

Formal project acceptance process:

- **AA Number:** Unique approval identifier
- **AA Date:** Formal approval date
- **Approving Authority:** Competent authority as per delegation
- **AA Amount:** Sanctioned project amount
- **Original vs Revised:** Tracking of approval changes

Critical Requirement: DAO (Divisional Accounts Officer) finalization required before Technical Sanction entry[^140].

Technical Sanction (TS)[^140]

Detailed technical approval with estimates:

- **TS Number:** Technical sanction identifier
- **TS Date:** Technical approval date
- **TS Authority:** Technical approving authority
- **SR Year:** Schedule of Rates year for costing
- **Zone:** SR zone for regional rate variations
- **TS Amount:** Technically sanctioned amount

Phase 3: Tendering & Contractor Selection

Bill of Quantities (BOQ) Preparation[^140]

Detailed work measurement and costing:

- **SR Item Selection:** Items from Schedule of Rates
- **Quantity Estimation:** Precise work measurements
- **Rate Application:** Current SOR rates application
- **Scope Definition:** Work scope for each item
- **Amount Calculation:** Total project cost computation

BOQ Example:

Item Code: 19
Description: Excavation of foundation in hard rock (granite) removed by chiseling including
Unit: Cubic Meters (cum)
Rate: ₹40.00 per cum
Quantity: 103.5000 cum
Amount: ₹4,140.00
SR Year: 2017
Zone: Central Zone

Schedule A Management[^140]

Department-supplied materials to contractors:

- Material specification and quantities
- Rate calculation and valuation
- Supply scheduling and tracking
- Contractor accountability systems

Pre-Tender & e-Procurement Integration[^140]

GEPNIC portal integration for transparent tendering:

- Tender reference number generation
- Cover system (Technical + Financial bids)
- Pre-bid conference management
- Automatic document generation
- Tender publishing and timeline management

Quotation Analysis & Contractor Selection[^140]

Comprehensive bid evaluation system:

- Contractor quotation entry and comparison
- Above/Below/At Par analysis
- L1 (Lowest) contractor identification
- Negotiation process management
- Technical and financial bid evaluation

Phase 4: Contract Award & Execution

Awarding of Contract[^140]

Formal contractor selection and agreement:

- **Agreement Number:** Contract identifier
- **Work Order Number:** Execution authorization
- **Commencement Date:** Actual work start date
- **Completion Timeline:** Stipulated completion date
- **Performance Guarantees:** BG and security deposits
- **Payment Terms:** Advance and progress payment terms

Work Execution Monitoring[^140]

Comprehensive progress tracking system:

- **Physical Scope Definition:** Work breakdown structure
- **Monthly Progress Targets:** Timeline-based milestones
- **Achievement Tracking:** Actual vs planned progress
- **Issue Management:** Land, forest, utility shifting issues
- **Photo Documentation:** Geo-tagged progress evidence

Advanced Billing System

RA Bill Processing Workflow

Multi-Tier Approval Hierarchy[^140]

Systematic bill verification and approval:

1. **Junior Engineer (JE):** Initial measurement entry and bill preparation
2. **Assistant Engineer (AE):** Sub-division level verification
3. **Auditor:** Compliance and accuracy verification
4. **DAO (Divisional Accounts Officer):** Financial oversight and approval
5. **Executive Engineer (EE):** Final technical and administrative approval
6. **iFMS Integration:** Automatic voucher generation for payment

Measurement Book (MB) Management[^140]

Comprehensive measurement documentation:

- **MB Record Entry:** Physical measurement documentation
- **Verification Levels:** Three-tier verification system
- **Quality Control:** Inspection and compliance records
- **Digital Integration:** e-Measurement book mobile app connectivity

MB Record Example:

Recorded By: S S Mohanty (Section Officer)
Record Date: 22/03/2010
MB Details: MB No. 4436, Pages 3-10
Checked By AE: Binod Chandra Dash (50% verification)
Checked By EE: Harihar Sahoo (Division level verification)
Amount: ₹43,345.00

Deviation Management System[^140]

Deviation Approval Process

Systematic handling of quantity variations:

- **Approval Number:** Deviation approval identifier
- **Approval Date:** Formal deviation acceptance date
- **Approving Authority:** Competent authority for deviations
- **Item-wise Deviations:** BOQ item quantity changes
- **Agreement vs Current:** Original vs revised quantities

Extra Items Management[^140]

Additional work items beyond original BOQ:

- **Extra Item Entry:** New work items with proper approvals
- **Rate Determination:** Current SR rates or negotiated rates
- **Approval Workflow:** Authority-based approval for additions
- **Integration:** Seamless integration with existing BOQ

Recovery & Taxation System

Automatic Recovery Calculations[^140]

Systematic deduction management:

