Software Requirements Specification (SRS)

Project: Integrated Construction Management System (ICMS)

1. Introduction

1.1 Purpose

This project aims to develop a Construction Project Management System that allows construction companies to manage all their operations, including:

- Managing multiple projects and clients.
- Monitoring daily tasks with subcontractors.
- Supervising consultants and executive engineers.
- Recording and reviewing contracts, payments, and price offers.
- Managing materials, warehouses, and equipment.

The system is designed to facilitate planning, monitoring, and execution of construction projects efficiently.

1.2 Project Scope

The system consists of two main parts:

1. **Client Interaction Module:** Managing projects, contracts, and final payments.
2. **Subcontractor Interaction Module:** Managing bills of quantities, conditions, price offers, execution drawings, payments, and modifications.

The system supports the following roles:

- Project Management Officer (PMO) of the company
- General and specialized consultants
- Executive engineers

- Subcontractors
- Labor supervisors

2. Overall System Description

2.1 Users and Roles

Role	Permissions
Project Management Officer	Create projects, add consultants, engineers, subcontractors, manage warehouses, follow contracts, review payments.
General Consultant	Manage consultants, upload bills of quantities and conditions, approve price offers and preliminary drawings.
Executive Engineer	Submit price offers, upload detailed drawings, supervise subcontractors, approve payments.
Subcontractor	Submit price offers, execute tasks, submit payments, follow modifications.
Labor Supervisor	Record daily labor tasks, costs, and material usage.

2.2 Environment

- Web-based system using [Frontend/Backend technologies]
- Database for managing projects, contracts, payments, and materials
- Email integration for invitations and registration

3. Functional Requirements

3.1 Project Management

- Add new projects with project details.
- Display all company projects with the option to select each project for detailed management.

- Each project contains **Navigation Sections (Nav)**:
    - Consultants
    - Executive Engineers
    - Subcontractors
    - Labor
    - Warehouse
    - Project Contract

3.2 Consultants Management

- Consultant registration via email invitation.
- Add consultants and specify their specialties.
- Upload bills of quantities and conditions for each consultant.
- Upload preliminary drawings and approve detailed drawings.
- Track modifications to the bills of quantities.

3.3 Executive Engineers Management

- View bills of quantities and conditions relevant to their specialization.
- Submit price offers for approval by the consultant.
- Upload detailed execution drawings.
- Monitor payments for subcontractors.
- Upload bills of quantities for subcontractors.

3.4 Subcontractors Management

- View bills of quantities and conditions assigned by the executive engineer.
- Submit price offers for assigned tasks.
- Execute tasks after the executive engineer approves the detailed drawings.
- Submit payments for completed tasks after engineer approval.
- Track modifications made by the consultant.

3.5 Labor Management

- Record daily labor activities (tasks, costs, materials used).
- Task details visible to executive engineers and subcontractors.

3.6 Warehouse Management

- Add materials and equipment: name, quantity, description, entry date, invoice image, usage status, quantity used.
- Track material requests from engineers or subcontractors.
- Assign materials to projects and monitor usage.

3.7 Project Contract Management

- Create contracts between the client and construction company after approval of bills of quantities and price offers.
- Contract includes: parties' information, project scope, obligations of both parties, financial terms, contract termination, electronic signatures.
- Send contract invitations via email to both parties.

4. Non-Functional Requirements

- User-friendly interface compatible with all devices.
- Data security (password encryption, identity verification).
- Audit trail for all actions and changes in the system.
- Support multiple simultaneous projects.
- System scalability for future expansion.

5. Use Case Scenarios (Summary)

1. PMO creates a project and adds consultants, engineers, and subcontractors.
2. Consultant uploads bills of quantities and conditions, approves preliminary and detailed drawings.
3. Executive engineer submits price offers and starts task execution with subcontractors.
4. Subcontractors execute tasks and submit payments for approved items.
5. Warehouse manager records materials and equipment usage.

6. Contract is created and sent to both parties for electronic signing after all approvals.