- **Income Tax:** TDS as per current government rates
- **Security Deposit:** Performance guarantee deductions
- **Advance Adjustments:** Mobilization advance recovery
- **Material Recovery:** Department-supplied material charges

Royalty Calculation System[^140]

Material-based royalty computation:

- **Material Coefficients:** Automatic coefficient application
- **Rate Analysis Integration:** BOQ item rate analysis
- **Automatic Calculation:** System-generated royalty amounts
- **Compliance Tracking:** Government royalty regulation adherence

Financial Integration & Compliance

iFMS Connectivity & Integration

Automatic Voucher Generation[^140]

Seamless financial system integration:

- **Payment Vouchers:** Automatic voucher creation for contractor payments
- **Adjustment Vouchers:** Recovery and advance adjustment vouchers
- **Budget Vouchers:** Budget allocation and transfer vouchers
- **Compliance Vouchers:** Tax and statutory payment vouchers

Real-time Budget Tracking

Live budget utilization monitoring:

- **Allocation Tracking:** Budget head-wise allocation monitoring
- **Expenditure Analysis:** Real-time spending against allocations
- **Balance Reporting:** Available balance calculations
- **Variance Analysis:** Budget vs actual expenditure analysis

CPWA Code Compliance[^140]

Central Public Works Account Code Adherence

Government accounting standard compliance:

- **Chart of Accounts:** Standardized accounting classification
- **Voucher Formats:** Government-prescribed voucher formats
- **Audit Requirements:** CAG audit trail maintenance
- **Monthly Accounts:** Automated monthly account preparation

AG System Integration[^140]

Accountant General system connectivity:

- **Monthly Submissions:** Automated account submission to AG
- **Trial Balance:** Automatic trial balance generation
- **Audit Reports:** Comprehensive audit trail reports
- **Compliance Certificates:** Regulatory compliance documentation

Mobile Integration & Field Operations

mWAMIS Mobile Application Features[^140]

Offline Capability

Field operations without internet dependency:

- **Local Data Storage:** Work information stored locally
- **Offline Measurements:** Field measurements without connectivity
- **Sync Functionality:** Automatic synchronization when online
- **Data Integrity:** Conflict resolution for offline/online data

Geo-tagging & GPS Integration[^140]

Location-based work documentation:

- **GPS Coordinates:** Automatic location capture
- **Geo-tagged Photos:** Work progress with exact coordinates
- **Location Verification:** Site verification through GPS
- **Mapping Integration:** GIS system connectivity

Field Quality Control

Digital Inspection System[^140]

On-site quality verification tools:

- **Digital Checklists:** Standardized inspection parameters
- **Photo Documentation:** Before/during/after work photos
- **Quality Parameters:** IS codes and BIS specification compliance
- **Defect Tracking:** Quality issue identification and resolution

Progress Reporting[^140]

Real-time field progress updates:

- **Milestone Tracking:** Key milestone achievement recording
- **Physical Progress:** Actual work completion percentages
- **Issue Reporting:** Field impediment documentation
- **Resource Utilization:** Material and equipment usage tracking

Comprehensive Reporting & Analytics

Works Progress Reports

Physical & Financial Progress Analysis[^140]

Comprehensive project performance tracking:

- **Physical Progress:** Work completion percentages by scope
- **Financial Progress:** Expenditure vs budget analysis
- **Timeline Analysis:** Planned vs actual completion timelines
- **Contractor Performance:** Performance evaluation metrics

Project Completion Analysis

End-to-end project evaluation:

- **Completion Certificates:** Formal project completion documentation
- **Final Cost Analysis:** Final cost vs estimated cost comparison
- **Quality Assessment:** Post-completion quality verification
- **Lessons Learned:** Project experience documentation

Billing & Financial Reports

RA Bill Reports[^140]

Comprehensive billing documentation:

- **Bill Summaries:** Running account bill summaries
- **Payment Schedules:** Contractor payment timelines
- **Recovery Statements:** All deduction and recovery details
- **Tax Compliance:** TDS and other tax documentation

Deviation & Extra Item Reports[^140]

Change management documentation:

- **Deviation Statements:** BOQ quantity deviation analysis
- **Extra Item Summaries:** Additional work documentation
- **Cost Impact Analysis:** Financial impact of changes
- **Approval Documentation:** Authority approval tracking

Audit & Compliance Reports

Audit Trail Reports[^140]

Complete activity logging and tracking:

- **User Activity Logs:** All user actions with timestamps
- **Data Change Logs:** Before/after values for modifications
- **System Event Logs:** Login/logout and system events
- **Transaction Histories:** Complete financial transaction trails

Compliance Reports

Regulatory adherence documentation:

- **CPWA Compliance:** Central Public Works Account Code adherence
- **CAG Requirements:** Comptroller and Auditor General standards
- **RTI Compliance:** Right to Information Act requirements
- **Transparency Reports:** Public disclosure mechanisms

User Role Management & Hierarchy

Technical Hierarchy & Responsibilities

Junior Engineer (JE)[^140]

Field-level operations and measurements:

- **Measurement Entry:** Physical work measurement recording
- **Bill Preparation:** Initial RA bill creation and processing
- **Quality Inspection:** First-tier quality verification
- **Progress Reporting:** Field progress update submission

Assistant Engineer (AE)[^140]

Sub-division oversight and verification:

- **Bill Verification:** Second-tier bill verification and approval
- **Quality Control:** Sub-division level quality oversight
- **Resource Management:** Sub-division resource allocation
- **Contractor Coordination:** Local contractor interaction management

Executive Engineer (EE)[^140]

Division management and final approvals:

- **Final Approvals:** Division-level final bill approvals
- **Policy Implementation:** Government policy implementation
- **Strategic Planning:** Division-level strategic planning
- **Performance Management:** Team performance evaluation

Superintending Engineer (SE)[^140]

Circle supervision and policy implementation:

- **Circle Management:** Multi-division circle oversight
- **Policy Formulation:** Circle-level policy development
- **Resource Allocation:** Circle-level resource distribution
- **Performance Monitoring:** Circle performance analysis

Chief Engineer (CE)[^140]

Zone management and strategic decisions:

- **Zone Leadership:** Multi-circle zone management
- **Strategic Planning:** Zone-level strategic initiatives
- **Budget Management:** Zone budget allocation and control
- **Government Liaison:** State government interface

Accounts Hierarchy & Functions

Section Officer[^140]

Bill entry and initial processing:

- **Data Entry:** Bill and financial data entry
- **Initial Verification:** Basic data verification
- **Document Management:** Financial document organization
- **Report Generation:** Basic financial report preparation

Auditor[^140]

Bill verification and compliance checking:

- **Compliance Verification:** Government code adherence verification
- **Accuracy Checking:** Mathematical and procedural accuracy
- **Audit Trail:** Comprehensive audit documentation
- **Exception Reporting:** Non-compliance issue identification

DAO (Divisional Accounts Officer)[^140]

Financial oversight and approval:

- **Financial Approval:** Division-level financial approvals
- **Budget Monitoring:** Division budget oversight

- **Compliance Management:** Financial compliance management
- **Treasury Interface:** Treasury system coordination

Advanced Features & Specialized Operations

Work Closure Management[^140]

Completed Works Classification

Physical completion with financial settlement pending:

- **Requirements:** Agreement present + Physical completion date present + Financial completion pending
- **Process:** Final bill processing and financial closure
- **Documentation:** Completion certificates and handover documents

Closed Works Classification[^140]

Agreement present but physical completion absent:

- **Requirements:** Agreement details present + No physical completion date
- **Process:** Work termination without completion
- **Documentation:** Closure reasons and final settlements

Dropped Works Classification[^140]

Works without agreement execution:

- **Requirements:** No agreement details + No physical completion
- **Process:** Work cancellation before execution
- **Documentation:** Cancellation reasons and approvals

Advanced Material Management

Material Coefficient System[^140]

Automated material consumption calculations:

- **Coefficient Entry:** Material consumption ratios per work item
- **Automatic Calculation:** System-generated material requirements
- **Royalty Integration:** Automatic royalty calculation based on consumption
- **Variance Analysis:** Planned vs actual material consumption

Schedule A Tracking[^140]

Department material supply management:

- **Material Specification:** Detailed material specifications
- **Quantity Tracking:** Issued vs consumed material tracking
- **Rate Management:** Material rate and valuation
- **Recovery System:** Unused material recovery processes

Contract Performance Management

Performance Monitoring System

Comprehensive contractor evaluation:

- **Timeline Performance:** Schedule adherence tracking
- **Quality Performance:** Quality standard compliance
- **Financial Performance:** Cost management evaluation
- **Overall Rating:** Composite performance scoring

Penalty & Incentive Management

Automated penalty and reward calculations:

- **Delay Penalties:** Automatic penalty calculation for delays
- **Quality Penalties:** Penalties for quality non-compliance
- **Performance Incentives:** Rewards for exceptional performance
- **Contract Adjustments:** Automatic contract amount adjustments

Variation Order Management

Contract modification handling:

- **Change Requests:** Systematic change request processing
- **Cost Impact:** Financial impact analysis
- **Approval Workflows:** Authority-based approval processes
- **Documentation:** Complete change documentation

Technical Implementation Examples

Real-World Work Flow Example[^140]

Bridge Construction Project Implementation:

Project: Construction of 5 Nos. bridges at 40/650 km, 42/330 km, 43/750 km, 45/150 km AND

Work Number: 555/24

Parent Work: 555/24

Split Works: 555/24/1 (Individual bridge construction)

Administrative Approval:

- AA Number: 1414
- AA Date: 02/11/2022
- AA Authority: Chief Engineer
- AA Amount: ₹50,00,000

Technical Sanction:

- TS Number: SR/2017
- TS Date: 02/11/2022
- TS Authority: Superintending Engineer
- SR Year: 2017
- Zone: Balasore Zone
- TS Amount: ₹50,00,000

BOQ Items:

1. Item Code: 1.1 - Earth work in ordinary soil
Rate: ₹16.62/cum, Quantity: 44.00 cum, Amount: ₹731.28
2. Item Code: 19 - Excavation of foundation in hard rock
Rate: ₹40.00/cum, Quantity: 103.50 cum, Amount: ₹4,140.00

Contract Award:

- Contractor: Abhaya Kumar Swain
- Agreement No: 5345
- Work Order No: 6434
- Commencement: 05/11/2022
- Completion: 04/01/2023
- Contract Type: P1
- Quoted Amount: ₹4,140.84 (14.99% Below)

Execution Status: In Progress

Current Stage: Billing and Measurement

Billing Process Example[^140]

RA Bill Processing for Bridge Construction:

RA Bill No: 2

RA Bill Date: 03/11/2023

Work: Repair and Renovation of Hospital Building at Sishu Bhawan Chowk

Measurements:

1. Earth work in excavation in foundation
 - BOQ Item: 1

- Agreement Quantity: 2.00 cum
- Current Bill Quantity: 2.00 cum
- Rate: As per agreement
- Amount: Calculated

2. Cement concrete 1:3:6 with 4cm size h.g. metal

- BOQ Item: 3
- Agreement Quantity: 7.00 cum
- Current Bill Quantity: 7.00 cum
- Rate: As per agreement
- Amount: Calculated

Approval Flow:

JE Entry → AE Verification → Auditor Check → DAO Approval → EE Final Approval → iFMS

MB Records:

- Recorded By: S S Mohanty (Section Officer)
- Record Date: 22/03/2010
- MB No: 4436, Pages: 3-10
- Checked By AE: Binod Chandra Dash (50%)
- Checked By EE: Harihar Sahoo

Recoveries:

- Income Tax: ₹4.00
- Security Deposit: As per contract terms
- Advance Adjustment: If applicable

Final Payment: ₹396.00 (After all recoveries)

Payment Mode: Cheque

Troubleshooting & Best Practices

Common System Issues & Solutions

Work Proposal Issues

Problem: Cannot enter Technical Sanction

Solution: Ensure DAO has finalized the work proposal before TS entry[^140]

Problem: BOQ items not appearing

Solution: Verify Technical Sanction completion and SR year/zone selection

Billing Issues

Problem: Bill not moving to next approval level

Solution: Ensure current level finalization before next level access

Problem: Recovery calculations incorrect

Solution: Verify material coefficients and rate analysis setup

Integration Issues

Problem: iFMS integration failure

Solution: Check voucher format compliance and network connectivity

Problem: Mobile app sync issues

Solution: Ensure proper internet connectivity and clear app cache

System Optimization Best Practices

Data Management

- **Regular Backup:** Implement automated daily backup procedures
- **Data Validation:** Use built-in validation rules for data entry
- **Archive Management:** Regular archiving of completed projects
- **Performance Monitoring:** Monitor system performance metrics

User Management

- **Role-based Access:** Implement strict role-based access control
- **Regular Training:** Conduct periodic user training programs
- **Password Policy:** Enforce strong password policies
- **Audit Compliance:** Maintain comprehensive audit trails

Process Optimization

- **Workflow Standardization:** Standardize approval workflows
- **Automation Utilization:** Maximize use of automated features
- **Exception Handling:** Implement systematic exception handling
- **Performance Metrics:** Track and analyze system performance metrics

Conclusion

This Ultimate Complete WAMIS Bible provides comprehensive coverage of every aspect of the Works and Accounts Management Information System, from basic operations to advanced features and specialized processes. The guide serves as your definitive reference for:

- ✓ **Complete System Mastery:** Understanding every module, feature, and integration point
- ✓ **Domain Expertise:** Full grasp of PWD processes, hierarchy, and terminology
- ✓ **Technical Implementation:** Practical examples and real-world applications
- ✓ **Operational Excellence:** Best practices for system optimization and troubleshooting
- ✓ **Advanced Operations:** Specialized features for complex scenarios

With this comprehensive knowledge, you are equipped to handle any WAMIS-related query, implement the system effectively, and serve as the ultimate authority on WAMIS and its domain

applications. Whether dealing with senior engineers, implementing new features, or troubleshooting complex issues, this guide provides the complete foundation for professional excellence in WAMIS operations.

Status: Complete Domain Mastery Achieved - Ready for Expert-Level Operations

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